Cloud Security

Techniques and Applications

Edited by Sirisha Potluri, Katta Subba Rao,
Sachi Nandan Mohanty

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ISBN 978-3-11-073750-9
e-ISBN (PDF) 978-3-11-073257-3
e-ISBN (EPUB) 978-3-11-073270-2
ISSN 2700-6239

Library of Congress Control Number: 2021939885

Bibliographic information published by the Deutsche Nationalbibliothek
The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data are available on the Internet at http://dnb.dnb.de.

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Cover image: monsitj / iStock / Getty Images Plus
Printing and binding: CPI books GmbH, Leck

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Volume 1

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This book is humbly dedicated in honour of Shri N. J. Yasaswy, Finance and investment writer and founder of ICFAI University and Shri E. N. Murthy, Member Secretary, The ICFAI Society, whose support, encouragement and blessings made us to get this effort and work.

Aforesaid volume contains the devotion with great love and affection "In memory of my beloved father Shri Potluri. Rama Mohana Rao", whose foundation, inspiration and benediction made me to achieve this great career and life.

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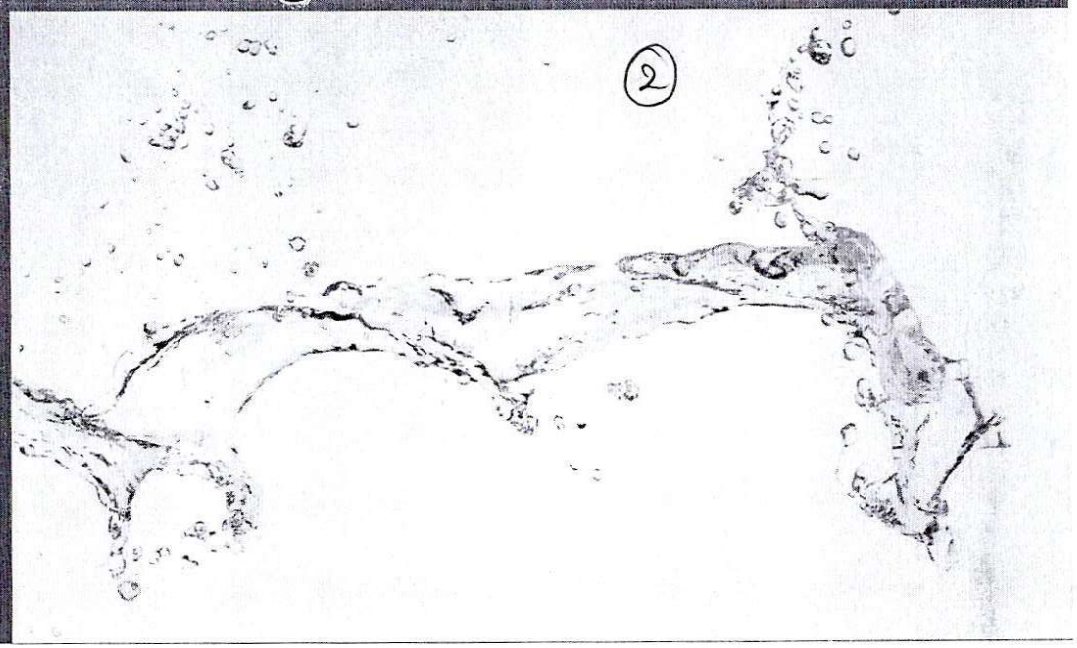
The aim of this book is to investigate linear and nonlinear stability of mono-diffusive (pure thermal) or double-diffusive (thermo-solutal) convection in a porous medium with induced inclined gradients. In this chapter 1 has provided some key definitions, and discuss the underlying theory of stability and instability with respect to linear and nonlinear stability analyses inherent in understanding flows through porous media. Chapter 2 deals with the problem of pure thermal convection induced by inclined thermal gradients with an internal heat source. Chapters 3 and 4, the stability analysis is performed on the double-diffusive Hadley flow induced by both thermal and solutal gradients, when it is subjected to gravity variations. In Chapter 5, the double-diffusive Hadley-Prats flow with a concentration based heat source is investigated through linear and nonlinear stability analyses. In both cases, the resulting eigenvalue problems have been numerically integrated using a combination of Shooting and Runge-Kutta methods. In the last Chapter, a summary of the present work and some future directions are discussed.

Linear and Nonlinear Stability Analysis



Dr. Anjanna Matta is working as an Assistant Professor in Department of Mathematics, FST at IFHE University, Hyderabad. He is published several articles in various international journals. He is awarded PhD from IIT Hyderabad, India, completed M.Tech (IMSC) from IIT Madras, India and M.Sc (Mathematics) from NIT Warangal, India.

978-3-330-07597-9

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Matta

Anjanna Matta

Linear and Nonlinear Stability Analysis in a Horizontal Porous Layer

with Effect of Inclined Gradients

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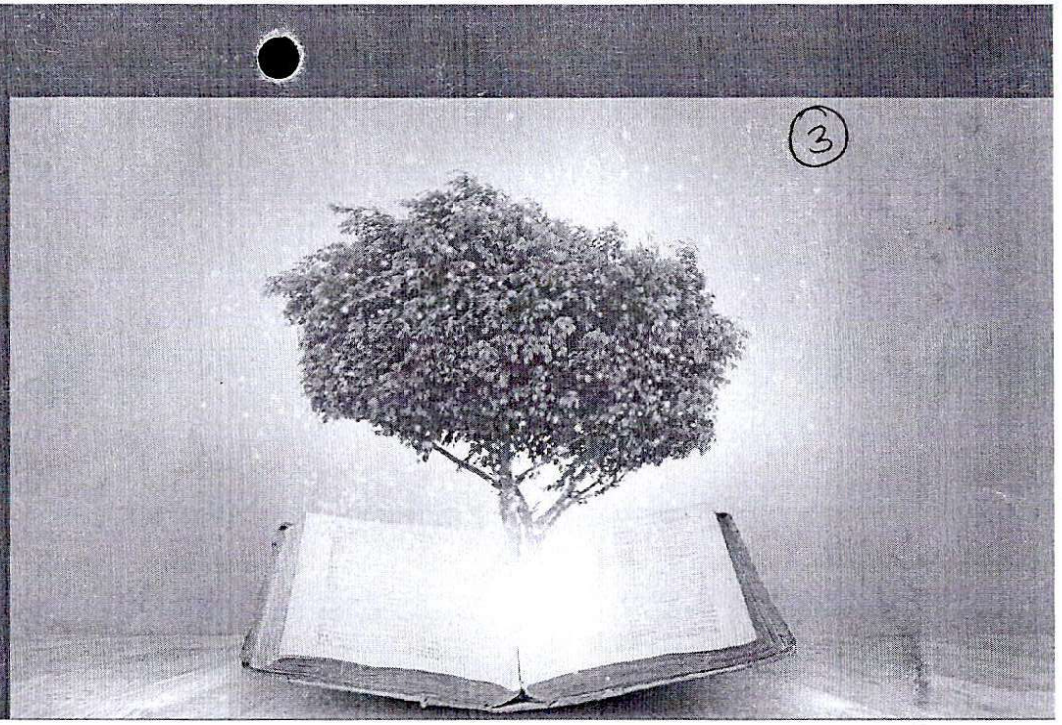
Although a variety of metal and ceramic powders are used as coating material and as reinforcing fillers in polymeric resins, the use of industrial wastes for this purpose has not been adequately explored. This book explores on the development and performance of new classes of plasma sprayed coating and polymer composites using Linz-Donawitz (LD) slag. This LD Slag is a major solid waste generated in huge quantities during steel making and its chemical analysis suggests the presence of oxides of silicon, calcium and iron along with some other minor constituents in it. This book gives a brief idea of coatings and composites.

Coatings and Composites



Pravat Ranjan Pati
Alok Satapathy

Plasma Spray Coating and Polymer Composites

Utilization of LD slag in Erosion Resistant Coatings and Polymer Composites

Dr. Pravat Ranjan Pati, Asst. Prof. of Mechanical Engg., ICFAI Tech School, IFHE, Hyderabad (India) is a researcher in the field of coatings and composites. Dr. Alok Satapathy, an eminent researcher with many research publications to his credits works as a Asso. Prof. of Mechanical Engg. at the National Institute of Technology, Rourkela (India).

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ISSN 2522-5162 ISSN 2522-5170 (electronic)
Asset Analytics
ISBN 978-981-13-1953-2 ISBN 978-981-13-1954-9 (eBook)
https://doi.org/10.1007/978-981-13-1954-9

Library of Congress Control Number: 2018950788

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Preface

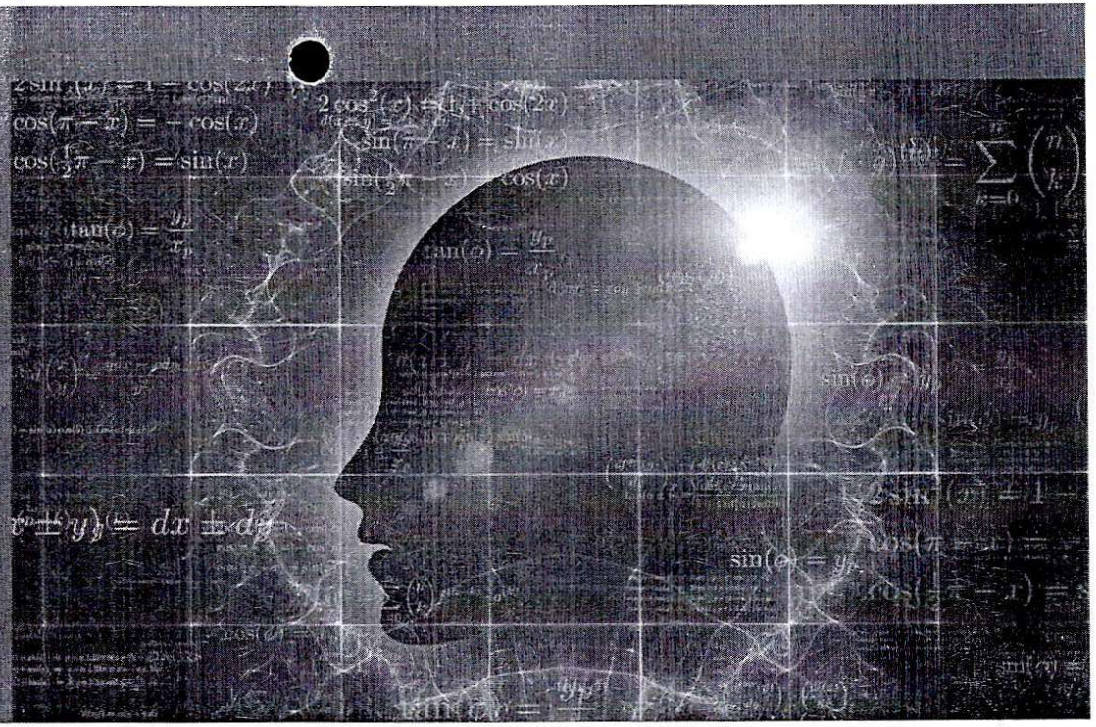
The papers in this book have been selected from among those presented at the 48th convention of the Operational Research Society of India (ORSI) organised at Bhubaneswar, Odisha, India, during 17–19 December 2015. The theme of the conference was Operations Research in Development Sector. More than 100 abstracts were received for presentation at the conference. Out of these, over 80 papers were presented at the conference. A total of 8 papers have been selected for this book after a rigorous peer review. As in most Operational Research (OR) conventions, large numbers of papers are technique related and few with some applications. Though the convention theme was focussed on the development sector, hardly any paper could qualify for the same.

The relevance of Operational Research for Development has been recognised from the 1950s. The use of Operational Research for Planning was used for national planning in India by Prof. Mahalanobis in the mid-1950s. Recognising its importance, the International Federation of Operational Research Societies (IFORS) organised the First International Conference on Operational Research for Development (ICORD) in 1992 at Ahmedabad, India. Now, ICORD is organised every year in a workshop format.

Operational Research originated with the focus on problem-solving. One of the essential requirements for effective problem-solving is to have enough clarity on the problem itself. In addition, in a problem-solving environment, there are many stakeholders. Every stakeholder has their own perspective while dealing with a problem, which hinders the problem-solving process. It helps to have a common understanding of the problem endorsed by all stakeholders. This thought led to the development of Soft OR. While Hard OR deals with various techniques and OR tools, Soft OR deals with the stakeholders' perspectives in getting a common understanding of the problem facilitating the solution process. Any problem can be thought to have the following characteristics—number of actors/stakeholders, diversity of perspectives, conflicting interests/objectives, uncertainty and such others.

Additionally, problems in the development domain are substantially messy; that is., clarity of the problems and objectives/outcomes to be pursued are substantially ambiguous, and the relationship between various elements is complex.

The content of this book is applications of Tauberian theorems to Dirichlet series and some results on Arithmetic Means, upper and lower bounds for L-series, results on Dirichlet series and a remark on Hardy-Ramanujan "Round numbers". This book contains five Chapters with the first on Number Theory preliminaries and Tauberian theorems of different types. Later chapters give applications of Tauberian theorems to various problems.



G. Sudhaamsh Mohan Reddy
S. Srinivas Rau
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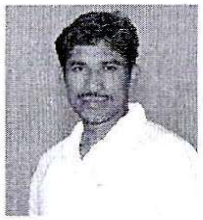
Applications of Tauberian Theorems to Dirichlet Series



G. Sudhaamsh Mohan Reddy is an Assistant Professor, Faculty of Science and Technology, Icfai Foundation for Higher Education. He has done his Master of Science in Mathematics and PhD degree from the Osmania University, Hyderabad, India. He has 16 years of teaching experience. His current research areas are Number Theory and Fixed point Theory.

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ISBN:	9781000045031, 100004503X	Page count:	234
Published:	17 March 2020	Format:	Ebook
Publisher:	CRC Press	Language:	English
Editors:	Sachi Nandan Mohanty, Suneeta Satpathy		

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Digital forensics has recently gained a notable development and become the most demanding area in today's information security requirement. This book investigates the areas of digital forensics, digital investigation and data analysis procedures as they apply to computer fraud and cybercrime, with the main objective of describing a variety of digital crimes and retrieving potential digital evidence.

Big Data Analytics and Computing for Digital Forensic Investigations gives a contemporary view on the problems of information security. It presents the idea that protective mechanisms and software must be integrated along with forensic capabilities into existing forensic software using big data computing tools and techniques.

Features

Describes trends of digital forensics served for big data and the challenges of evidence acquisition

Enables digital forensic investigators and law enforcement agencies to enhance their digital investigation capabilities with the application of data science analytics, algorithms and fusion technique

This book is focused on helping professionals as well as researchers to get ready with next-generation security systems to mount the rising challenges of computer fraud and cybercrimes as well as with digital forensic investigations.

Dr Suneeta Satpathy has more than ten years of teaching experience in different subjects of the Computer Science and Engineering discipline. She is currently working as an associate professor in the Department of Computer Science and Engineering, College of Bhubaneswar, affiliated with Biju Patnaik University and Technology, Odisha. Her research interests include computer forensics, cybersecurity, data fusion, data mining, big data analysis and decision mining.

Dr Sachi Nandan Mohanty is an associate professor in the Department of Computer Science and Engineering at ICFAI Tech, ICFAI Foundation for Higher Education, Hyderabad, India. His research interests include data mining, big data analysis, cognitive science, fuzzy decision-making, brain-computer interface, cognition and computational intelligence.

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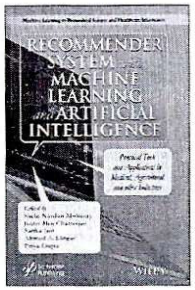

Recommender System with Machine Learning and Artificial Intelligence: Practical Tools and Applications in Medical, Agricultural and Other Industries

Sachi Nandan Mohanty (Editor), Jyotir Moy Chatterjee (Editor), Sarika Jain (Editor), Ahmed A. Elngar (Editor), Priya Gupta (Editor)

E-Book	978-1-119-71159-9	June 2020	€192.99
Hardcover	978-1-119-71157-5	September 2020	€213.80
O-Book	978-1-119-71158-2	July 2020	Available on Wiley Online Library

DESCRIPTION

This book is a multi-disciplinary effort that involves world-wide experts from diverse fields, such as artificial intelligence, human computer interaction, information technology, data mining, statistics, adaptive user interfaces, decision support systems, marketing, and consumer behavior. It comprehensively covers the topic of recommender systems, which provide personalized recommendations of items or services to the new users based on their past behavior. Recommender system methods have been adapted to diverse applications including social networking, movie recommendation, query log mining, news recommendations, and computational advertising.

This book synthesizes both fundamental and advanced topics of a research area that has now reached maturity. Recommendations in agricultural or healthcare domains and contexts, the context of a recommendation can be viewed as important side information that affects the recommendation goals. Different types of context such as temporal data, spatial data, social data, tagging data, and trustworthiness are explored. This book illustrates how this technology can support the user in decision-making, planning and purchasing processes in agricultural & healthcare sectors.

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ABOUT THE AUTHOR

Sachi Nandan Mohanty received his PhD from IIT Kharagpur, India in 2015 and is now at ICFAI Foundation for Higher Education, Hyderabad, India.

Jyotir Moy Chatterjee is working as an Assistant Professor (IT) at Lord Buddha Education Foundation, Kathmandu, Nepal. He has completed M.Tech in Computer Science & Engineering from Kalinga Institute of Industrial Technology, Bhubaneswar, India.

Sarika Jain obtained her PhD in the field of Knowledge Representation in Artificial Intelligence in 2011. She has served in the field of education for over 18 years and is currently in service at the National Institute of Technology, Kurukshetra.

Ahmed A. Elngar is the Founder and Head of Scientific Innovation Research Group (SIRG) and Assistant Professor of Computer Science at the Faculty of Computers and Information, Beni-Suef University, Egypt.

Priya Gupta is working as an Assistant Professor in the Department of Computer Science at Maharaja Agrasen College, University of Delhi. Her Doctoral Degree is from BIT (Mesra), Ranchi.

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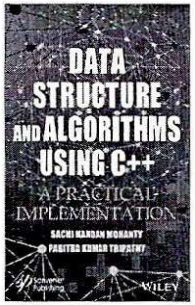

Data Structure and Algorithms Using C++: A Practical Implementation

Sachi Nandan Mohanty, Pabitra Kumar Tripathy

E-Book	978-1-119-75203-5	January 2021	€150.99
Hardcover	978-1-119-75054-3	February 2021	€166.70
O-Book	978-1-119-75205-9	January 2021	Available on Wiley Online Library

DESCRIPTION

Everyone knows that programming plays a vital role as a solution to automate and execute a task in a proper manner. Irrespective of mathematical problems, the skills of programming are necessary to solve any type of problems that may be correlated to solve real life problems efficiently and effectively. This book is intended to flow from the basic concepts of C++ to technicalities of the programming language, its approach and debugging. The chapters of the book flow with the formulation of the problem, it's designing, finding the step-by-step solution procedure along with its compilation, debugging and execution with the output. Keeping in mind the learner's sentiments and requirements, the exemplary programs are narrated with a simple approach so that it can lead to creation of good programs that not only executes properly to give the output, but also enables the learners to incorporate programming skills in them. The style of writing a program using a programming language is also emphasized by introducing the inclusion of comments wherever necessary to encourage writing more readable anc well commented programs. As practice makes perfect, each chapter is also enriched with practice exercise questions so as to build the confidence of writing the programs for learners. The book is a complete and all-inclusive handbook of C++ that covers all that a learner as a beginner would expect, as well as complete enough to go ahead with advanced programming. This book will provide a fundamental idea about the concepts of data structures and associated algorithms. By going through the book, the reader will be able to understand about the different types of algorithms and at which situation and what type of algorithms will be applicable.

(8)

ABOUT THE AUTHOR

Sachi Nandan Mohanty received his PhD from IIT Kharagpur in 2015. He has recently joined as an associate professor in the Department of Computer Science & Engineering at ICFAI Foundation for Higher Education Hyderabad. His research areas include data mining, big data analysis, cognitive science, fuzzy decision-making, brain-computer interface, and computational intelligence. He has published 20 SCI journal articles and has authored 3 as well as edited 4 books.

Pabitra Kumar Tripathy has completed his MTech in computer science at Berhampur University. He is currently pursuing his PhD in computer science and engineering at Biju Patnaik University of Technology. He has been teaching for 15 years and is currently working as the Head of Department Computer Science in KALAM Institute of Technology, Odisha. He has also published 3 programming books for technical students.

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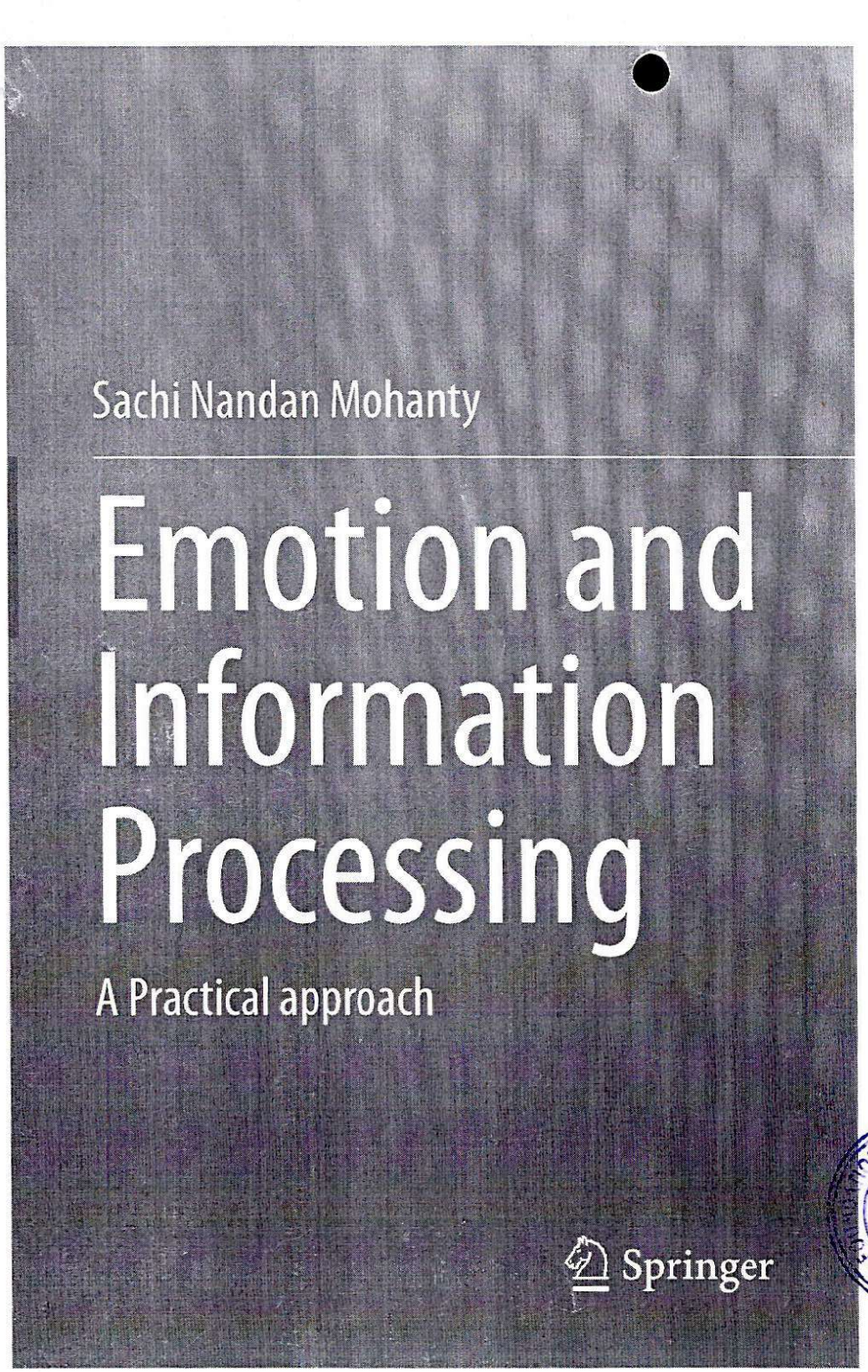

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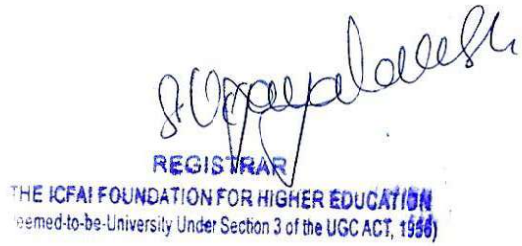

ISBN 978-3-030-48848-2 ISBN 978-3-030-48849-9 (eBook)
https://doi.org/10.1007/978-3-030-48849-9

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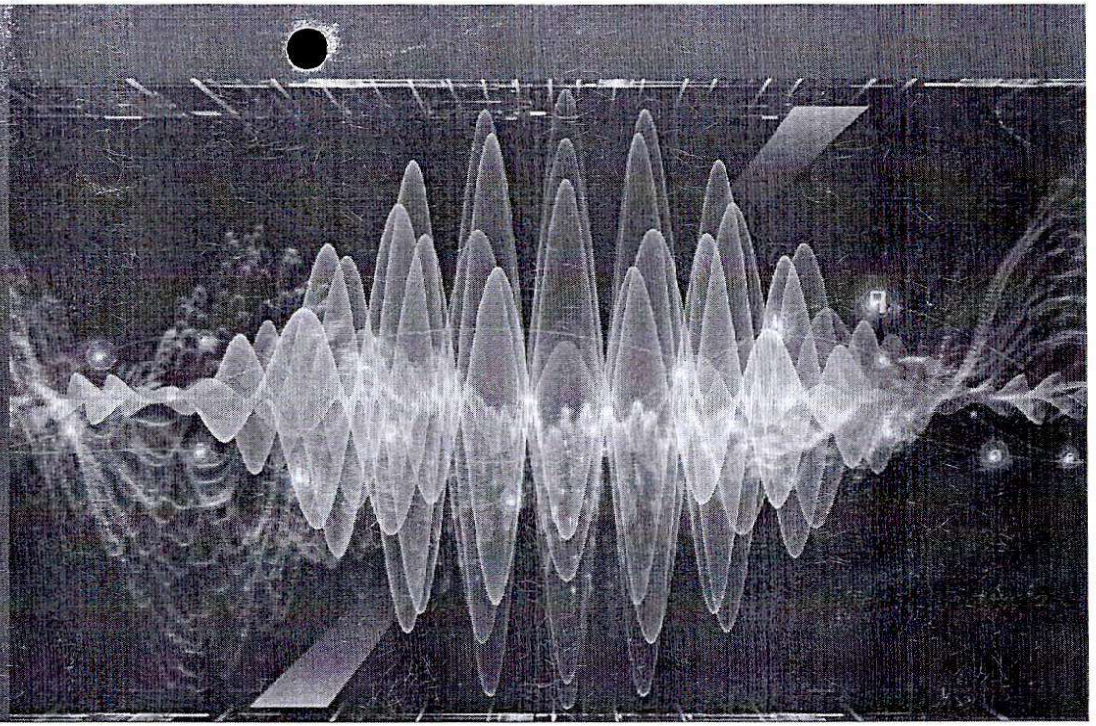
Structural elements in various engineering applications may take the form of a rectangular plate. For such elements, the prediction of vibration characteristics when operated close to resonant modes becomes important, as a measure of failure. In addition to the shape, cutouts in rectangular plates also have an effect on the modal characteristics. The research presented in this text aims to document the vibrational characteristics of a rectangular plate by utilizing FEM techniques. The effects of inclusion of cutouts on the vibrational characteristics are found numerically. Boundary conditions which were used in this study are: rectangular plate (without cutout) clamped on the outer periphery, rectangular plate (with cutout) clamped on the outer periphery, rectangular plate (with cutout) clamped on both the outer and inner peripheries. Numerical studies were carried out for a conventional material (isotropic, Aluminium) as well as for a composite material (orthotropic, GFRP) with the same constraints. The results are presented with discussion and conclusions.



M. L. Pavan Kishore
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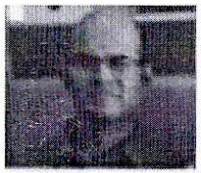
Anirudh Tallam

Effect of Cutouts on Free Vibrations in Rectangular Plates



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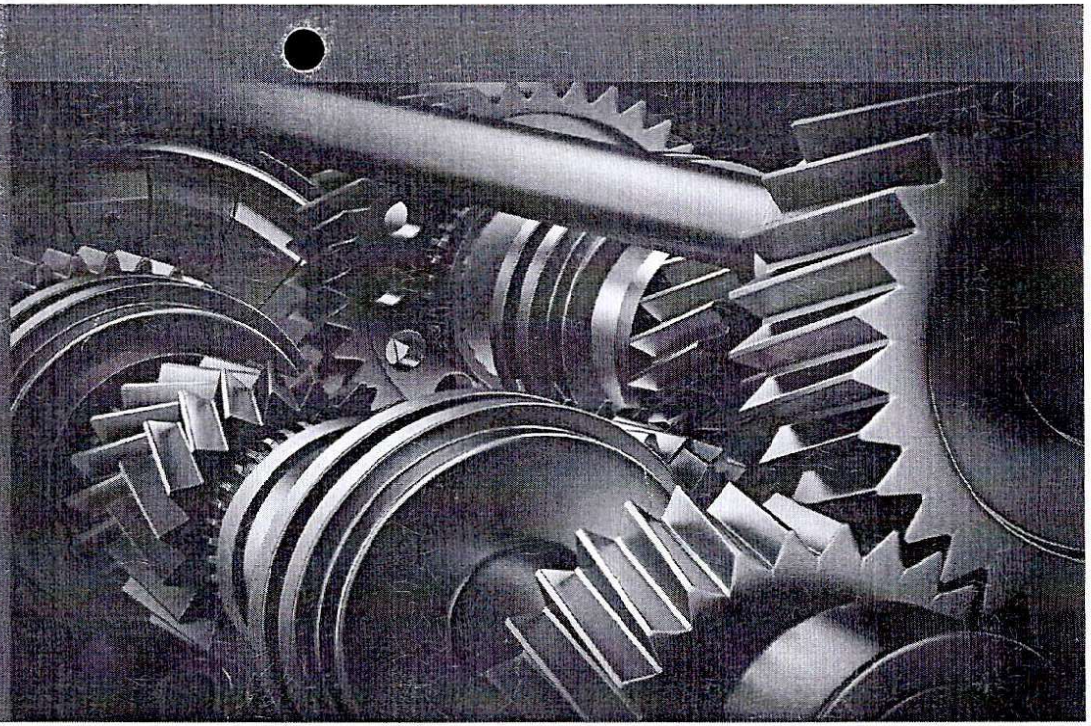
Gears are found in everything from cars to clocks. They are used in tons of mechanical devices. Therefore, the production methods and the problems related to gear failure is an important topic. The production method varies from type of gear to the purpose they are intended to be used in. Understanding the purpose and type of gears suitable for the work is an important aspect for many companies as failure in proper selection and maintenance results in shutting down equipment which has a high cost as time is of paramount importance in large factories.



Anirudh Tallam
Vedanth Bhatnagar
M.L.Pavan Kishore

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NUMERICAL COMPUTATION FOR CONTACT STRESS ANALYSIS OF SPUR GEAR

Gear Modelling and Analysis

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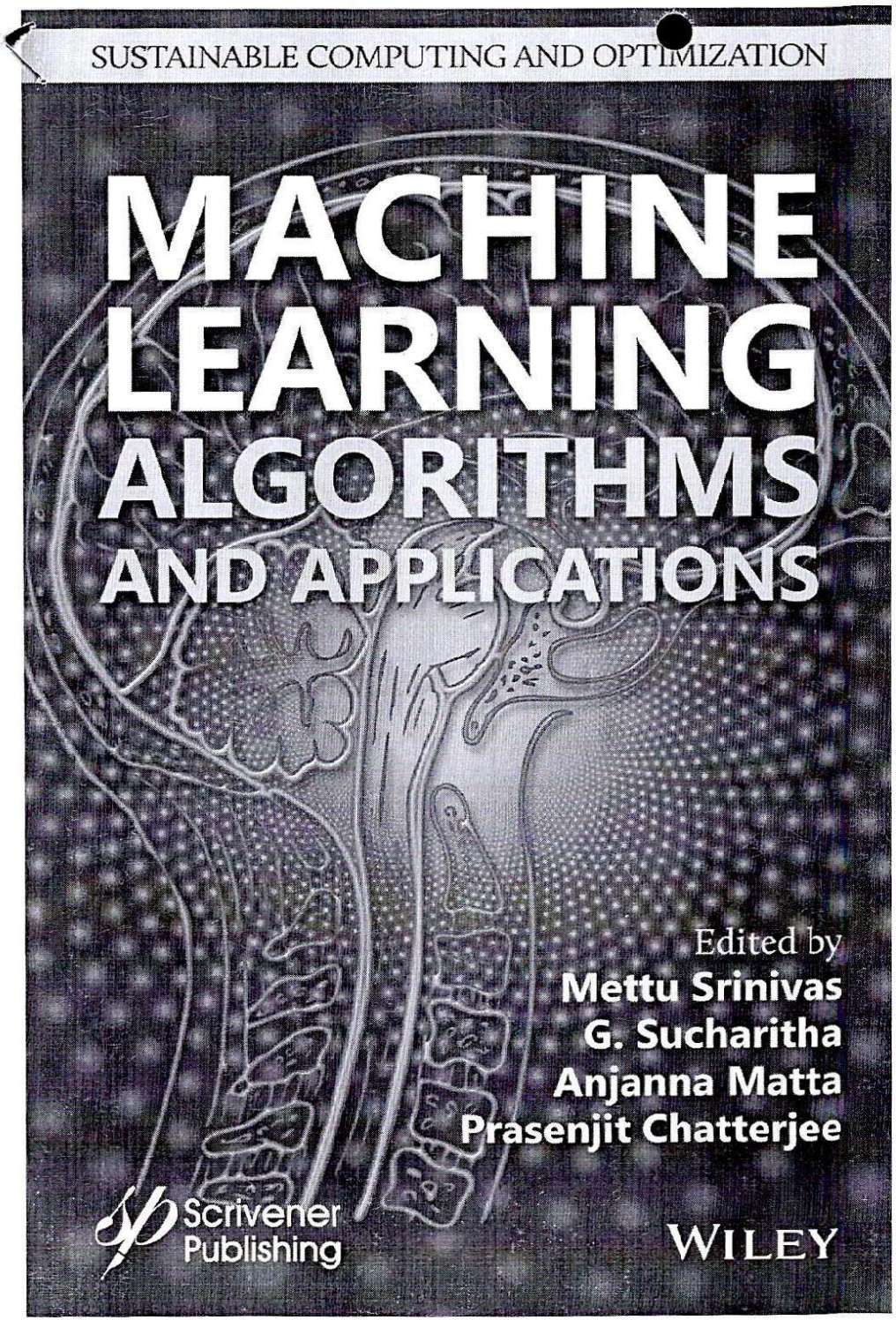

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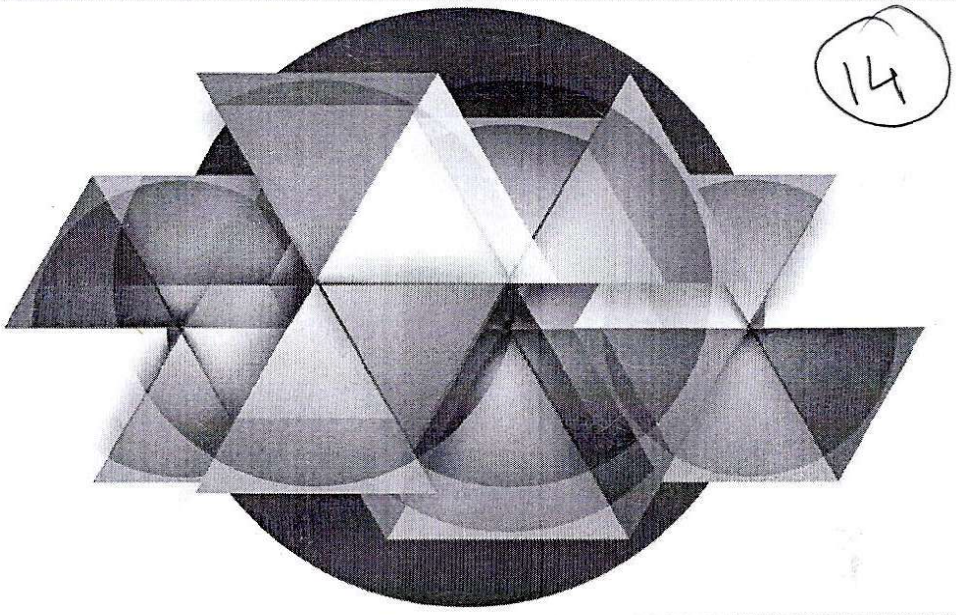

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Algorithms and Applications

Edited by
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CRC Press
Taylor & Francis Group
Boca Raton London New York

CRC Press is an imprint of the
Taylor & Francis Group, an informa business

First Edition published 2021
by CRC Press
6000 Broken Sound Parkway NW, Suite 300, Boca Raton, FL 33487-2742

and by CRC Press
2 Park Square, Milton Park, Abingdon, Oxon, OX14 4RN

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ISBN: 978-0-367-63185-7 (hbk)
ISBN: 978-0-367-63187-1 (pbk)
ISBN: 978-0-367-63188-8 (ebk)

Typeset in Caslon
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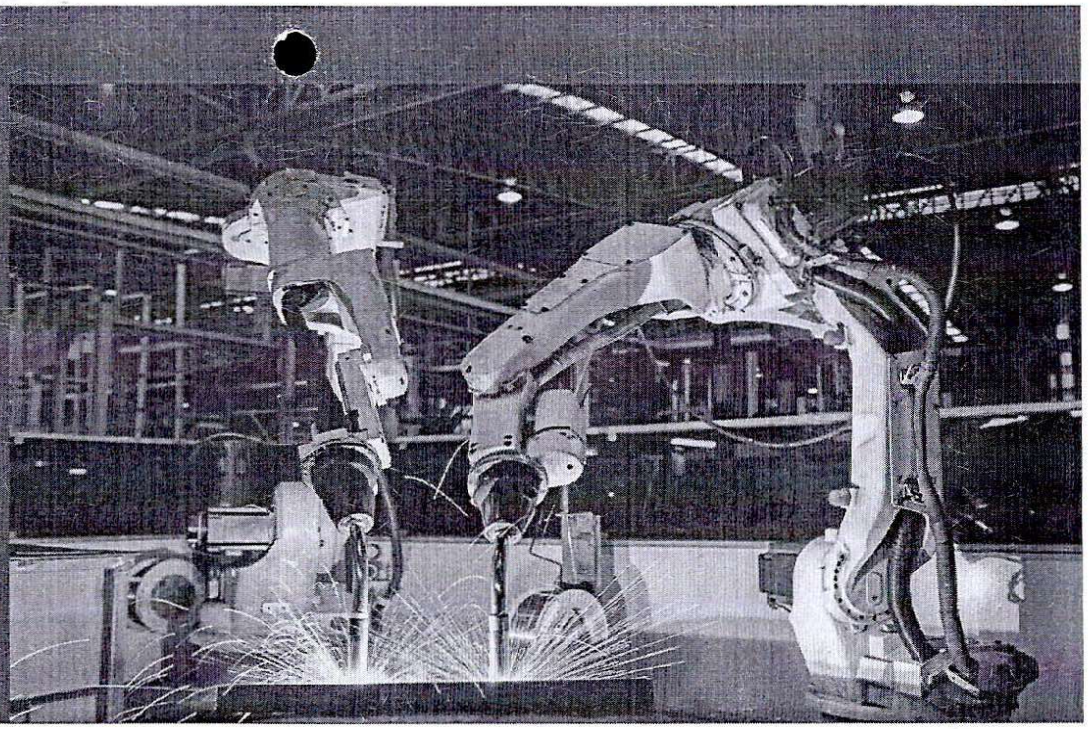
The use of robotics in the modern world has increased manifold. Robotics not only holds importance in the field of traditional works like machinery and automation of typical works but also works in the field of critical environment which humans try to avoid. This is because the effects in these environments hampers the normal life of humans. Certain works requires precision as in the case of surgery. The medical world requires the device which is very accurate as the life of humans cannot be put on stake. The robots are used in nuclear power plant, mining of coals,petroleum and other natural gases as well as in those parts in which human exposure is very limited.This project will explore and analyze the aspects regarding the proper use of these robots and the material require to consider these robots in various situations and the improvement required in it.



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DYNAMIC ROLE OF ROBOTS IN VARIOUS PRECARIOUS CONDITIONS

Application of Robots

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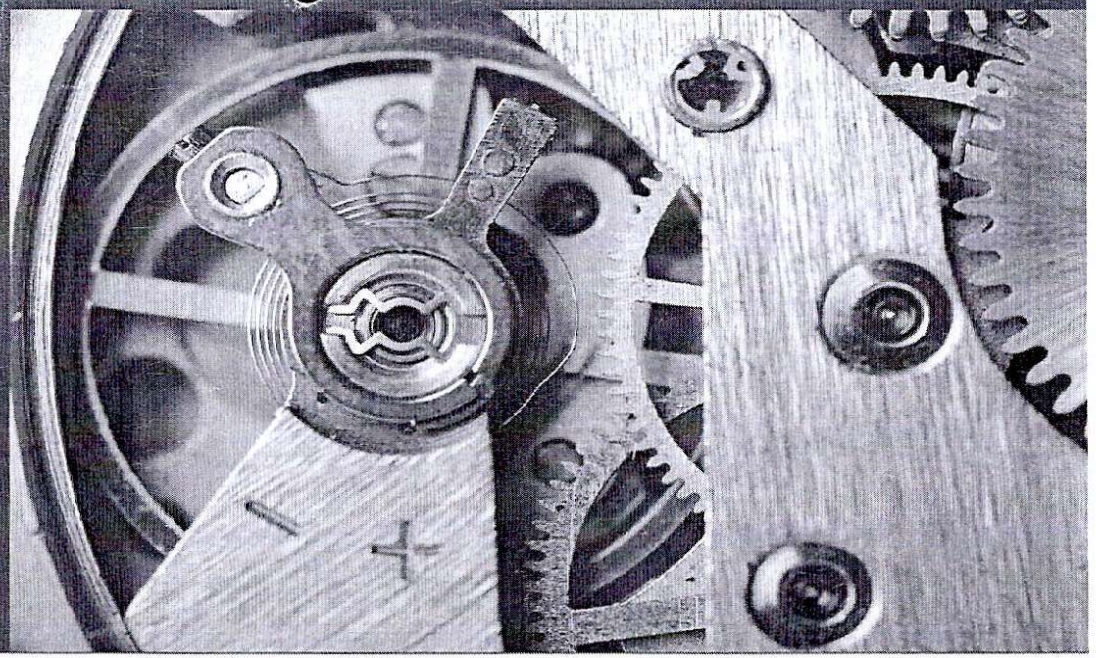
Reducing weight while increasing or maintaining the strength of products is a challenging task in the automobile industry. Reduction in weight increases the overall fuel efficiency proportionately. The leaf spring considered as one of the main components of the suspension systems in the heavy vehicles are prone to fatigue. The replacement of composite materials for conventional ones has made it possible to reduce the weight of the vehicle, without reduction in load carrying capacity. The part of research work focusses on the design and analysis of composite leaf spring replaced with that of conventional steel leaf spring. The objective of this study is to perform Theoretical calculation and numerical analysis for the static strength of simple leaf springs designed for small vehicles. The objective is to compare the stresses and percentage weight saving of composite leaf spring with that of conventional leaf spring. To achieve this objective, stress and displacements under static loading were analytically calculated. A computer-aided design model of a leaf spring was created.



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Numerical Analysis for Static Stress analysis of Composite Leaf Spring

Modelling and Analysis of Leaf Spring Using Laminated Composites

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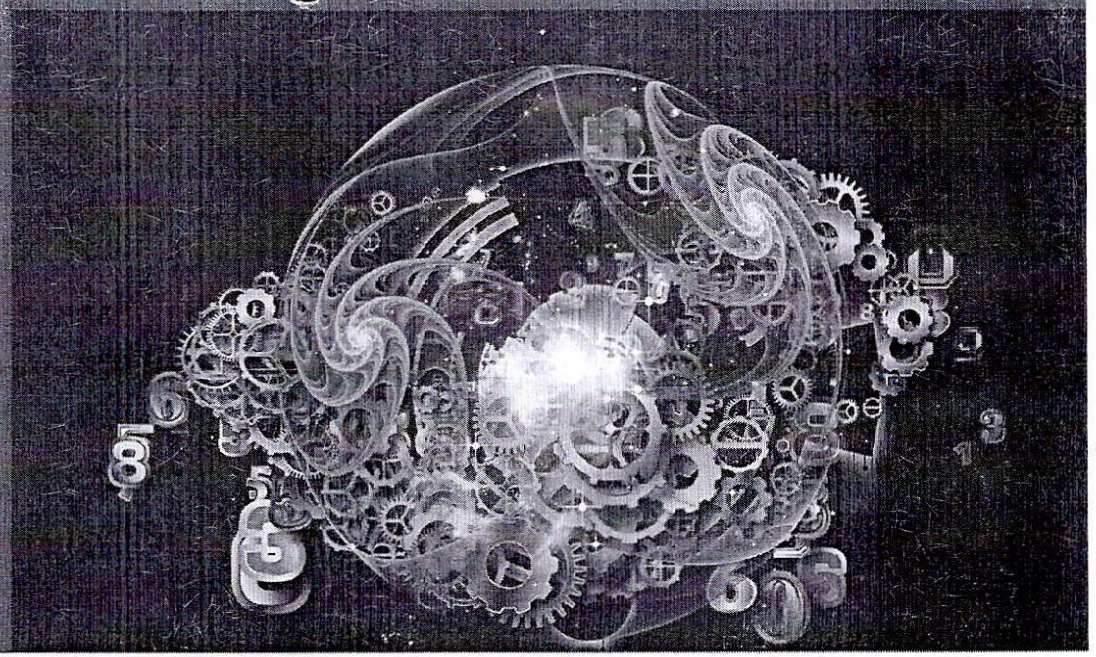
Dependingon the service requirementsit becomes necessary to include openings/Cutoutsin structural members. Plate being an integral part of structural members subjected to these type of openings. The application based structural members possess different set of openings individually or all-together.In this part of research work an emphasis has been made to review the investigation carried out numerically on the stress analysis of a circular plate having Cutouts.The approach mainly carried out with two steps.In the first step a conventional material based uniform plate considered for elliptical, triangular cutouts, along with base shapes of circular, square, rectangular types.In the second step the study if extended to orthotropic material Glass epoxy.The numerical computations performed are carried out using Finite element analysis based software ANSYS.The accuracy of the methodology adopted for present work is checked by comparing the results available with the literature.From the comparison the results showed a good agreement between them and the adopted methodology can be used in accurate prediction of deformations and various stresses which are helpful for optimizing the plates.



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Comparative Study for Stress Behavioral Characteristics of Circular Plates

Stress Analysis of Circular Plates Using Laminated Composites

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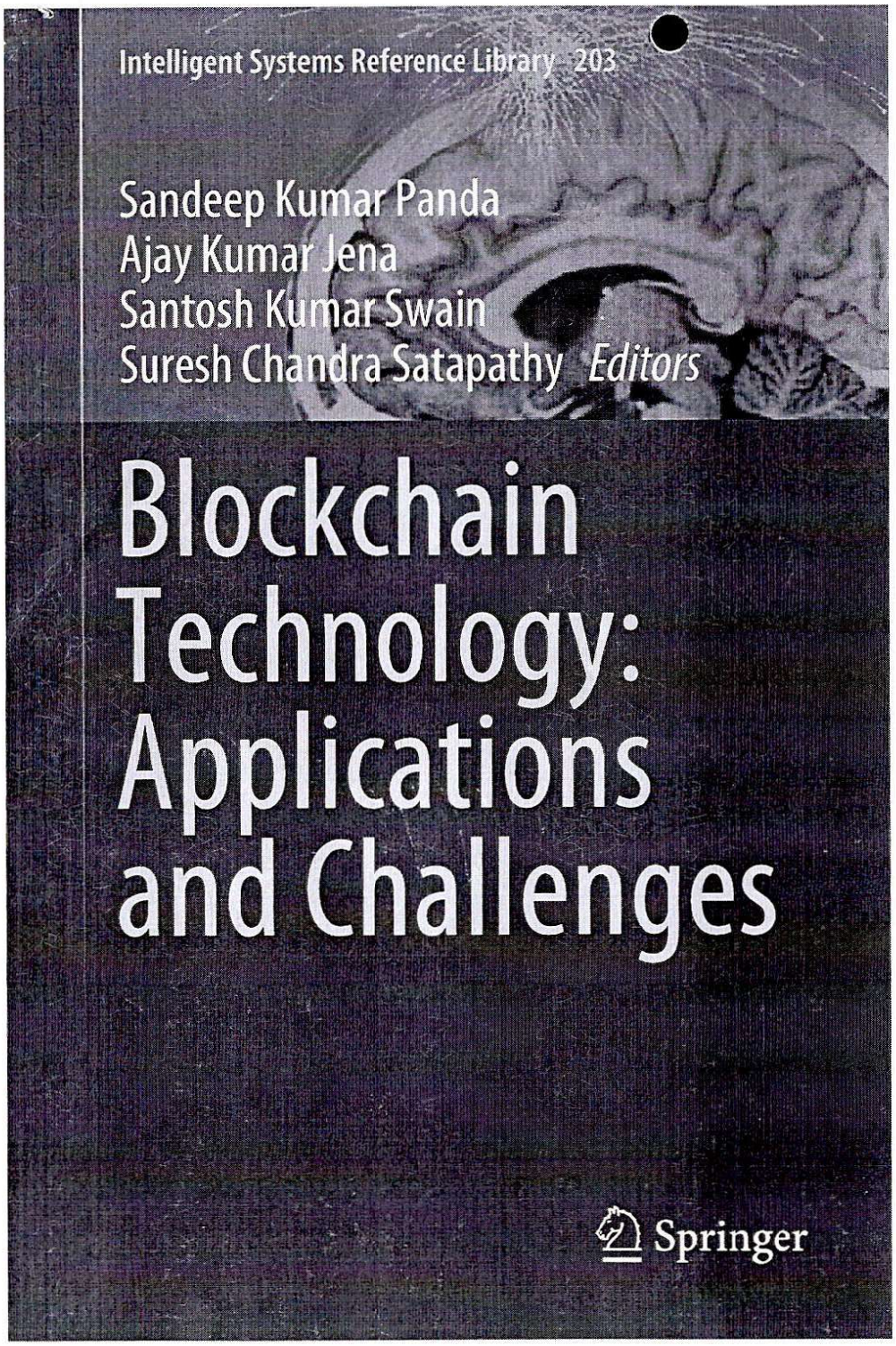

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ISSN 1868-4394 ISSN 1868-4408 (electronic)
Intelligent Systems Reference Library
ISBN 978-3-030-69394-7 ISBN 978-3-030-69395-4 (eBook)
https://doi.org/10.1007/978-3-030-69395-4

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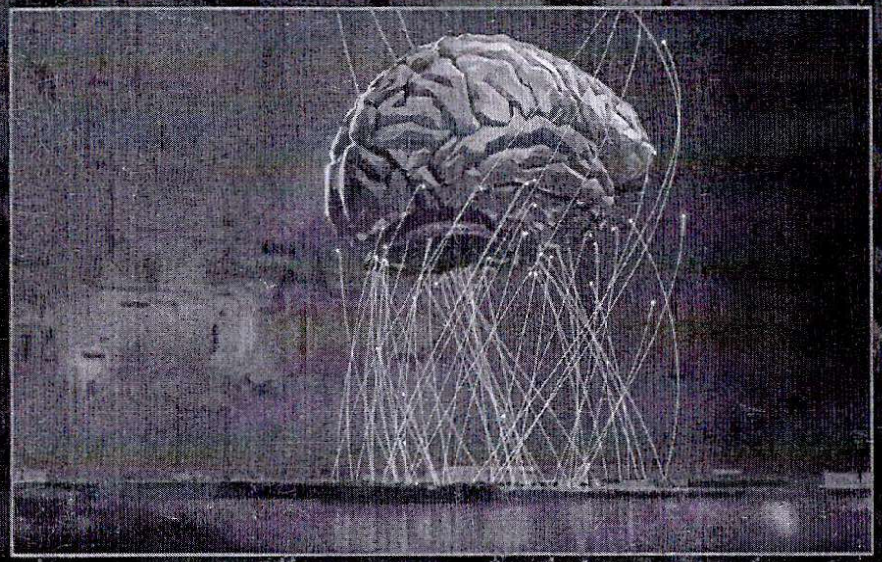

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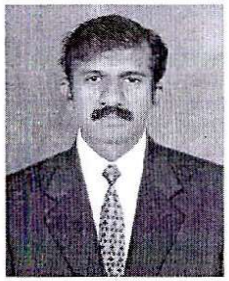

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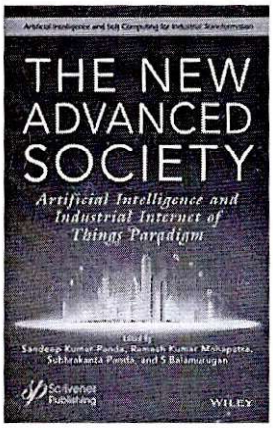

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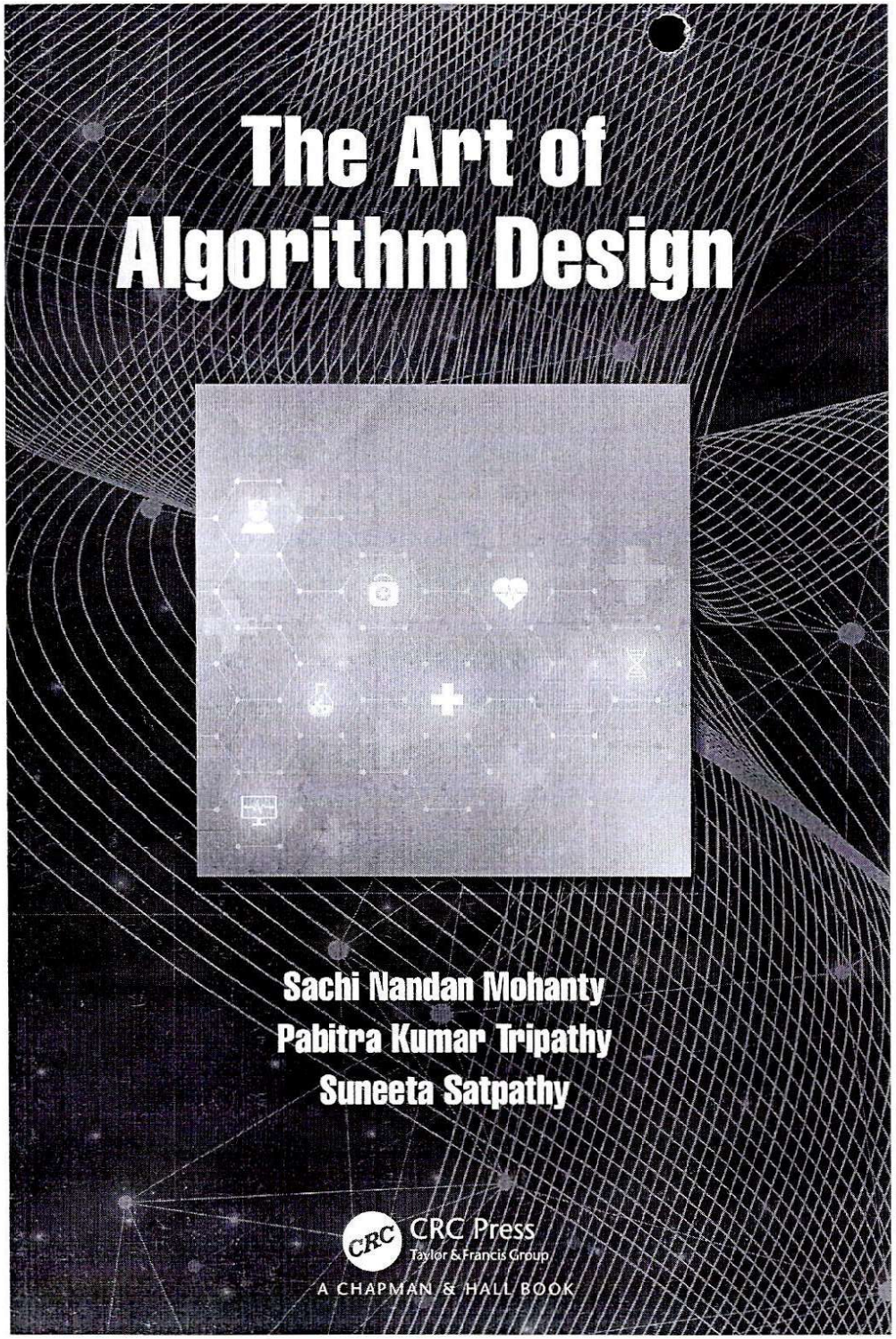

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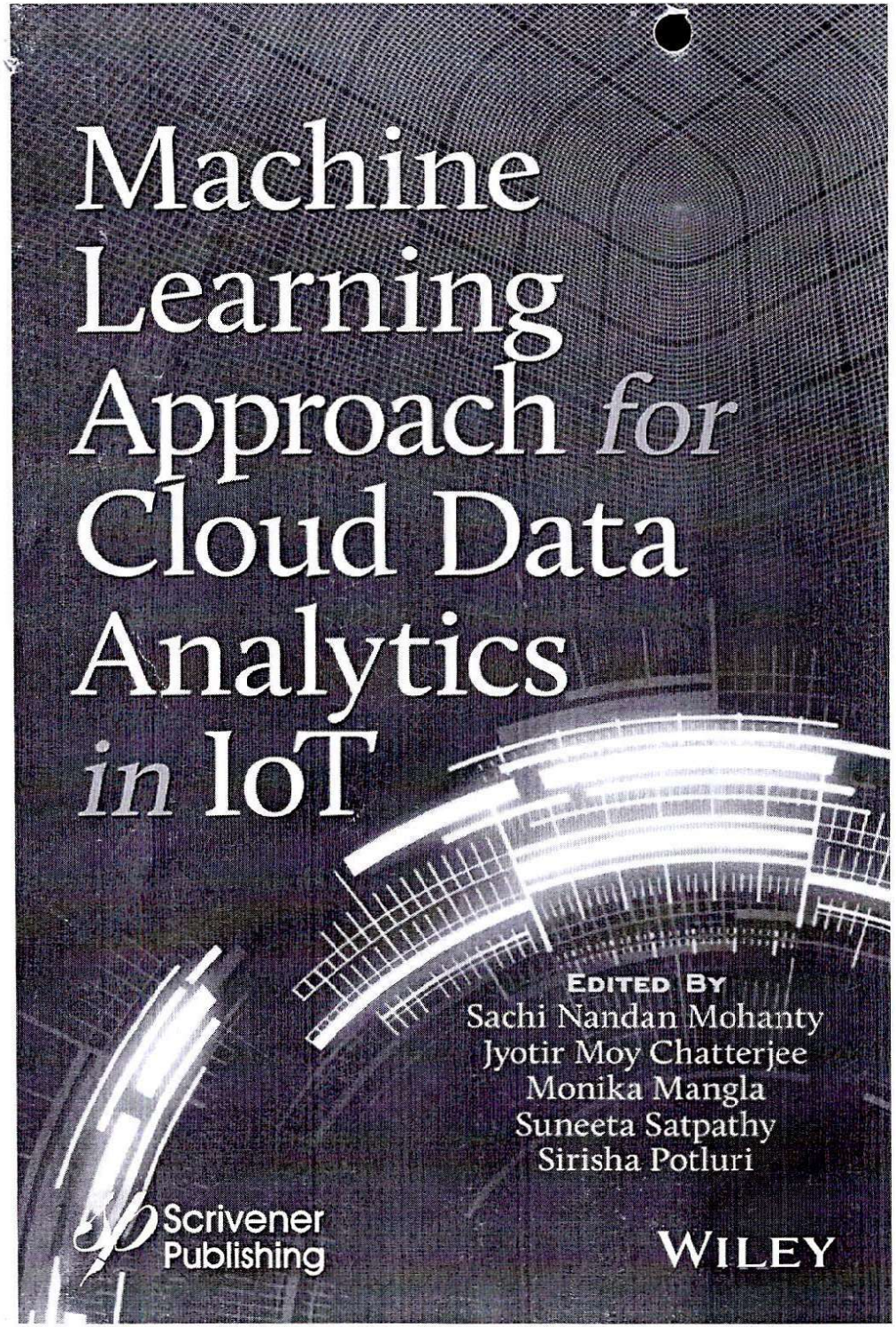

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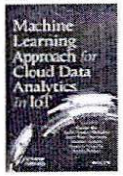

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First published: 13 July 2021

Print ISBN: 9781119785804 | Online ISBN: 9781119785873 | DOI: 10.1002/9781119785873

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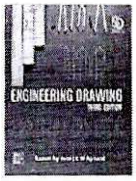

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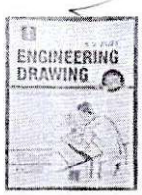

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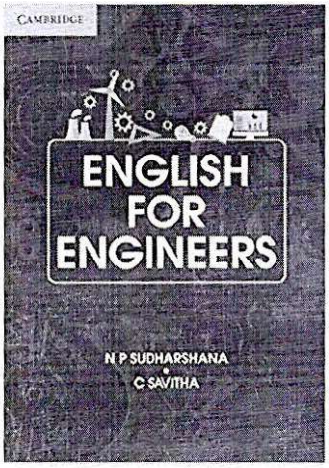

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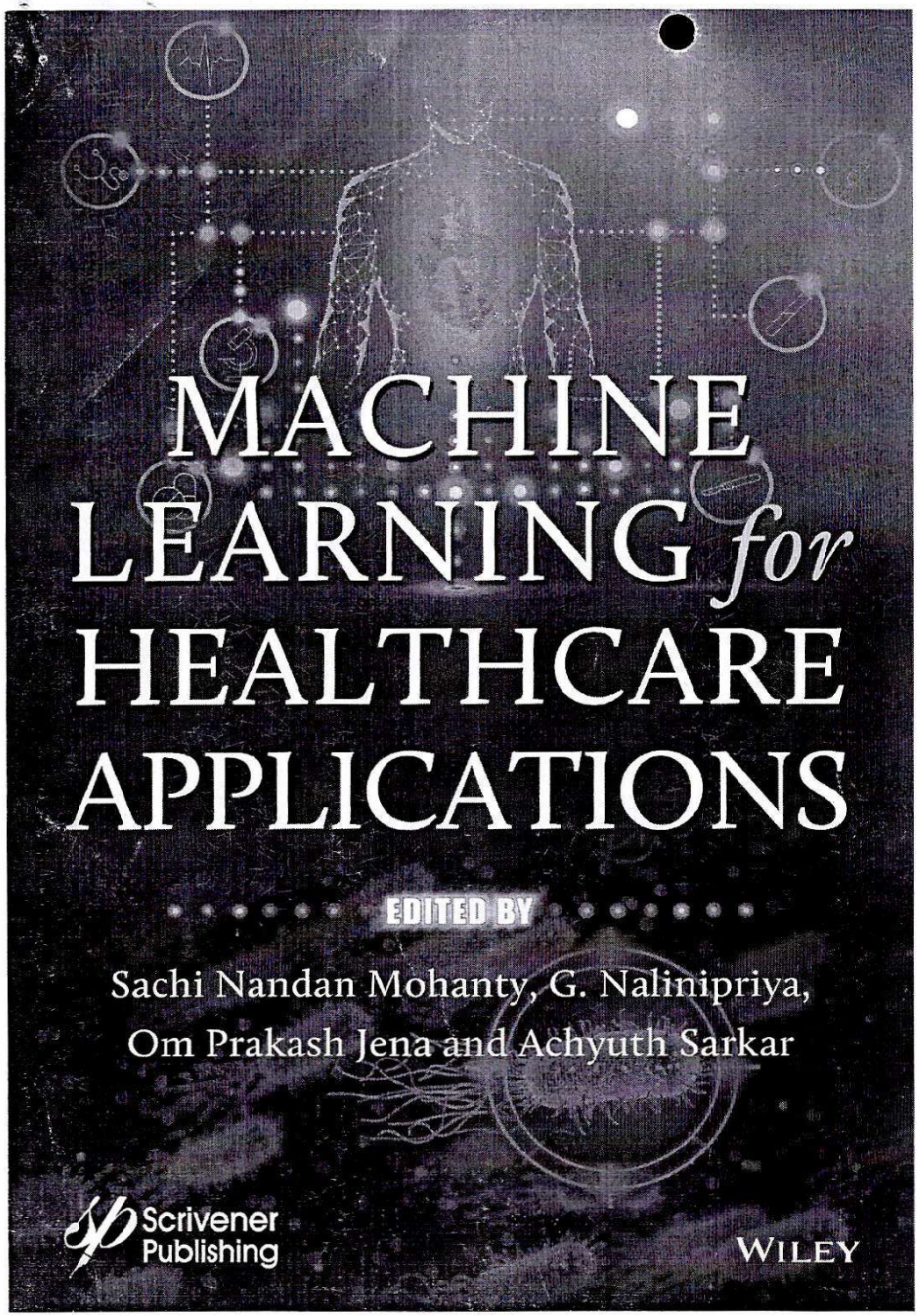

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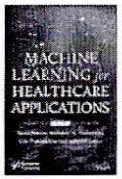

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Editor(s): Sachi Nandan Mohanty, G. Nalinipriya, Om Prakash Jena, Achyuth Sarkar
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Print ISBN: 9781119791812 | Online ISBN: 9781119792611 | DOI: 10.1002/9781119792611
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Society Technical Education (ISTE), The Institute of Engineering and Technology (IET), Computer Society of India (CSI), Member of Institute of Engineers and senior member IEEE Computer Society, he is actively involved in the activities of the Professional Bodies/Societies.He has been bestowed with several awards which include "Best Researcher Award from Biju Pattnaik University of Technology in 2019","Best Thesis Award(first Prize) from Computer Society of India in 2015", "Outstanding Faculty in Engineering Award" from Dept. of Higher Education, Govt. of Odisha in 2020. He has received International Travel fund from, SERB, Dept of Science and Technology, Govt. of India for chair the session international conferences USA in 2020.Dr.Mohanty currently reviewer of many journal like journal of Robotics and Autonomous Systems (Elsevier),Computational and Structural Biotechnology (Elsevier),Artificial Intelligence Review (Springer),Spatial Information Research (Springer).Ten Edited book, published by Wiley, CRC, and Springer Nature, and four authors' book on his Credit.

Bibliographic information

- Book Title Decision Making And Problem Solving
- Book Subtitle A Practical Guide For Applied Research
- Editors Sachi Nandan Mohanty
- DOI https://doi.org/10.1007/978-3-030-66869-3
- Copyright Information The Editor(s) (if applicable) and The Author(s), under exclusive license to Springer Nature Switzerland AG 2021
- Publisher Name Springer, Cham
- eBook Packages Behavioral Science and Psychology Behavioral Science and Psychology (R0)
- Hardcover ISBN 978-3-030-66868-6
- Softcover ISBN 978-3-030-66871-6
- eBook ISBN 978-3-030-66869-3
- Edition Number 1
- Number of Pages XIII, 111
- Number of Illustrations 11 b/w illustrations, 11 illustrations in colour
- Topics Psychology, general
  Cognitive Psychology
  Emotion
  Simulation and Modeling
  Psychological Methods/Evaluation

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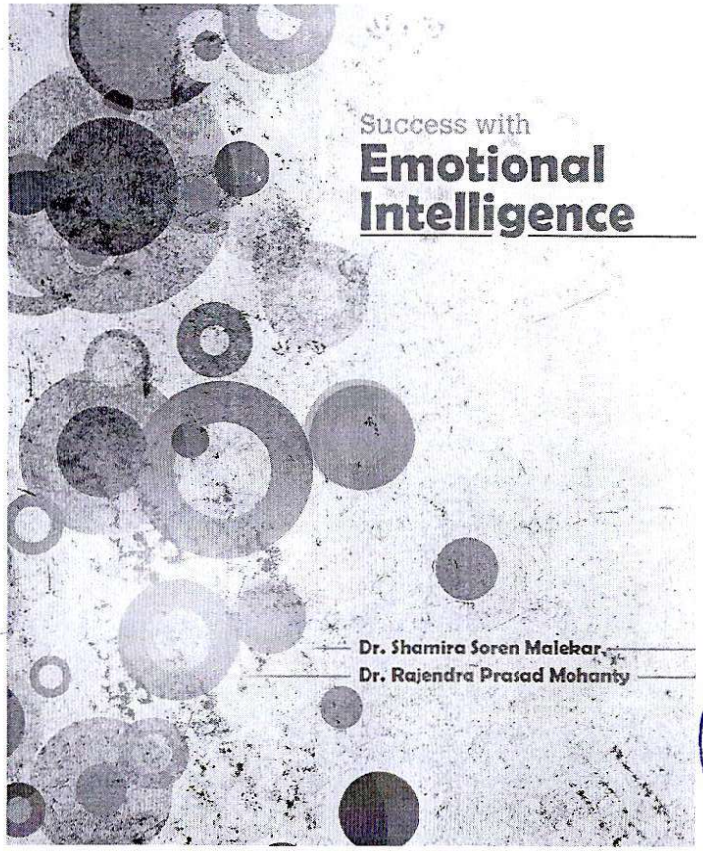

Success with Emotional Intelligence

Dr. Shamira Soren Malekar,
Dr. Rajendra Prasad Mohanty

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ISBN 978-1-5249-3323-4

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About the Authors

Dr. Shamira Malekar is an Assistant Professor with City University of New York—Borough of Manhattan Community College. Prior to relocating to the United States, she was an Assistant Professor at Mumbai University's Aruna Manharlal Shah's Institute of Management and Research (AMSIMR). She has several research papers to her credit published in National and International Management journals of repute. She is one of the founder members and Joint Secretary for the Forum of Emotional Intelligence and Learning (FEIL) in India.

In December 2005, she won the Best Paper Award at the National Conference at ITM Business School with a paper presentation on "Managing Human Capital." In December 2007, she won the Best Paper Award at the National Conference at ITM Business School with an empirical paper presentation on "Emotional Intelligence of school students."

She is the recipient of the 1st prize of the Best Doctoral Paper Competition at the Association of Indian Management Scholars (AIMS-7) International Conference organized at Indian Institute of Management, Bangalore, in December 2009. She also won the 1st prize of the Best Thesis Competition at the Doctoral Conclave at ICFAI Business School (IBS) in February 2010. In March 2011, she won the Best Paper Award at a Corporate Social Responsibility (CSR) National Conference organized by Babasaheb Gawde Institute of Management with an empirical paper presentation on "Social Responsibility." In January 2012, she won the Best Paper Award at the International Conference at IES Institute of Management with an empirical paper presentation on "Employee Satisfaction."

Dr. Shamira has compiled and edited the 1st book of FEIL entitled *Emotional Intelligence and Leadership: Better Work and Learning Environments* published by Excel Books, 2011 (ISBN No. 978-81-7446-902-1).

Professor R P Mohanty has 40 years' experience in Academics in India and Foreign Universities and 10 years in Indian Industry in top management positions. At present, he is engaged as the senior adviser to ICFAI group of universities and was the Vice Chancellor at Shiksha 'O' Anusandhan University, Bhubaneswar, Odisha, India (2011–2014). He also undertakes research scholars pursuing Ph.D. in Engineering and Management. He is involved in leadership education, management consulting and managerial competency development programs across the country and also engaged in advising many universities to develop quality faculty resources in India and abroad.

In 2016, he was conferred with Honorary D.Sc. Degree by Sambalpur University. In 2015, International Engineering and Technology Institute (IETI), Hong Kong conferred upon him the Fellowship and Management Teachers Consortium (MTC GLOBAL) conferred the Life Time Achievement Award. In 2014, Utkal Sahitya Kala Parisad conferred upon him the Utkalshree Award.

In 2013, Prof. Mohanty found a place in Asia Pacific Who's Who (12th Edition). In 2012, he received the Excellence in Research and Innovations Award from Knowledge Resource Development and Welfare Group, IIT Delhi. In 2010, he received the exemplary leadership award in industrial engineering from (IIIE). In 2009, he has been felicitated by the "Lifetime Achievement Award" of Indian Institution of Industrial Engineering (IIIE) and also the "International Lifetime Achievement Award" from AIMS International. He received the Life Time Achievement Award from The Institution of Engineers (India) in the year 2006. VSS University of Technology, Odisha has conferred upon him the Distinguished Alumni Award in the golden

jubilee year 2006. In 2004, he has been elected as a Fellow of Indian National Engineering Academy; toward outstanding contributions in "Engineering". In 2003, he received the most prestigious "Sir Visveswaraya Award" for his outstanding contribution in the field of Technical Education & Technology Management. Sambalpur University conferred upon him "Intellectual Colossus Award 2003" as an honour to his profound contributions to the field of Management Education in India and abroad. Utkal University honored him as the most distinguished HR professional in 2003. In 1997, he was chosen as the "Most Outstanding Academician" and was honored with "UNITOP" award by the Indian Institution of Materials Management. In 1995, Indian Institution of Industrial Engineering (IIIE) has honoured him by its highest award "Lilian Gilbreth Award" for his most significant and outstanding contribution to the field. In 1987, Indian Institution of Industrial Engineering has awarded him "Ramaswamy Cup" for his extraordinary services to the I.E. profession. American Biographical Institute has conferred upon him the "Distinguished Leadership Award in Academics". The Institution of Engineers (India) has also awarded him as the "Best Researcher".

He has published 17 Text Books, more than 350 research papers in reputed and scholarly International & Indian Journals and Newspapers. The total numbers of citations of most of these papers stand above 2600. He has guided 24 Ph.D. research scholars and several hundreds of master theses. He has advised more than 25 big companies in India and abroad in the areas of Engineering and Management. He is the past Chairman, Honorary Secretary, Treasurer, National Council Member, and Chairman Board of Examination, Editor-in-Chief of *Industrial Engineering Journal* and a Life Fellow of *Indian Institution of Industrial Engineering*. He has also served as Chairman and President of many Professional associations in India and also as a board member in International Professional Institutions. He represents in the Editorial Board of 17 international and national journals.

He is renowned in India as a distinguished academic leader. His innumerable value adding contributions in the field of technical education in terms of research publications, academic planning, administration, faculty development, management development, institutional development and direction of several top ranking international and national conferences, workshops, symposia, colloquium etc. are well known to the world of academia and industry professionals. Internationally, he is known as an empirical researcher, a system scientist, an organization theorist, and an organization development expert.

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Acknowledgments

Soren, Simone, and Ethan require a special mention for all the unstinting support, sacrifice, and cooperation throughout the research project study and finally writing of this book.

We also express a deep sense of appreciation to Dr. Bina Niger at Haifa University Library, Israel; librarians of Bar Ilan University, Israel; ITM, Kharghar, Tata Institute of Social Sciences (TISS); and NITIE, Mumbai and ITM Group of Institutions. Thanks are due to the chairperson Dr. Mahatapa Palit, Faculty colleges and business students of the Borough of Manhattan Community College, especially Ching Hei Mok.

Sue Saad and Samantha Anne Schmidt of Kendall Hunt receive a special mention for their support and cooperation.

Thanks are also due to Mrs. Edna Charikar, Ms. Reena Solomon, Mr. Benson Samuel, Mr. Raymond, and Mr. Gershon. Kolatkar, Israel, along with Sam and Annie Malekar.

We appreciate greatly Nabnita, Madhumita, Pinaki and late Swarnalata Mohantty and they deserve a special mention.

Heartfelt thanks to Rene Caroline Balan for the edits and suggestion towards the betterment of the manuscript. The team at Kendall Hunt is acknowledged and thanked. Our gratitude to friends Shekhina Nagaonkar and Alicia Weinstein who have a significant influence in shaping many of the concepts presented in chapter 10 and 11 respectively.

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Proceedings of the 1st International Conference on Emerging Trends in Mechanical Engineering (ICETiME-2016))

ISBN: 9788131427941

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Foreword

The Phenomenal growth of Science and Technology has made tremendous contributions in every walk of life. All this has been possible due to the continuous efforts put globally by academicians, engineers, scientists and industrialists.

It gives us great pleasure to present the proceedings of the International Conference on Emerging Trends in Mechanical Engineering (ICETiME-2016). The conference is being organized during 23rd – 24th September, 2016 at Department of Mechanical Engineering, Faculty of Science and Technology, ICFAI Foundation of Higher Education Hyderabad, India.

Mechanical Engineering is the backbone of the industrialized country. The rapid development taking place in the manufacturing industries are being witnessed and used by us every day in the form of newer product and services. It is necessary for the students, faculty members from various technical institutions and professionals from the industries to keep themselves abreast of the latest methods and techniques of Mechanical Engineering Science. Through this conference a sincere attempt is being made to bring together the practitioners from various industries and academia on a common platform to facilitate meaningful exchange of ideas and deliberations in the latest trends and advances in Mechanical Engineering.

This conference focuses on the emerging trends in Mechanical Engineering. The role of Mechanical Engineering in the country's economy has long been established through their wealth creation activities. To deepen and broaden our knowledge of manufacturing and to increase innovation and responsiveness to ever-growing international needs, more in depth studies are critically needed at this juncture of global competitive scenario. It is an attempt to provide platform to academicians, professionals, & research scholars to share their views on the issues & challenges in the field of Mechanical Engineering. The articles/papers are from various functional areas of Mechanical Engineering. They are categorized into various sections viz. Materials, Robotics and automation, Machine Tool Design and Structure, Maintenance and Reliability, Flexible Manufacturing System, Sustainability, Quality Management, Supply Chain Management, Conventional Manufacturing Processes, Non-conventional Manufacturing Processes, Optimization, Refrigeration and Air-Conditioning Process, Energy, Computational Fluid Dynamics, Heat Transfer and miscellaneous articles. It is a sincere hope that the persons associated/interested in the field of emerging trends in mechanical engineering will find this publication of some value in their pursuance of knowledge.

Organizing Committee of this conference acknowledges the financial support provided by the Sponsors. The committee is also thankful to the learned reviewers who spared their valuable time to improve the readability and quality of papers.

A. Chandra Shekhar

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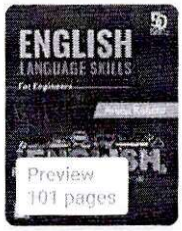

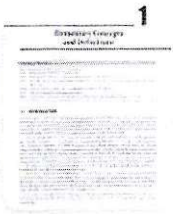

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Published:	24 April 2020	Publisher:	McGraw-Hill Education
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Aruna Koneru has over more than four decades of experience in teaching, training, research and consultancy. A former faculty member in the department of language at BITS, Pilani; She has also been associated as visiting or Adjunct Professor of Professional and Technical Communication with ICFAI Institute of Science and Technology, Hyderabad, IMT, Hyderabad and worked in several other institutions including Medical Transcription. She has several years of teaching experience and has taught Communication Skills at different levels of students and professionals. She has authored six books: Professional Communication, English Language Skills, Professional Speaking Skills, Speak to Lead and Words Are Your Friends-Book 1 and 2. Her books are known for rich content and for clarity of expression. S... more

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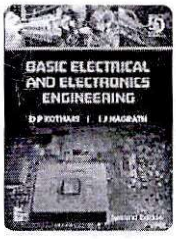

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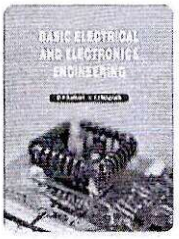

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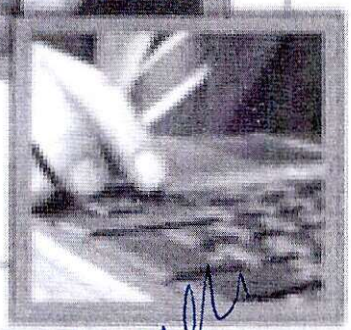

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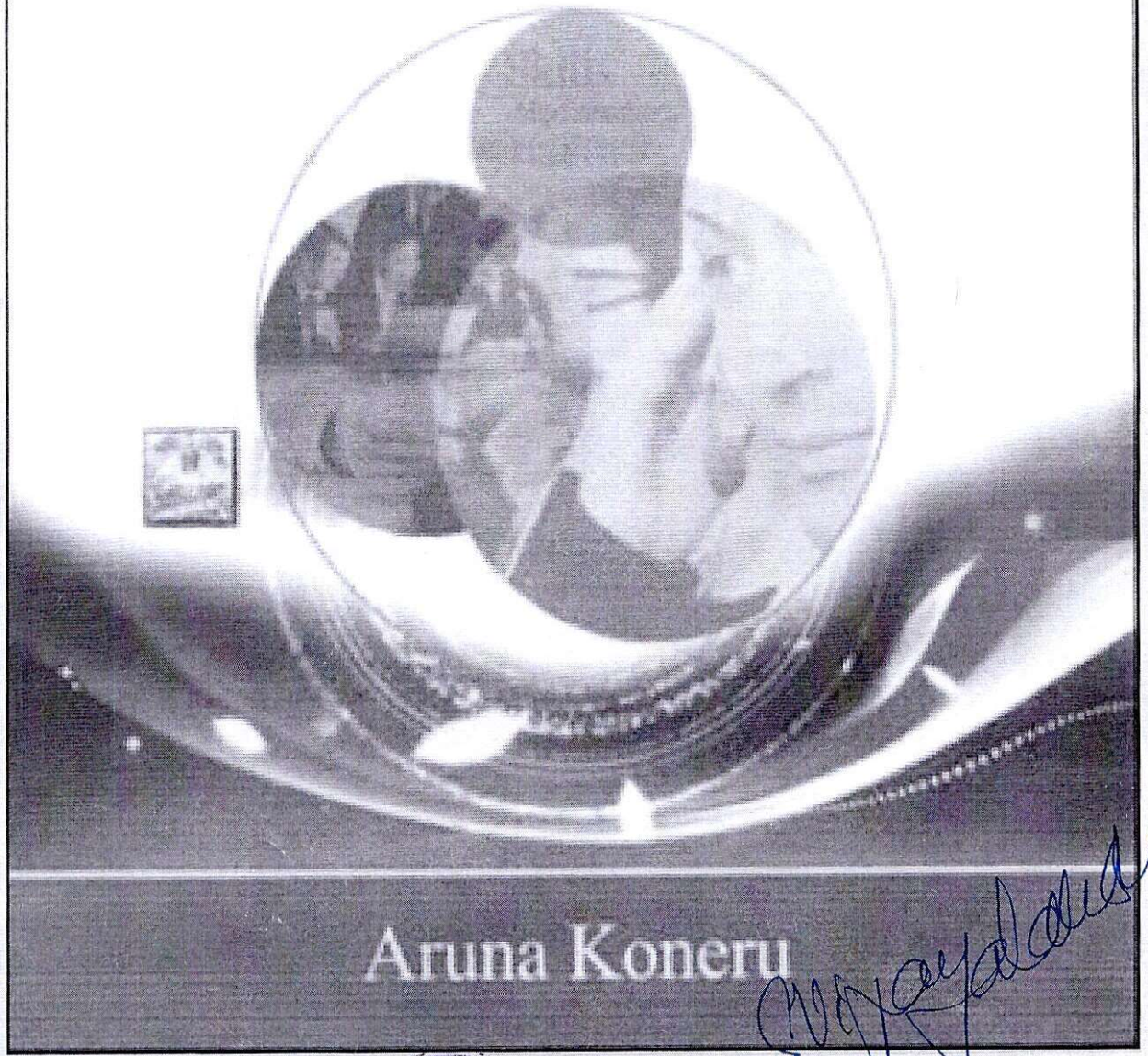

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English Language Skills

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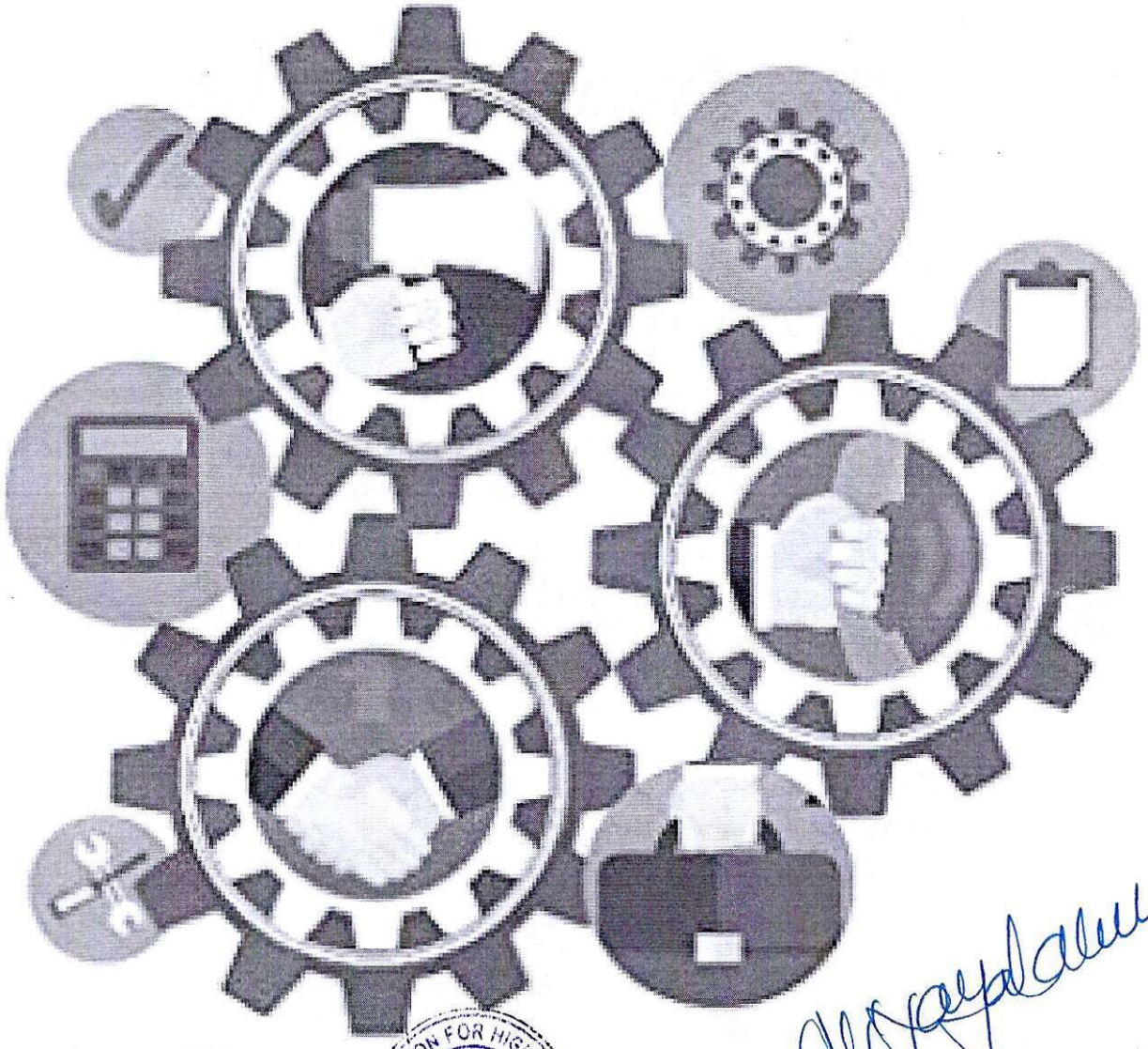

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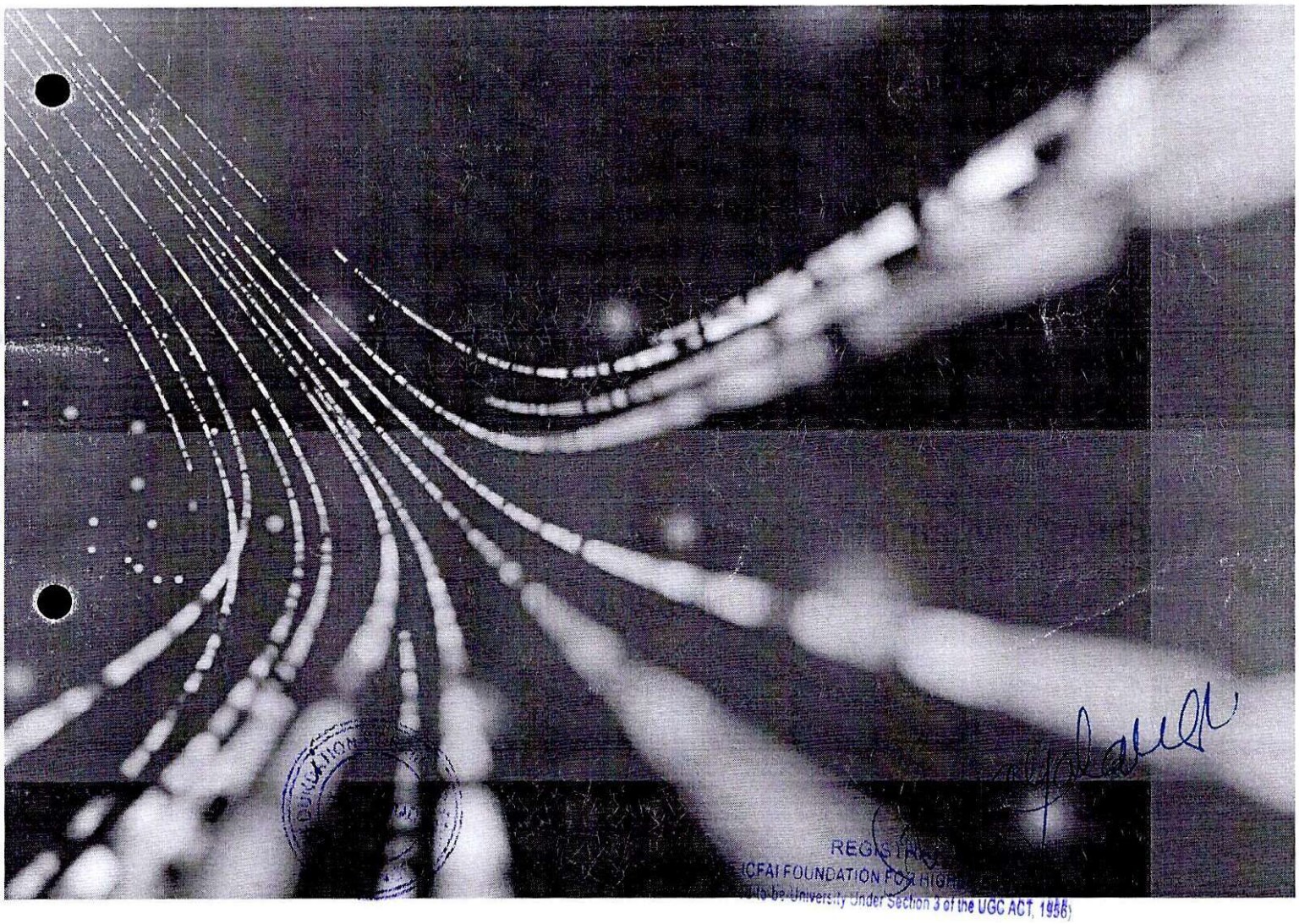

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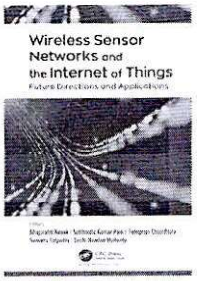

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Edited By Bhagirathi Nayak, Subhendu Kumar Pani, Tanupriya Choudhury, Suneeta Satpathy, Sachi Nandan Mohanty

Edition	1st Edition
First Published	2021
eBook Published	30 September 2021
Pub. Location	New York
Imprint	Apple Academic Press
DOI	https://doi.org/10.1201/9781003131229 (https://doi.org/10.1201/9781003131229)
Pages	380
eBook ISBN	9781003131229
Subjects	Bioscience, Computer Science, Engineering & Technology

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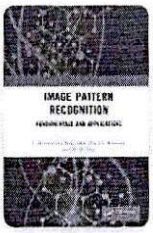
Image Pattern Recognition

Fundamentals and Applications

By L. Koteswara Rao, Md Zia Ur Rahman, P. Rohini · 2022



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ISBN:	9780367642167, 0367642166	Page count:	184
Published:	14 January 2022	Format:	Hardcover
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This book describes various types of image patterns for image retrieval. All these patterns are texture dependent. Few image patterns such as Improved directional local extrema patterns, Local Quantized Extrema Patterns, Local Color Oppugnant Quantized Extrema Patterns and Local Mesh quantized extrema patterns are presented. Inter-relationships among the pixels of an image are used for feature extraction. In contrast to the existing patterns these patterns focus on local neighborhood of pixels to creates the feature vector. Evaluation metrics such as precision and recall are calculated after testing with standard databases i.e., Corel-1k, Corel-5k and MIT VisTex database. This book serves as a practical guide for students and researchers.

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Usability has been the primary way for assuring the quality of web applications. The main challenge in usability is to identify effective usability problems. Addressing the usability problems of e-commerce websites could increase the percentage of visitors who purchased from a site and who could then turn into frequent and loyal customers. Even though the web applications have become more and more sophisticated, they are not yet matured. The main lacuna is a lack of skilled engineers in web applications development and lack of knowledge to create complex and quality websites, which can be used and updated quickly and reliably. An investigation into the current situation of e-commerce companies in developing countries is still in its infancy and there is an opportunity to improve the usability of those e-commerce websites. Designing frameworks and metrics helps the developers and managers of the e-commerce companies to employ specific usability assessment methods in order to improve the usability of their websites.

Dr. Sandeep Kumar Panda is currently working as an Associate Professor in the Department of Data Science and Artificial Intelligence, Faculty of Science and Technology at ICFAI Foundation for Higher Education (deemed to be University), Hyderabad, Telangana, INDIA. His research interests include Software Engineering, and Blockchain Technology.

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Usability and Productivity of E-Commerce Websites

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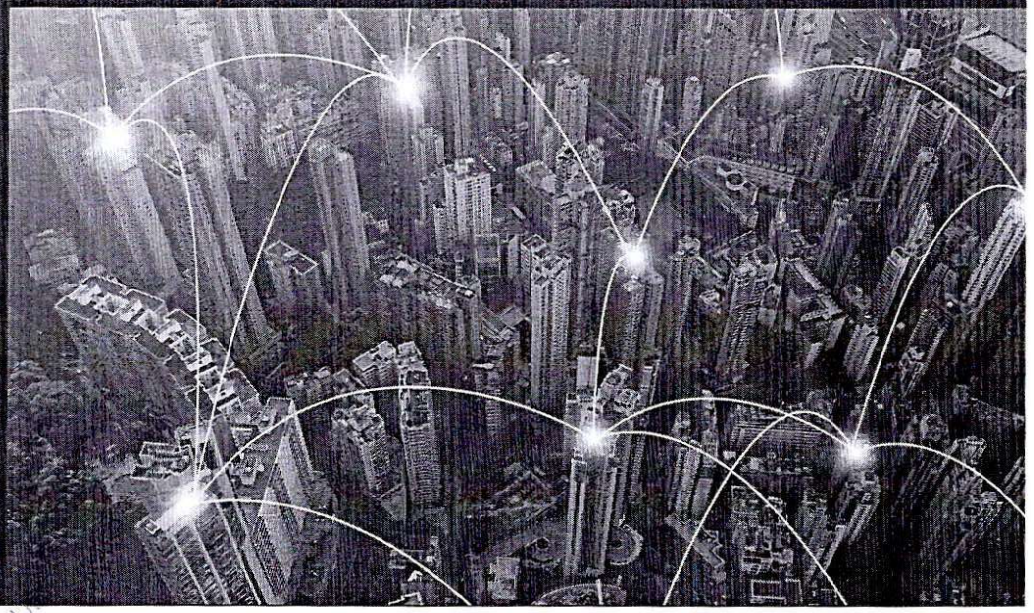
Without a proper mechanism to track and authenticate drugs, both stakeholder and consumer experience dilemmas. The dilemmas arise between stakeholders and consumers are related to of coordination, inventory management, human resource dependency, order management, stock management, expiry of medicines data etc. Stakeholders are unable to analyses the demands, hence becoming incapable of optimizing their production and storage. Likewise, a consumer remains suspicious about the authenticity of the drug. A medical supply chain promotes updating medicine status at each checkpoint, reducing the disputes caused by medicine ' s unseen journey. In the current market, medical supply chains are present, but they are centralized. A centralized medical supply chain is typically tedious and expensive to maintain and does not provide adequate features to analyse markets. Above all, it brands merely a certificate to prove the authenticity of a drug. However, by using a blockchain platform, the medical supply chain problems can be solved efficiently. This blockchain-based medical supply chain's key feature is to system stores all the medicine batch ' s transfer history.



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Sandeep Kumar Panda

Medical Supply Chain using Blockchain Technology

Applications and Challenges

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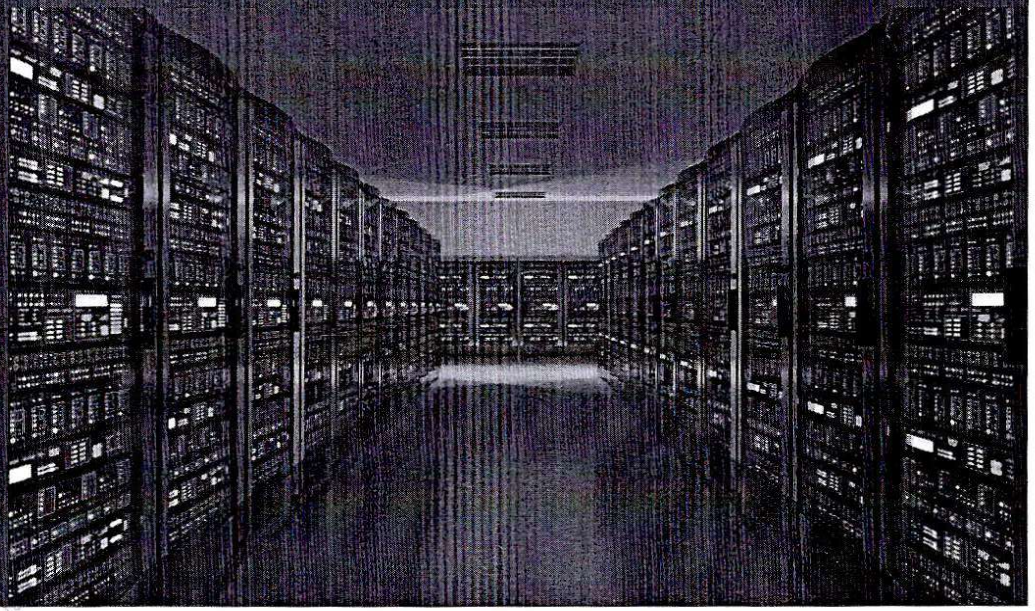
Cloud computing is gaining popularity among different users and organizations and one of the prominent areas of research in the present world. It delivers on- demand computing services including networking, software, storage, etc through the Internet. There are many advantages like cost-saving, flexibility in capacity, availability, etc. those exist in cloud computing but the major drawback is to create a secure cloud storage system. Additionally, cloud environments are controlled by several service providers like Amazon, Microsoft, Google's App Engine, etc. Cloud environment provides security depending upon the centralized third-party provider and hence, the data confidentiality has to be compromised. Data confidentiality and integrity are important concepts that are required to be maintained to preserve security and privacy in the cloud. Confidentiality keeps the sensitive data secure, whereas integrity assures data which improves better data privacy. There are many cryptographic methods available such as symmetric, asymmetric, etc., but every algorithm has its drawbacks in terms of time complexity, various attacks, etc.



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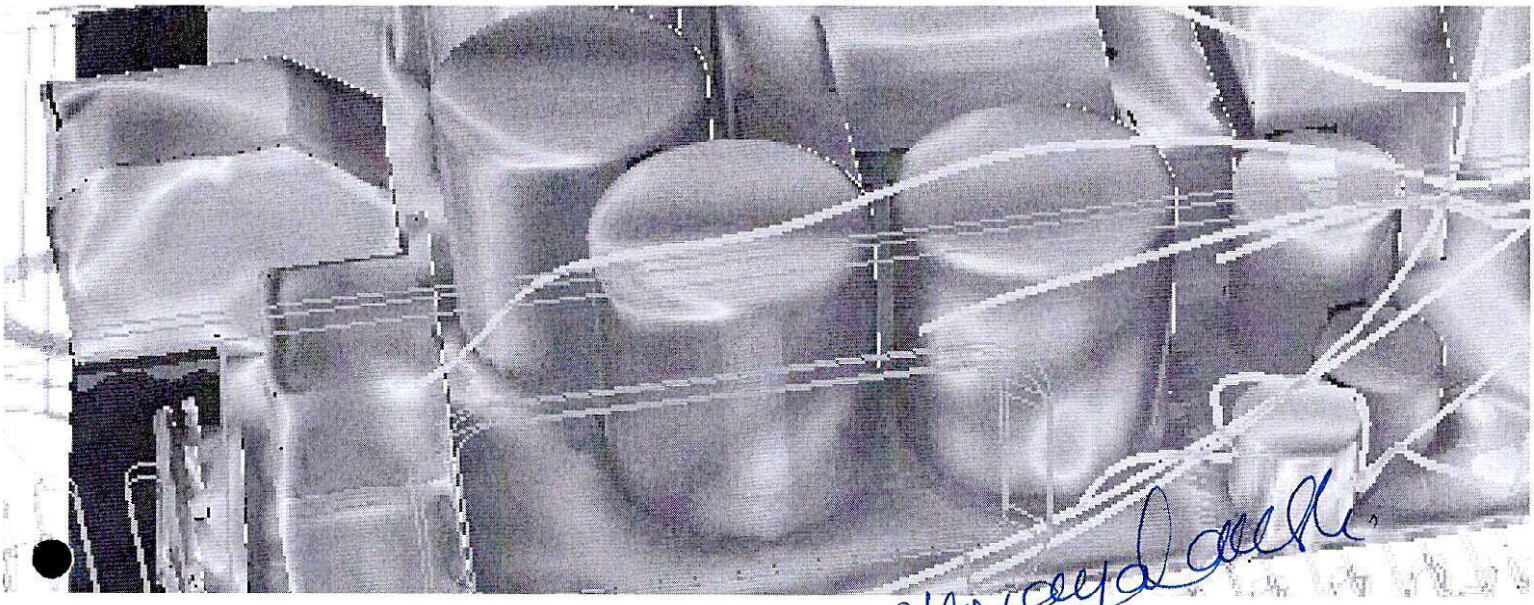

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Edited by
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IUP

ISBN: 978-93-92377-19-8

Thermal Analysis of Heat Transfer Applications
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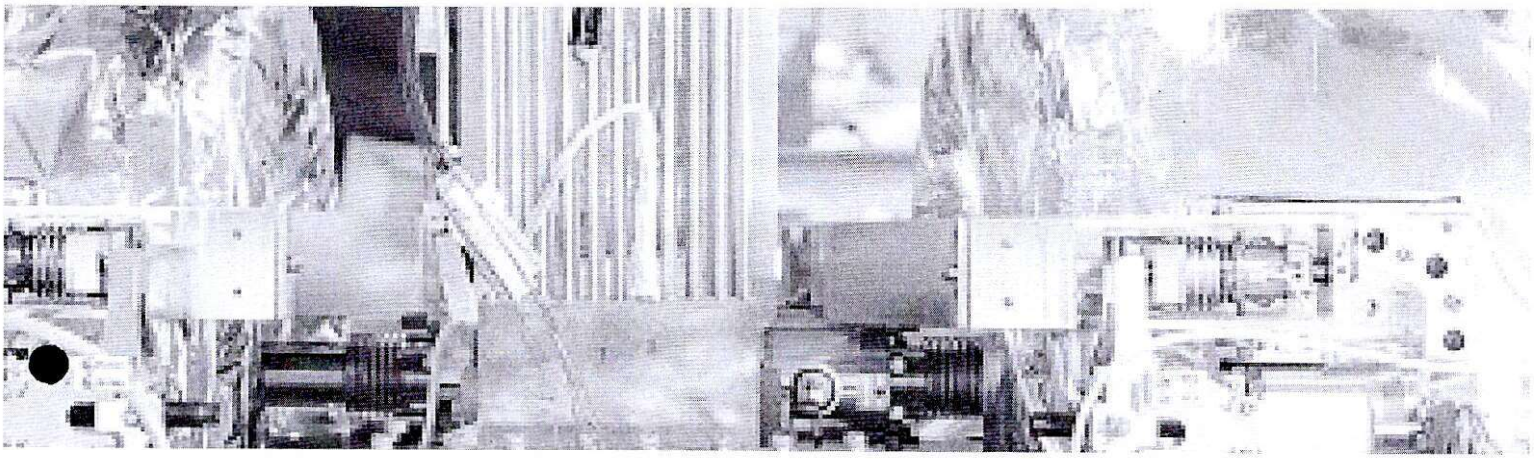

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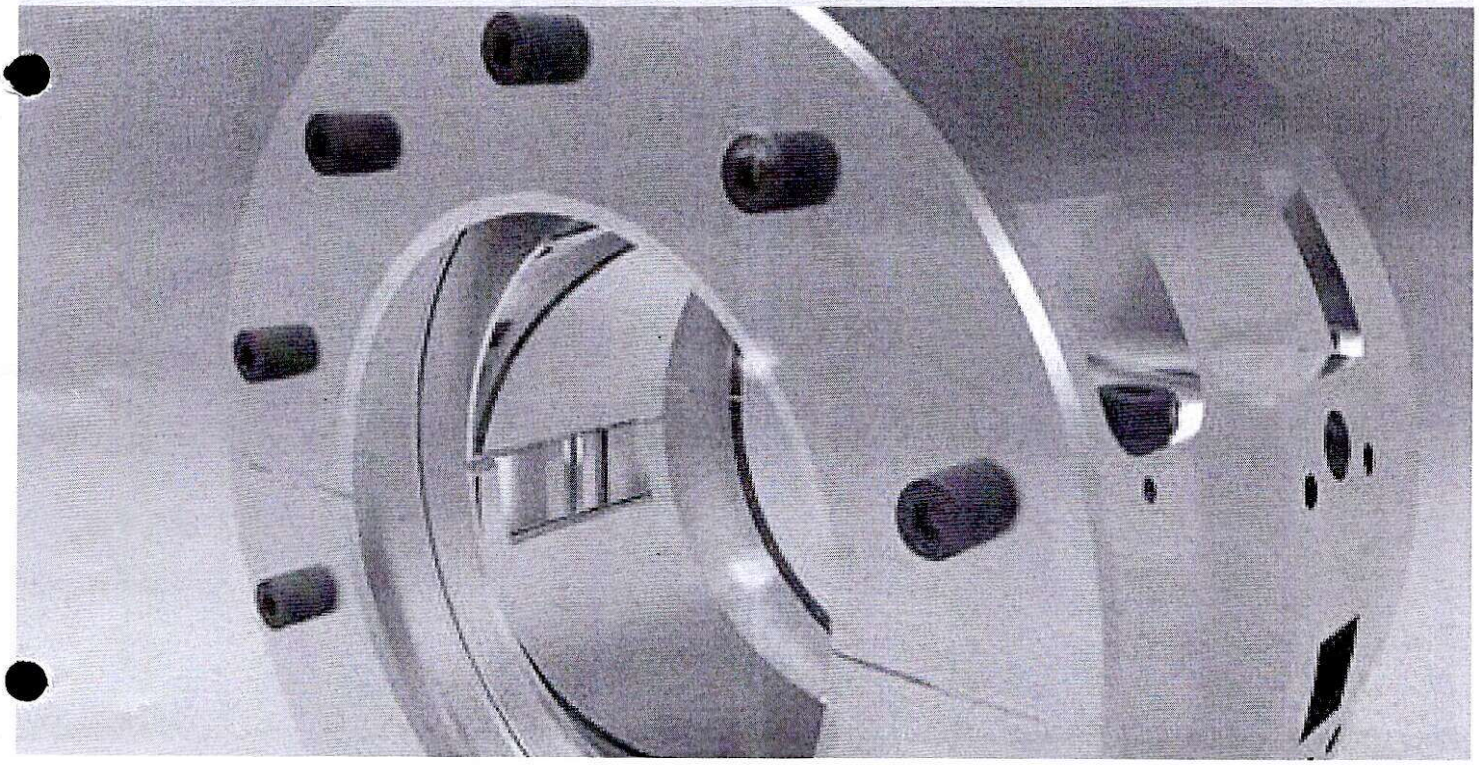

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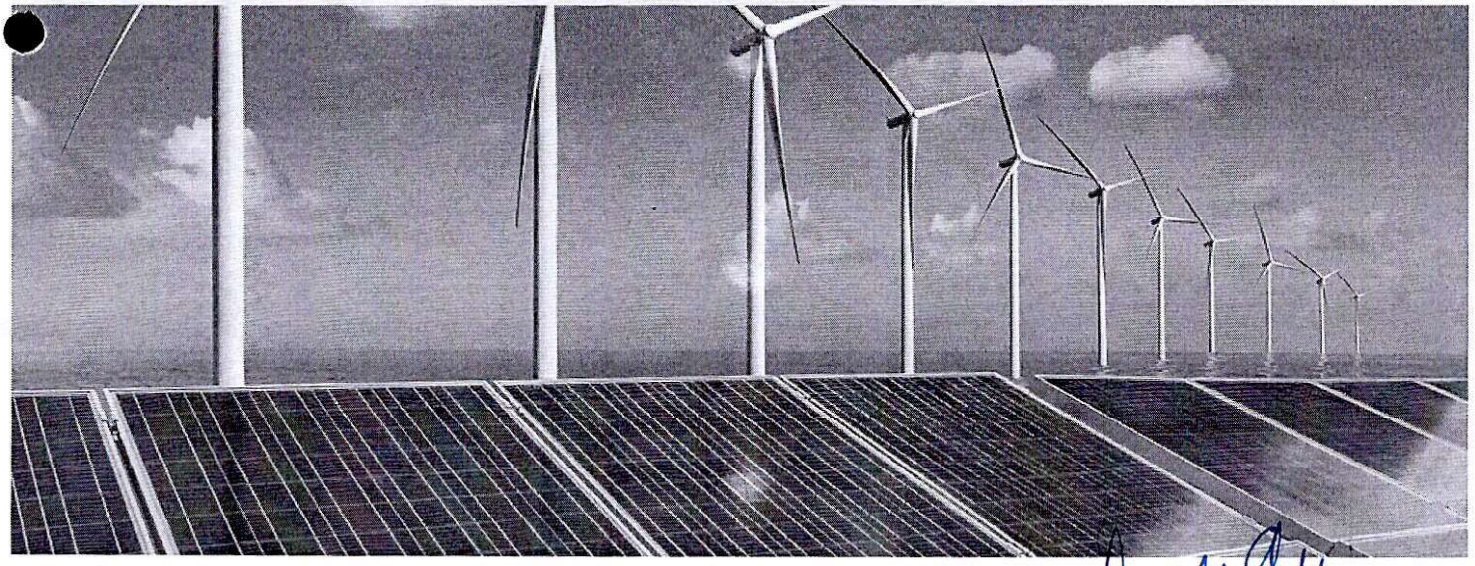

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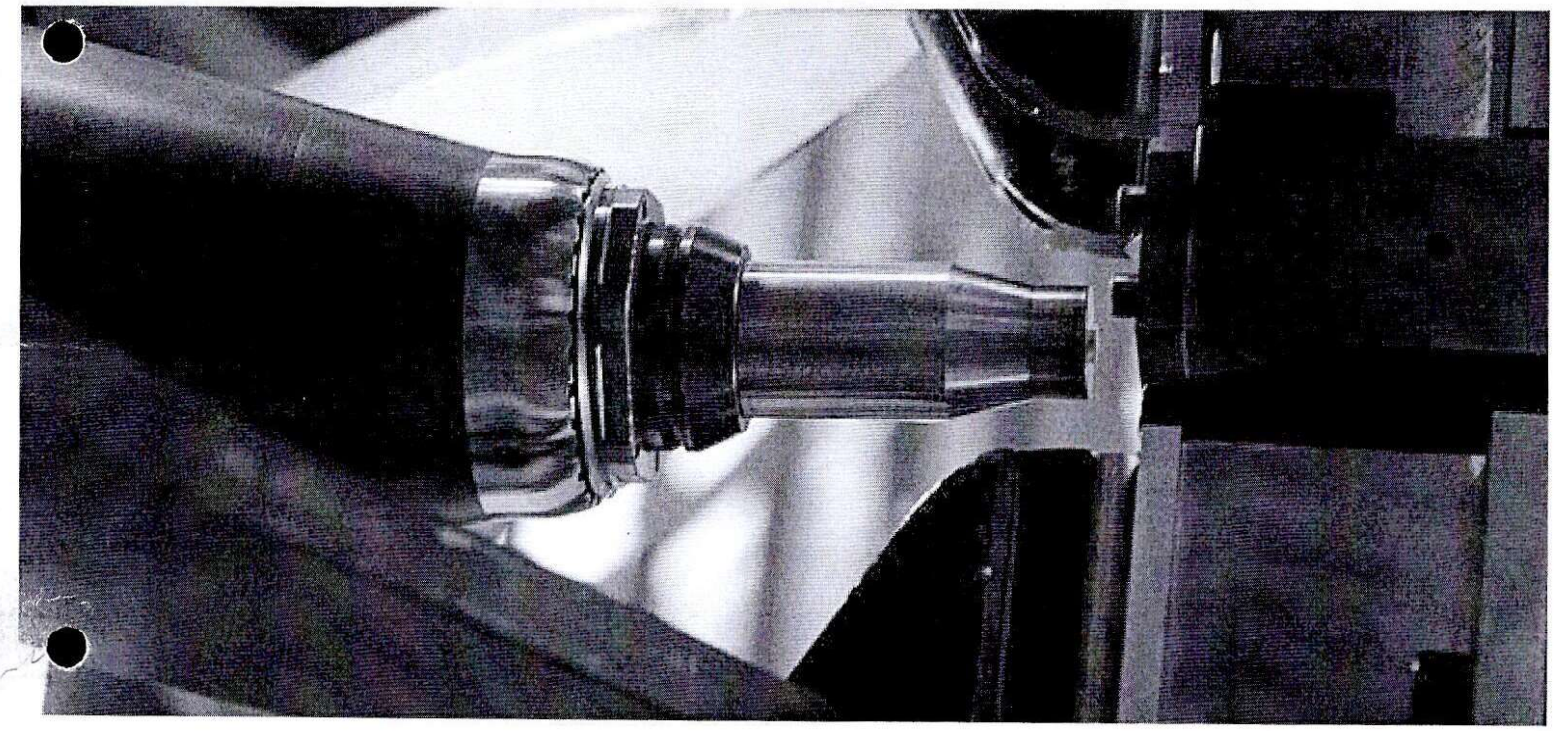

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ISBN: 978-93-92377-29-7

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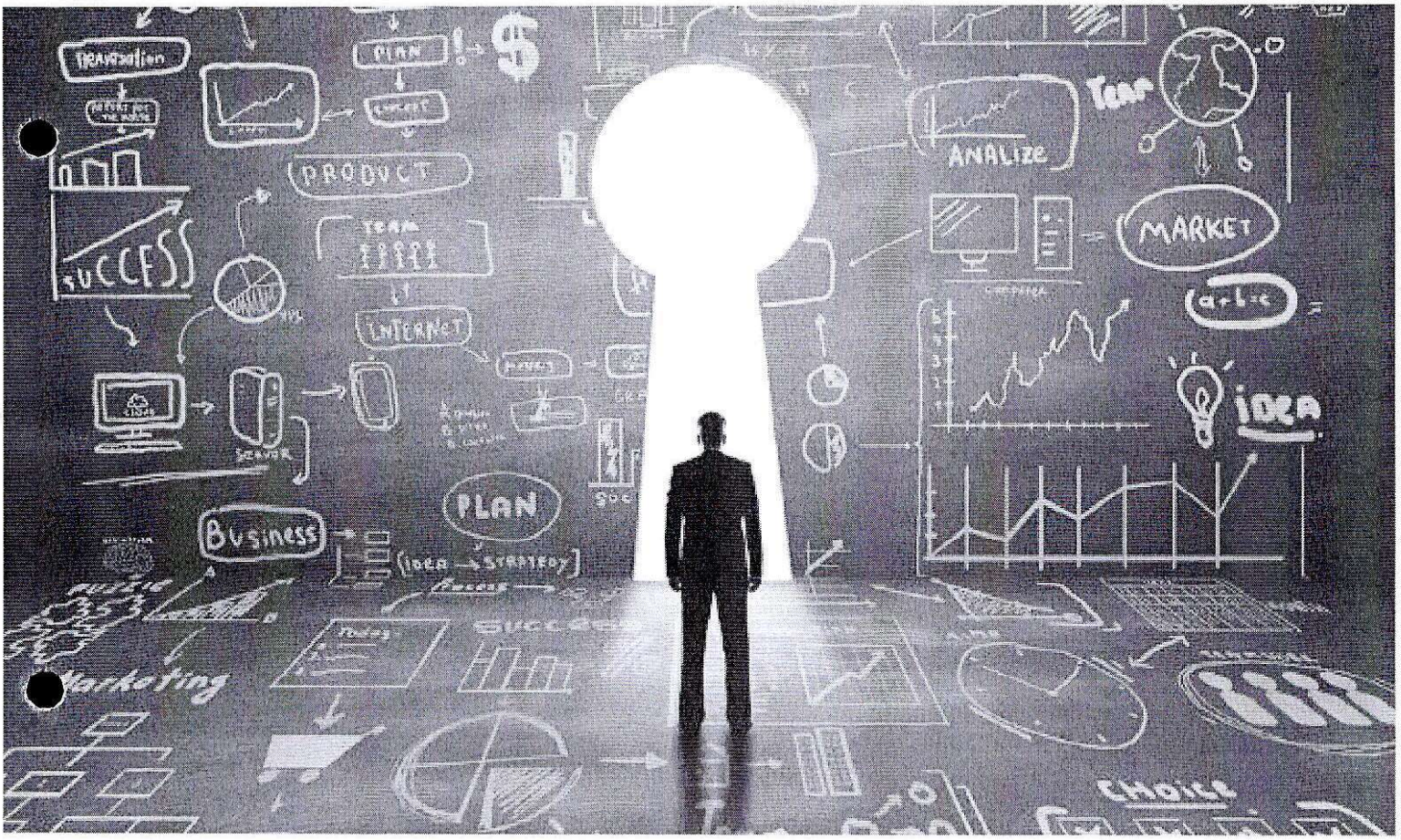
Decision Making in Manufacturing



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ISBN: 978-93-92377-30-3

Decision Making in Manufacturing
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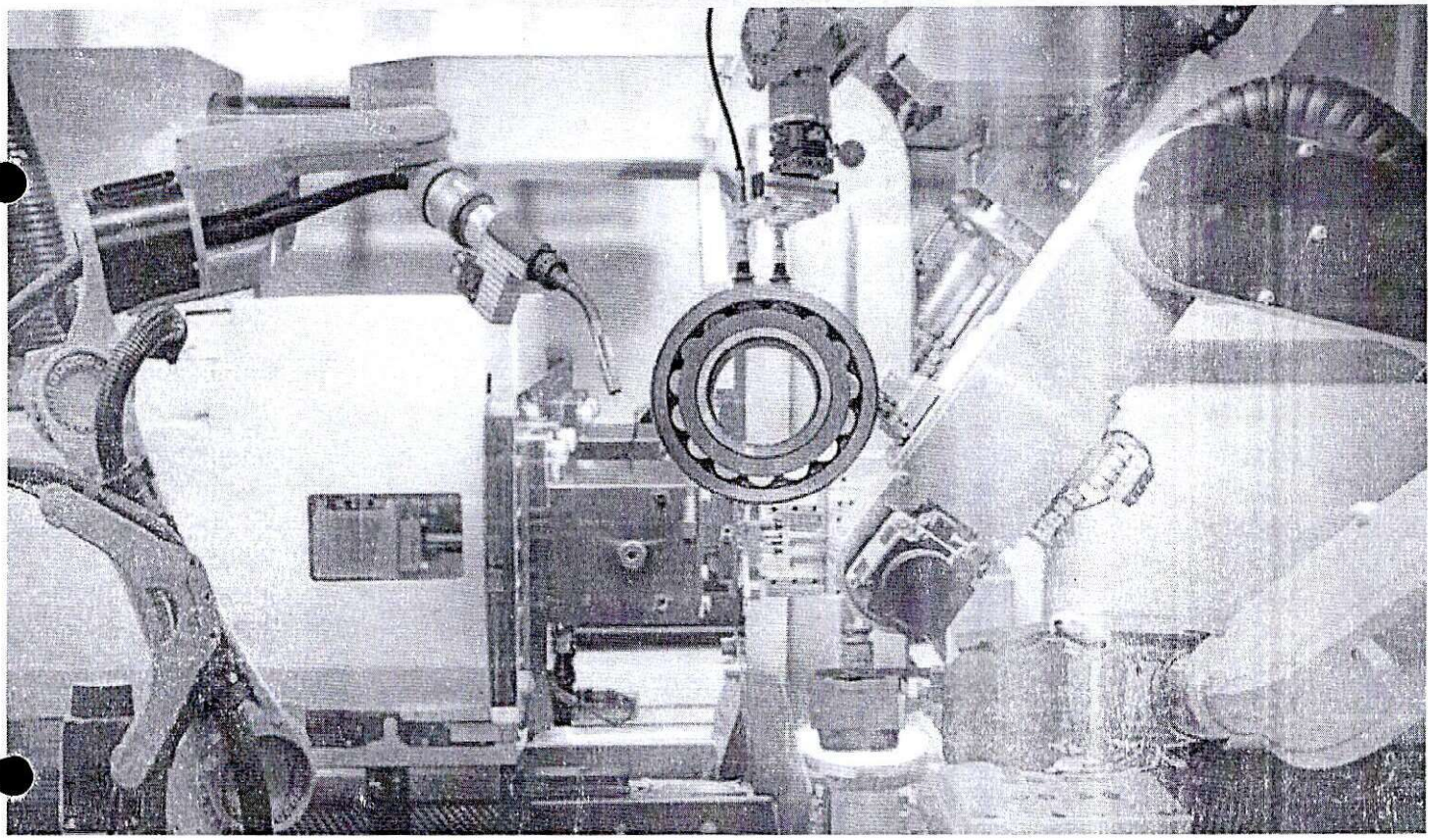

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ISBN: 978-93-92377-31-0

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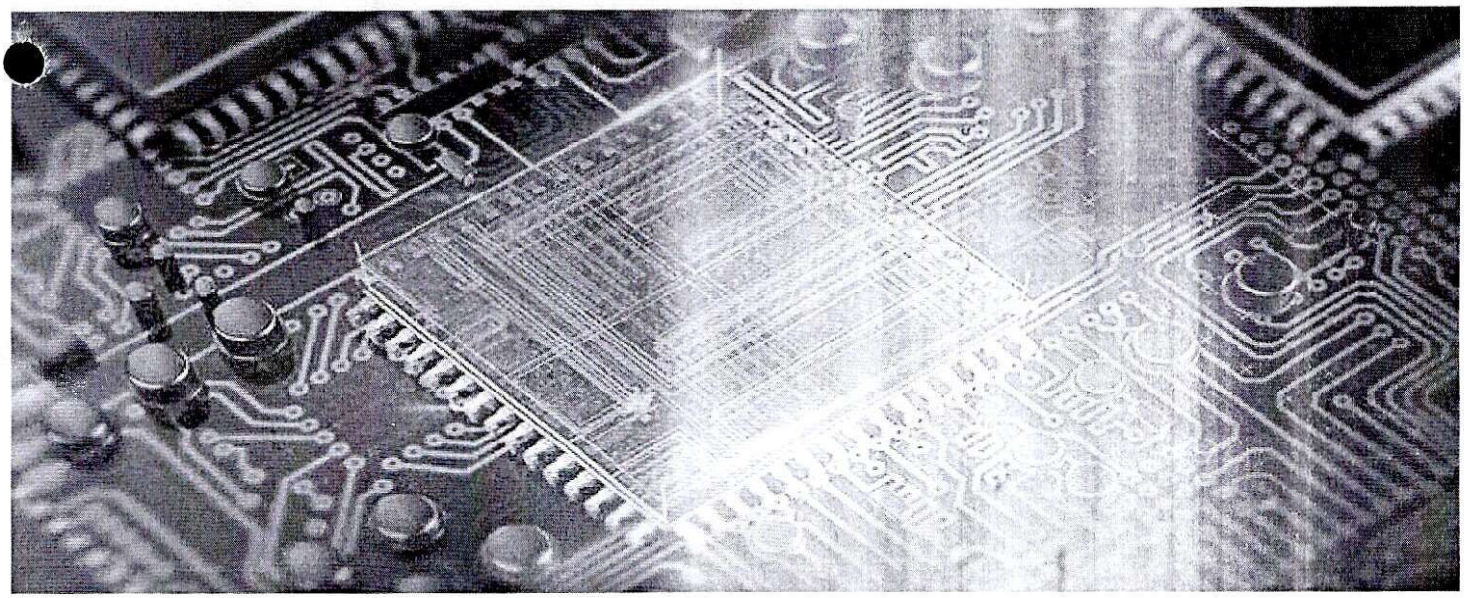

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Advanced Machining Processes

Edited by

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ISBN: 978-93-92377-32-7

Advanced Machining Processes

Editor:

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6-2-959/2, Khairatabad, Hyderabad 500004.

ISBN: 978-93-92377-32-7

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Electrical Power Systems and Energy Management

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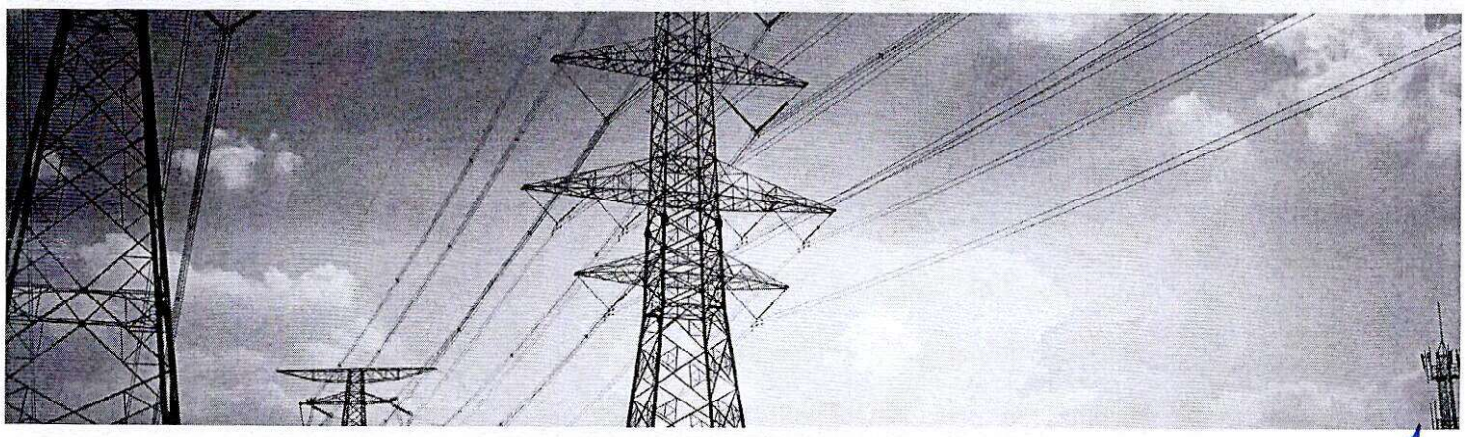

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Edited by

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ISBN: 978-93-92377-42-6

Electrical Power Systems and Energy Management

Editor:

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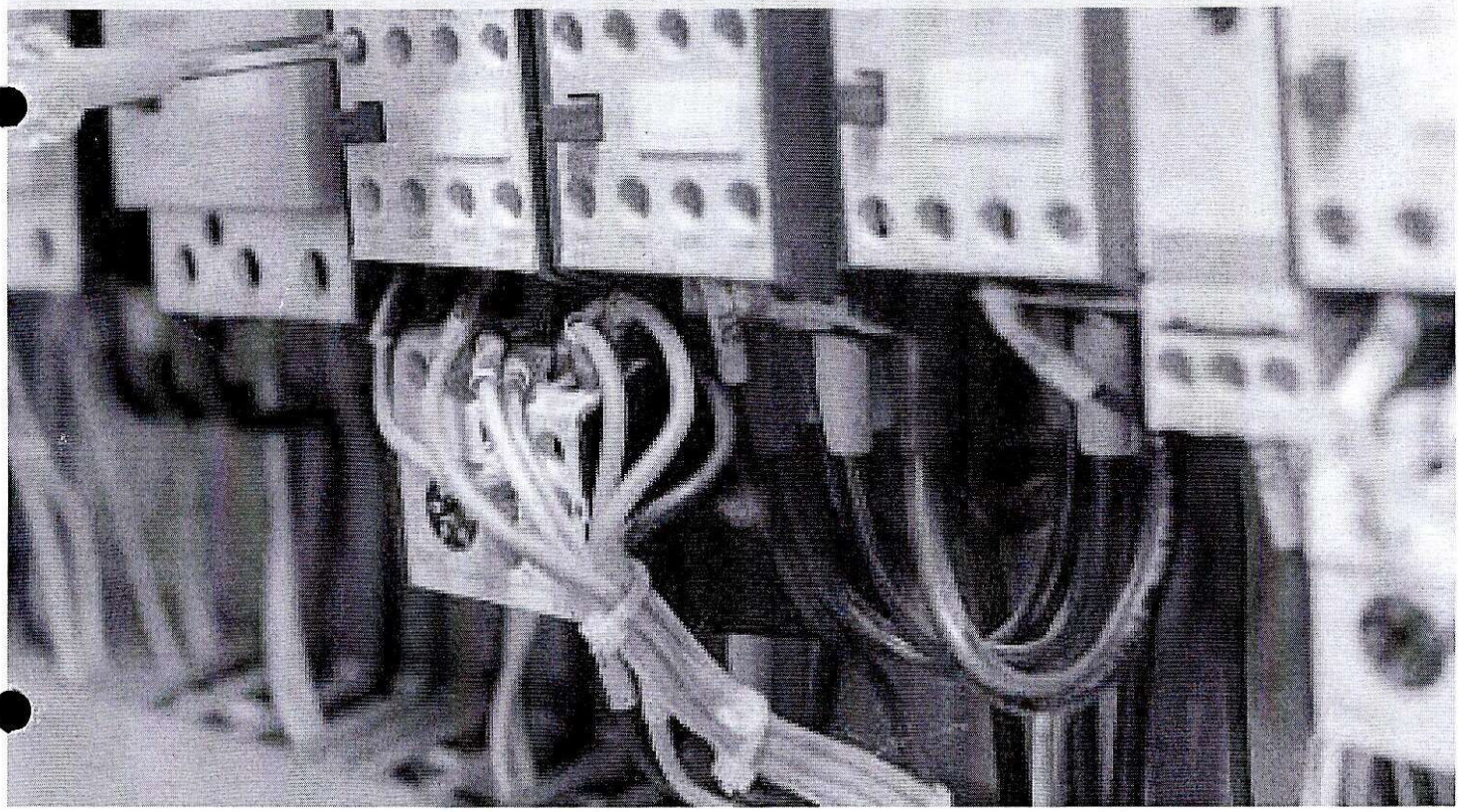

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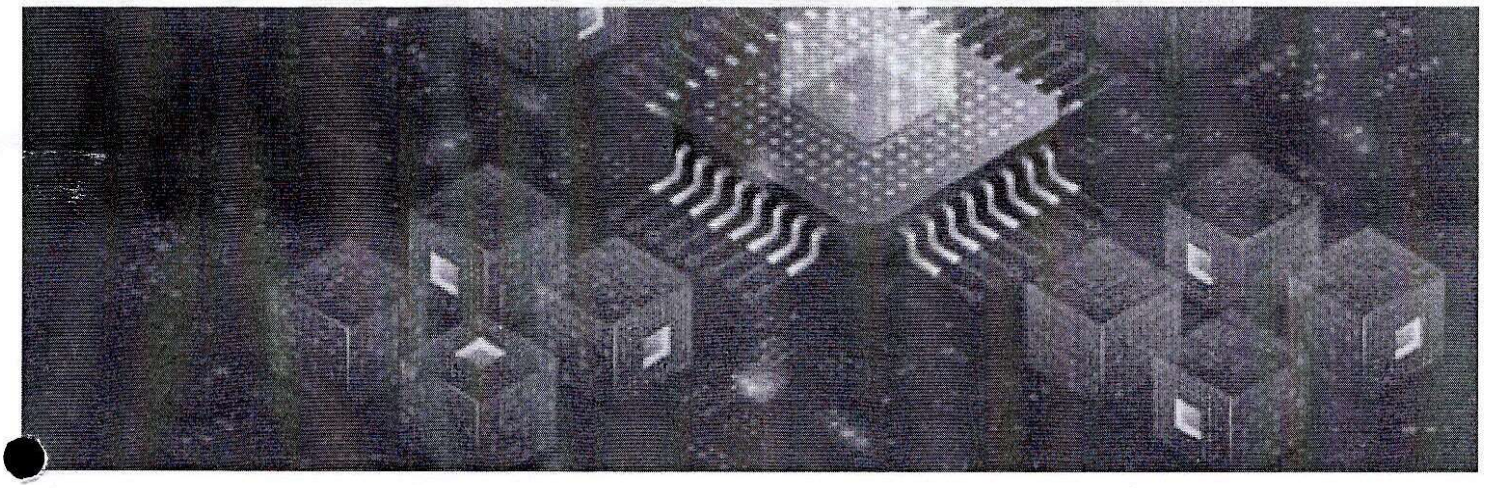

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ISBN: 978-93-92377-48-8

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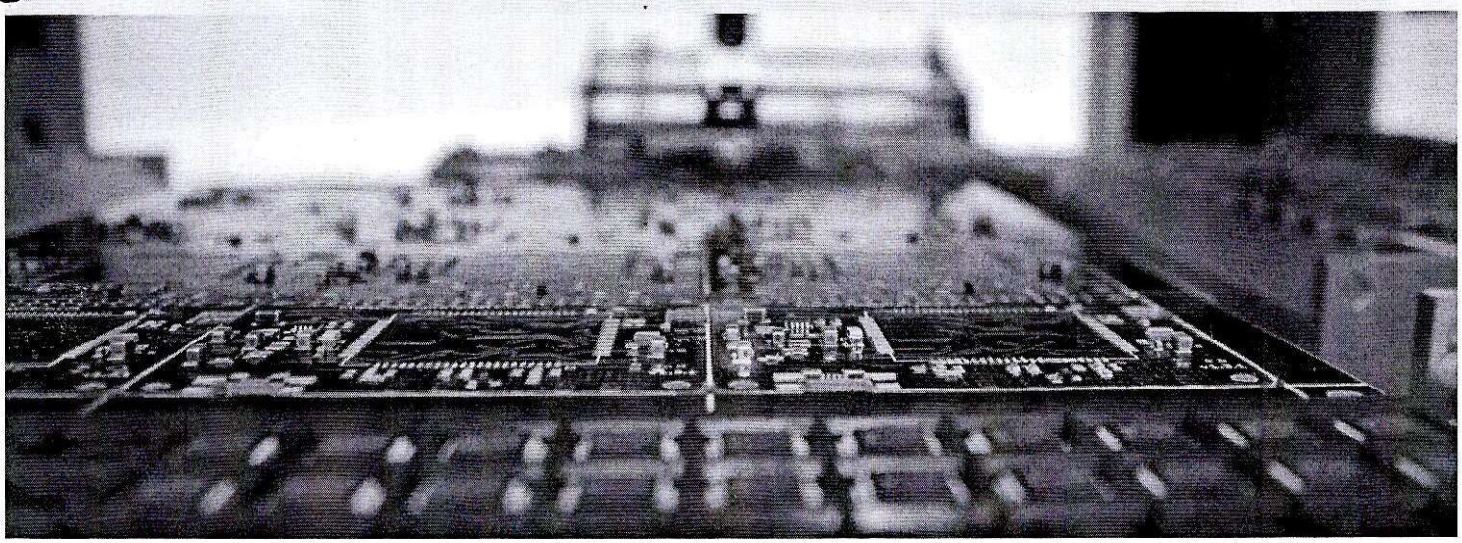

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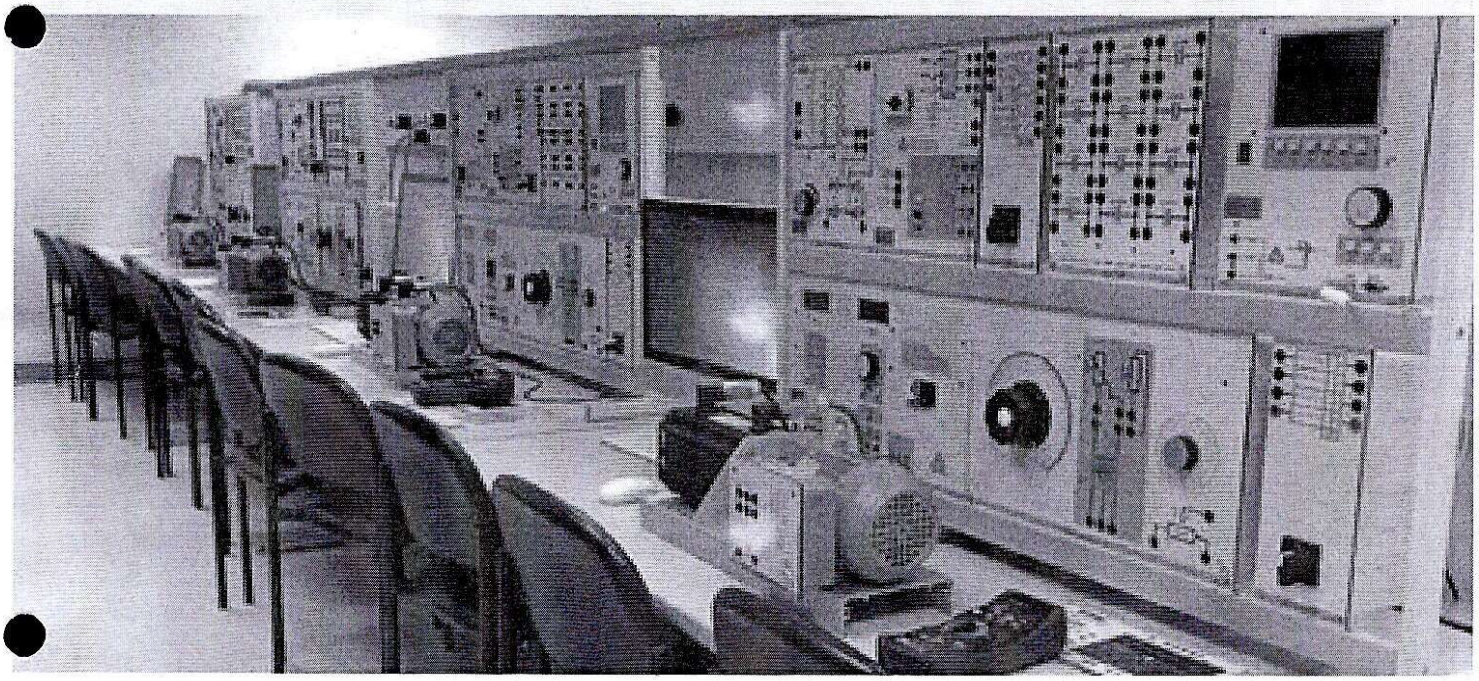
Power Electronics and Drives



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Power Electronics and Drives

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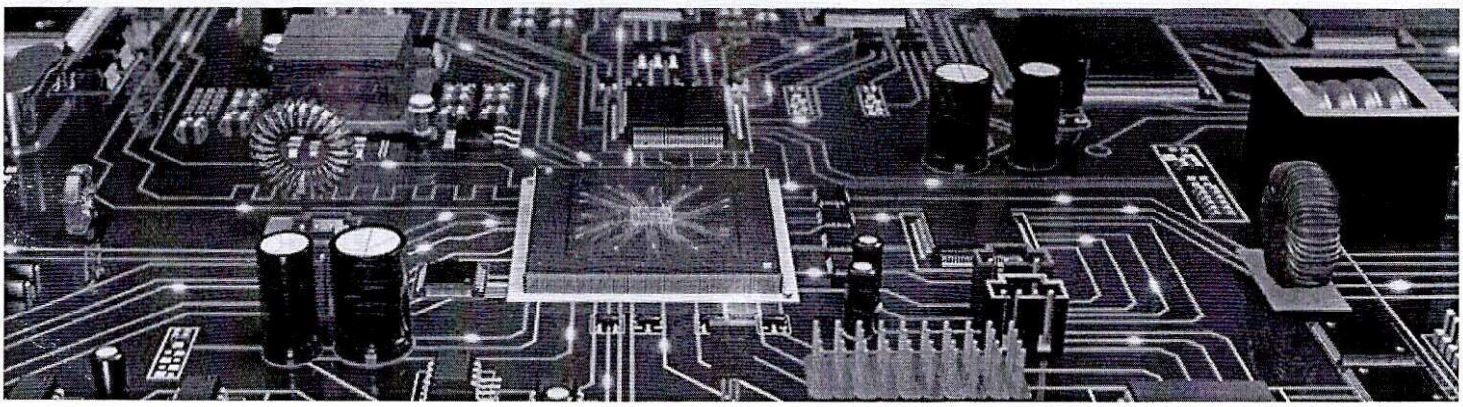

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(Deemed-to-be-University Under Section 3 of the UGC ACT, 1956)

ISBN: 978-93-92377-51-8

Recent Advances & Future Trends in Digital Electronics

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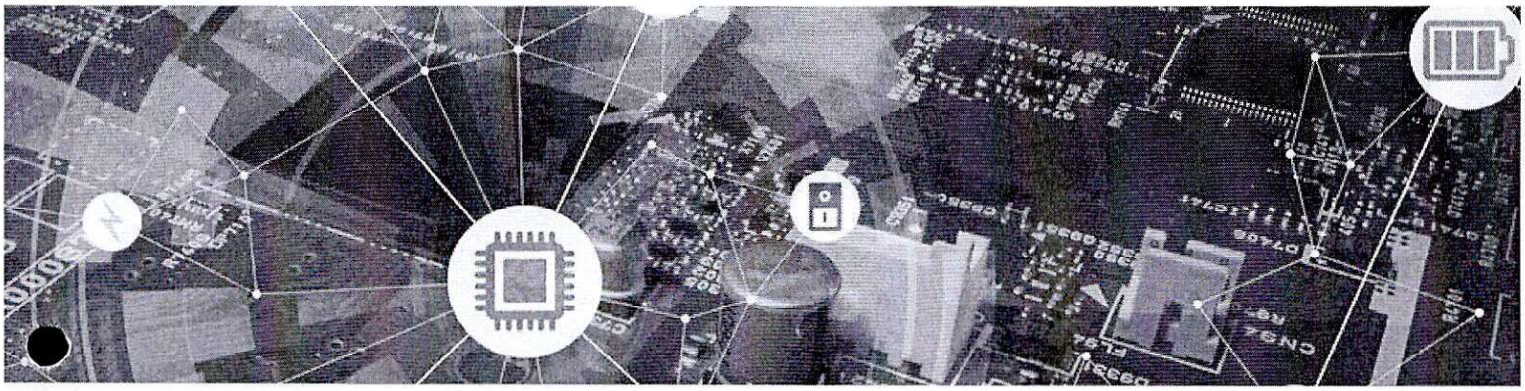

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ISBN: 978-93-92377-56-3

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Signal and Image Processing

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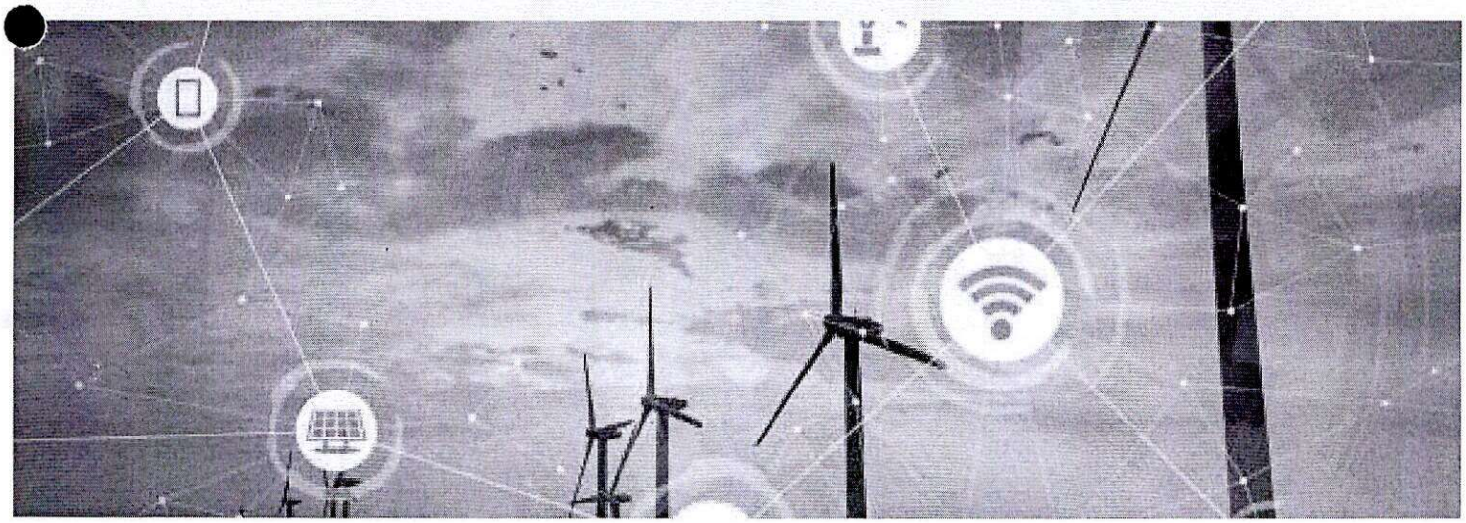

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ISBN: 978-93-92377-58-7

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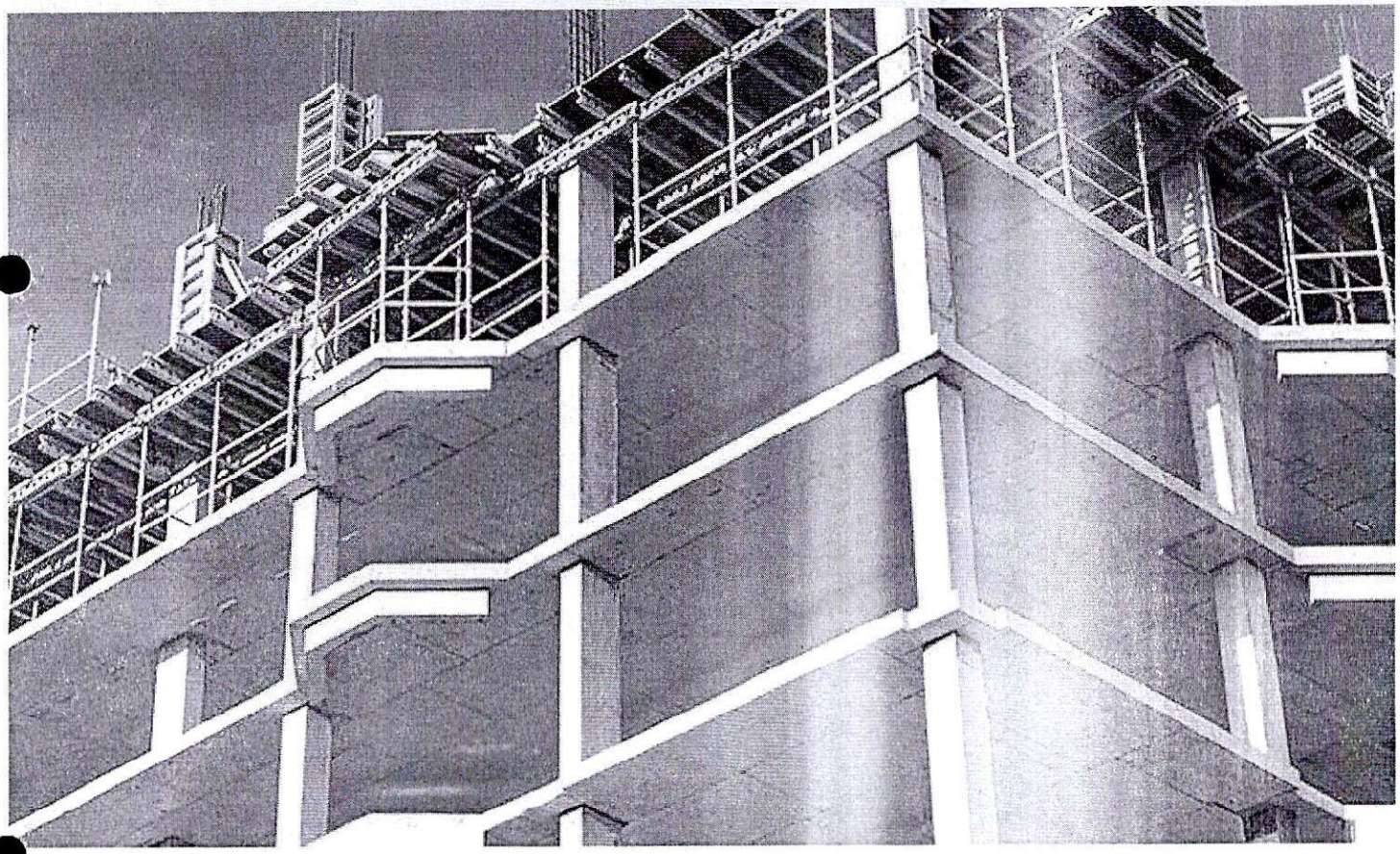
Behavior of RCC Structures



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ISBN: 978-93-92377-37-2

Behaviour of RCC Structural Members

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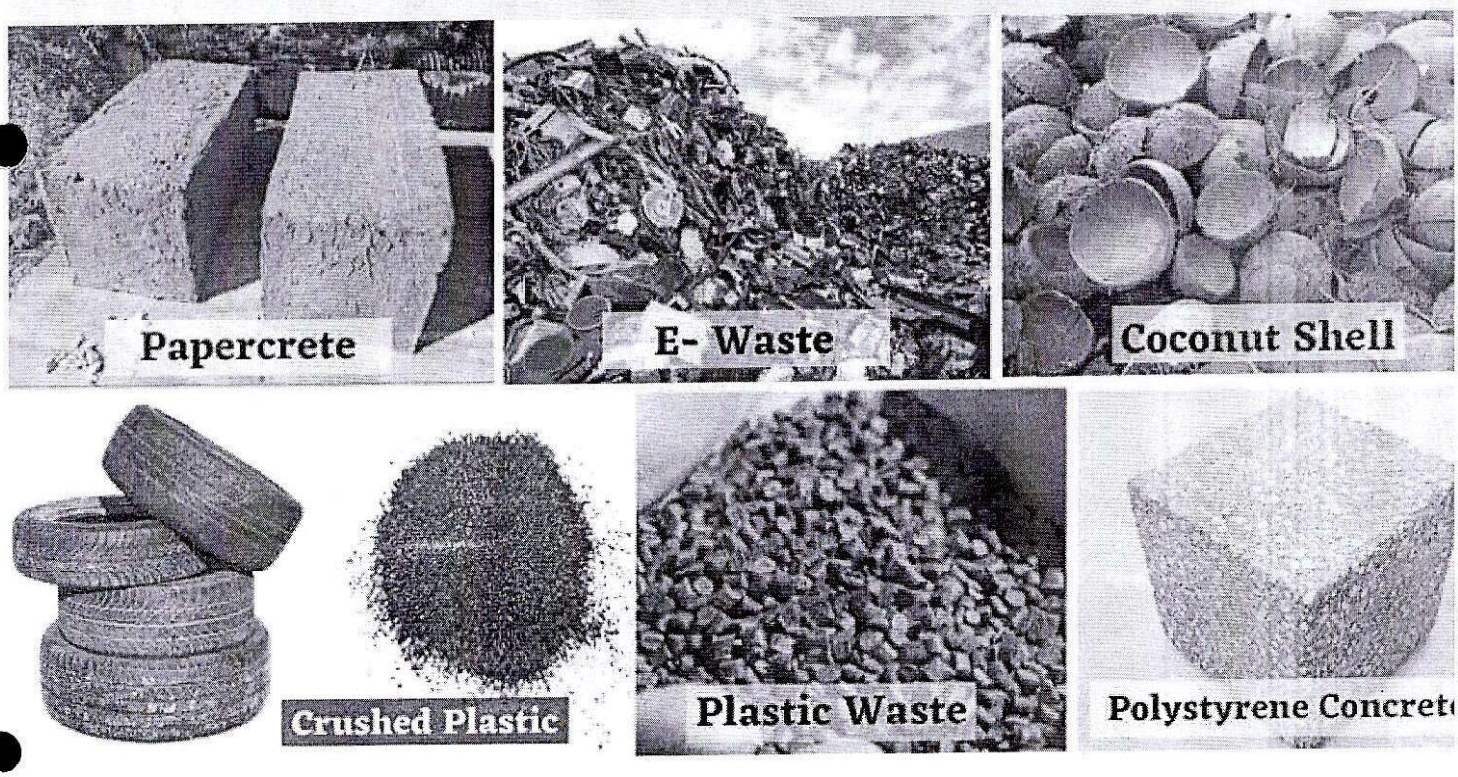

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ISBN: 978-93-92377-38-9

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ISBN: 978-93-92377.38-9

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Design and Analysis of Multi-Storeyed Buildings

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Edited by

Veereswara Sarma Ivaturi

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ISBN: 978-93-92377-01-3

Design and Analysis of Multi-Storeyed Buildings

Editor:

Veereswara Sarma Ivaturi

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Published by

IUP Publications (A Division of The ICFAI Society),

#52, Nagarjuna Hills, Panjagutta,

Hyderabad-500082, Telangana,

India.

Printed at

M/s. Sai Likhita Printers,

6-2-959/2, Khairatabad, Hyderabad 500004.

ISBN: 978-93-92377-01-3

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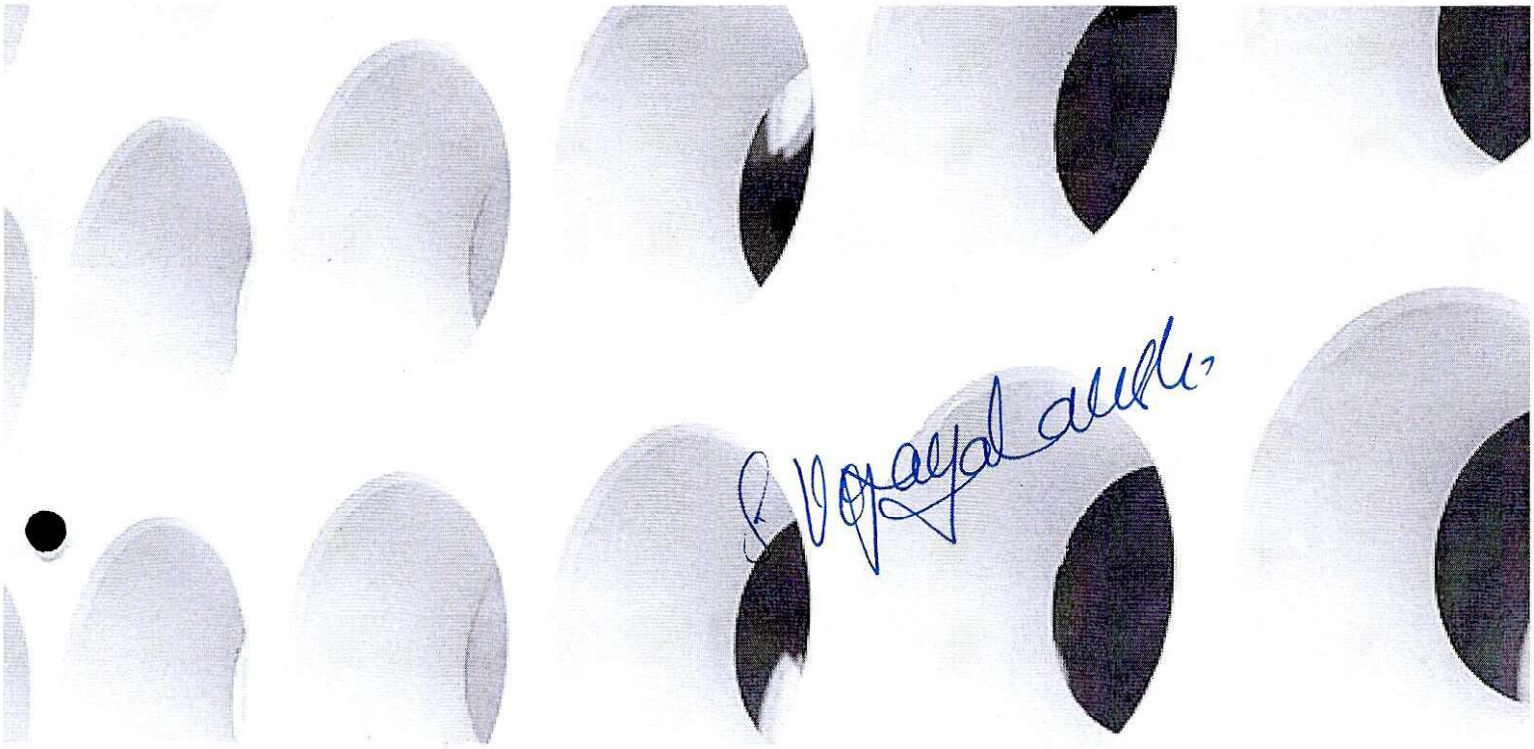

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ISBN: 978-93-92377-17-4

Fiber Reinforced Concrete

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6-2-959/2, Khairatabad, Hyderabad 500004.

ISBN: 978-93-92377-17-4

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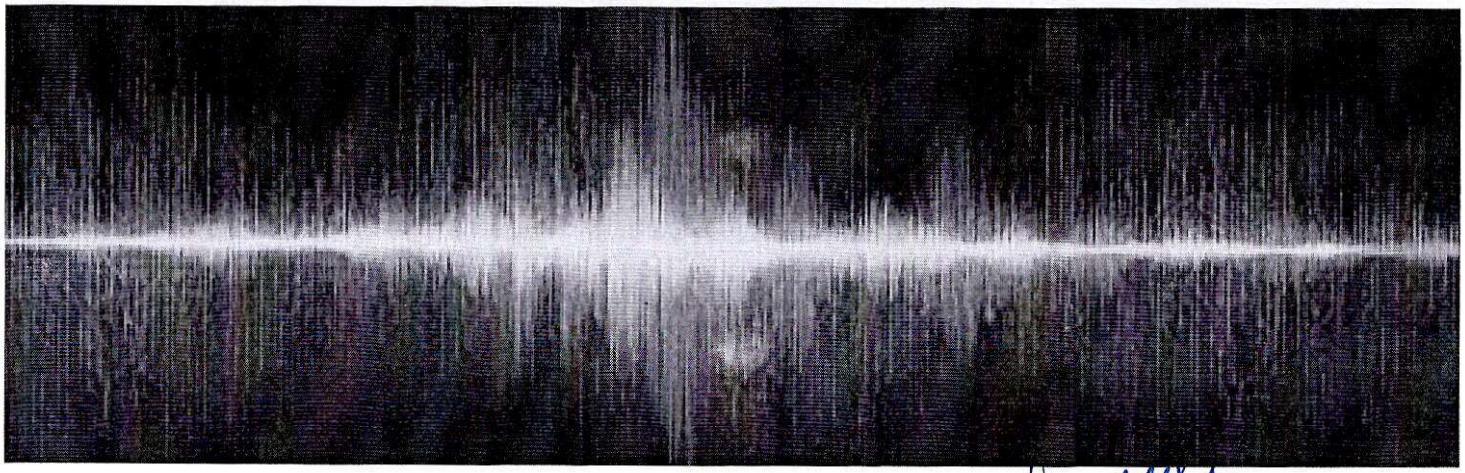
Seismic Analysis of Structures



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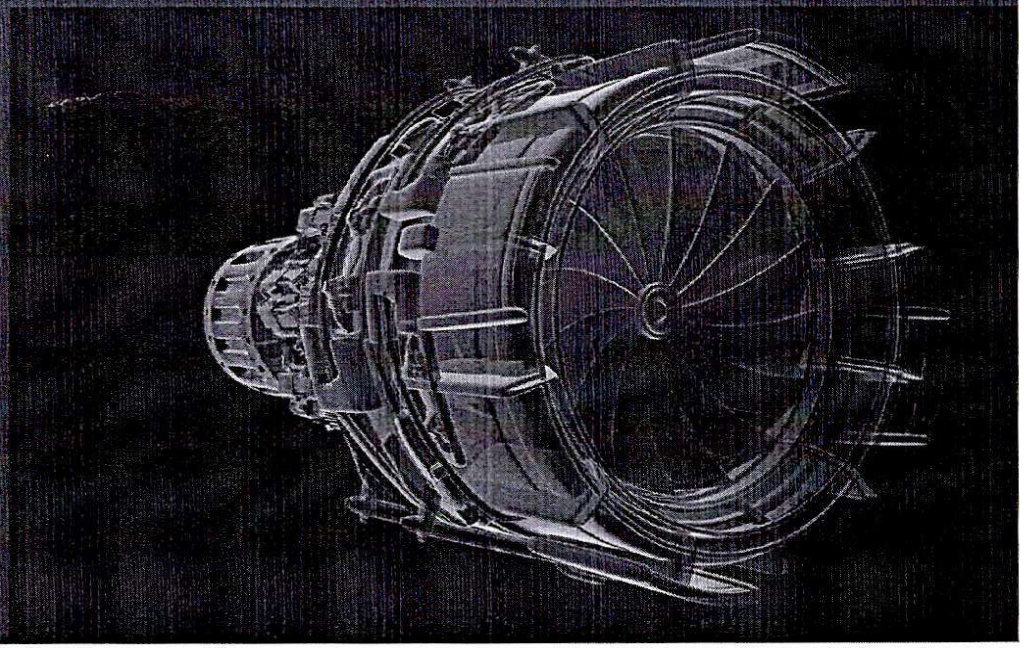
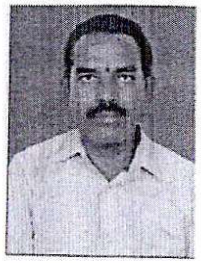
The fuselage layout of common traveler shipping plane has mechanical obligations joined with the errand to comfy travelers towards the cold and inordinate commotion inside the extraordinary flight stages. Current plan exercise for fuselage structures is a successive method where mechanical requirements are fulfilled first and then the acoustical and heat prerequisites are fulfilled in a restorative fashion. It tends to be addressed if this methodology will activate a great weight plan. Subsequently a plan study become started to look at consecutive as opposed to simultaneous multi-disciplinary plan of a rearranged fuselage shape. A Design and Engineering Engine (DEE) has been fabricated which can create (contribution for) mechanical, acoustical and heat fashions of hardened and un solidified disentangled fuselage segments with discretionary flooring uncovered to mechanical, acoustical and heat hundreds. So a ways the DEE was utilized to perform fundamental imagine a state of affairs in which considers. The DEE is presently reached out to enhance a solidified chamber for least weight, uncovered to mechanical, acoustical and warm necessities. The acoustical models have been accepted.





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Noise Reduction in Commercial Aircrafts by Analysis Fuselage Structures

Stress Analysis of Aircraft Structures

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Dynamic Stream Control Mechanism For Qos In Heterogeneous Network

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Abstract: with the development of hybrid model of data streaming the need for rate controlling in such network has emerged. Various methods were proposed in past for the development of rate controlling approach in heterogeneous mode of operation. For the streaming of data in different network the available resource per node need to be evaluated and is to be adaptively allocated for different link nodes. The variability wrt. the available resource is hence a concern matter for Heterogeneous network, to provide services in different mode of communication.

Keyword: Adaptive rate controlling, Heterogeneous network, Data streaming, variable data rate.

I. INTRODUCTION

Computer networks by nature are dynamic environments, where many users and applications share resources. Application management in networked environments is associated with effective management of networked resources with respect to their static characteristics as well as the dynamic changes of their state. During the past years, management systems have tried to overcome the heterogeneity of network resources, operating systems, and protocol of different domains, resulting in standard protocols like SNMP that are widely used today. When later application management become an important issue, SNMP-MIB was extended to include application-related resources. The demand for Quality of Service (QoS) raised by multimedia applications, introduced resource reservation protocols like RSVP as additional standards. An application - oriented resource management system using Common Object Request Broker Architecture (CORBA) is presented in [16]. Resource management has common functionality that is independent of resource type. CORBA [10, 11] is intended to support the production of flexible and reusable distributed services and applications. This paper present a support management operation to guarantee QoS for a variety of resource types, while possessing a uniform operation interface at the application level. This system allows a plug-in approach for various resources. A similar goal is also a major research topic of active and programmable networks [15]. This architecture enables users to inject customized programs into the nodes of the network in which the switches perform customized computations on the messages flowing through them. The development of active networks is motivated by the increasing requirement of user-driven computation and by the emergence of mobile code technologies that make dynamic network service innovation available. Dynamic resource management and adaptive QoS is another related field, which focuses on developing resource management mechanisms with different kinds of customized services. Some recent approaches [4, 5, 6, 13] are based on dynamic management using CORBA. Some other approaches are based on management rules for specific protocols of the network or of other layers [8, 9]. An SNMP-based network management schema using CORBA was proposed in Bell Laboratory [8]. For the development of resource adaptability for such network in this paper a integrated approach to such a network is proposed. The rest of the paper is presented in eight sections. Where in section II the design constraint wrt. QoS in heterogeneous network is been focused. In Section III the information transformation approach for resource adaptability is been defined. The transportation mechanism for such a network is defined in section IV. Section V defines the control strategy outlined for the proposed approach. The observations obtained for such a network is presented in section VI. The conclusion is presented in section VII.

II. QOS MODELING

For the development of a Heterogeneous network environment various constraints need to be considered in the designing phase. Three different resource requirement sessions can be raised from the user application:

A. Guaranteed QoS

The requirement is specified in terms of parameters of services. For example, for a switch-like resource, these parameters would be bandwidth, delay, reliability and jitter. The return code for this application requirement is simple: it informs the user application whether the request was completed successfully, appended to a waiting list or rejected.

B. Priority level QoS session

The user desires a certain level of service from the system, but with no particular parameters as the case in the first session. The return code is similar to the first session, with the addition of the Resource Evaluator's object reference.

C. "Best effort" service

The user wishes to have the best possible results from the system as a whole. The service request message is tagged with the current values of the "benefit" function and the signature of the Resource Evaluator that can provide it. Replies are of the same format as for the priority level QoS sessions.

III. STREAMING MECHANISM

An important characteristic of the Resource Evaluators is that, although their management mechanism is resource and/or system specific, their operational interface as well as the

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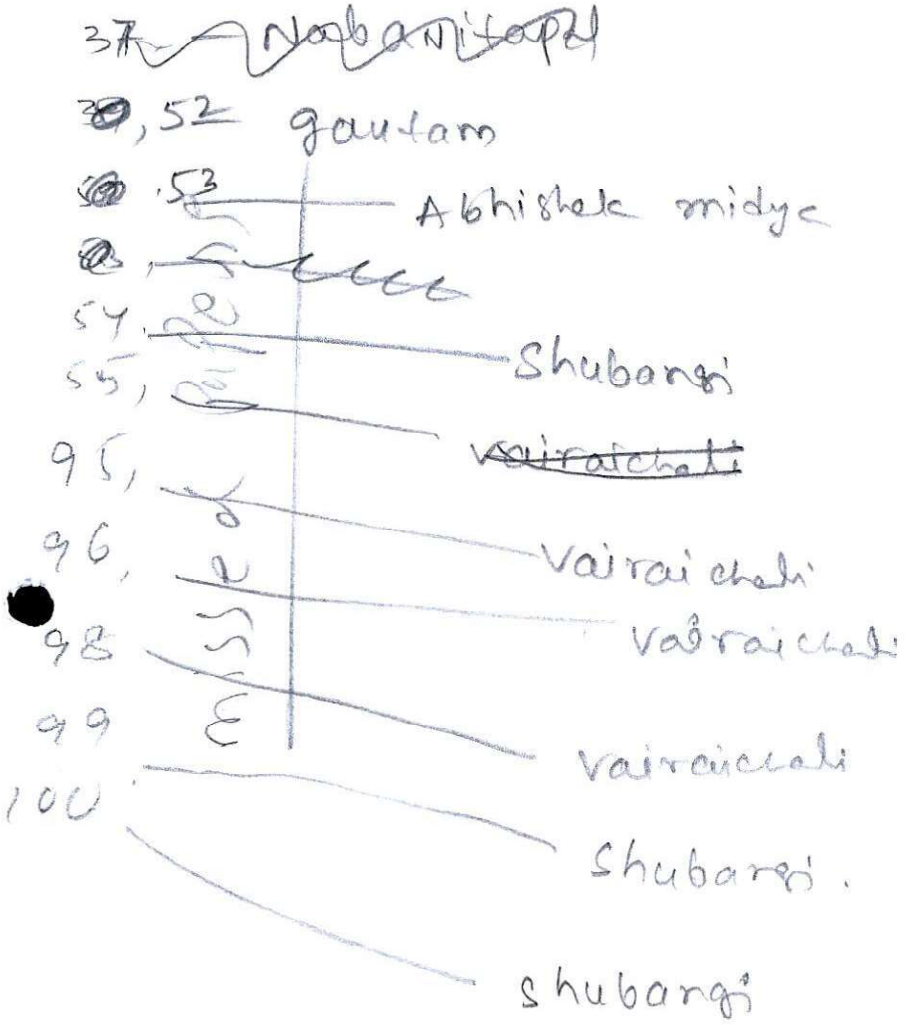

1

Construction of new rational potentials and their solutions using Darboux transformations

S. Sree Ranjani *

The discovery of exceptional orthogonal polynomials (EOPs) by Kamran *et.al.*, [1], [2] extended the class of orthogonal polynomials arising as the solutions of the Sturm-Liouville operator. The first polynomials to be constructed were the exceptional Laguerre and Jacobi polynomials of codimension 1. Later on polynomials with codimension m have also been constructed. The characteristic feature of this new class of polynomials is that the series can start with a polynomial of degree $l, (l = 1, 2, ...)$ and still forms a complete set with respect to a positive-definite measure. Another feature of these polynomials is that their second order differential operators have regular singular points (read poles) in their coefficients. The discovery of these new polynomial classes also extends the scope of the Bochner theorem on characterization of orthogonal polynomial systems defined by Sturm-Liouville's problem [1], [3].

The connection between the EOPs and shape invariant potentials (SIPs) was first realized by Quesne [4]. Using Darboux transformation, she constructed new potentials, rational extensions of the radial oscillator and the Scarf potential, with X_1 exceptional Laguerre and Jacobi polynomials as solutions. Later, Sasaki *et.al.*, constructed potentials which have solutions in terms of EOPs of higher codimension [5]. In our recent study, we have shown that the QHJF in combination with supersymmetric quantum mechanics (SUSYQM) provides a simpler method to construct these new rational potentials [6]. The Riccati equation plays an important role here and the connection between the Riccati equation and second order linear differential equation is utilized to arrive at the results. The method also exploits supersymmetric quantum mechanics techniques. Our method allows one to construct a hierarchy of generalized exactly solvable rational potentials and their solutions in simpler way. In addition, the method automatically takes care of the weight regularity problem, which arises when one rationalizes the weight function.

In the current study, we explore the idea of further generalizing this method to construct new rational potentials. Though the method is general and applicable to all ES models, we have specifically used it to study the rational radial oscillator potential discussed in [4], [5] and [6]. We have constructed rational extensions to this potential. The preliminary results for the solutions of these new potentials look very promising and offer an interesting prospect of either extending the class of EOPs or leading us to a totally different class of polynomials. This work is still under progress and the results will be presented.

References

[1] Gómez-Ullate D, Kamran N and Milson R, An Extension of Bochner's Problem: Exceptional Invariant Subspaces , J. Approx. Theory 162: 987 2010; (arXiv:0805.3376).

[2] Gómez-Ullate D, Kamran N and Milson R, An extended class of orthogonal polynomials defined by a Sturm-Liouville problem, *J. Math. Anal. Appl.* 359: 352, 2009; arXiv:0807.3939.

[3] M. Ángeles García-Ferrero, David Gómez-Ullate, Robert Milson, A Bochner type classification theorem for exceptional orthogonal polynomials, arXiv:1603.04358

[4] Quesne C, Exceptional orthogonal polynomials, exactly solvable potentials and supersymmetry, *J. Phys. A: Math. Theor.* 41, 392001, 2008; arXiv:0807.4087.

[5] Odake S and Sasaki R, Infinitely many shape invariant potentials and new orthogonal polynomials , *Phys. Lett. B* 679, 414, 2009; arXiv:0906.0142.

[6] Sree Ranjani S, Sandhya R and Kapoor A K, Shape Invariant Rational Extensions And Potentials Related to Exceptional Polynomials *Int. J. Mod. Phys. A* 30, 1550146, 2015; arXiv:1503.01394.

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in the 61st Congress of ISTAM organised by the Department of Mathematics, School of Advanced Sciences (SAS), VIT University, Vellore during 11th to 14th December, 2016.

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International Conference on Emerging Trends in Mechanical Engineering (ICETiME-2016), September 23-24, 2016 at Faculty of Science and Technology, ICFAI Foundation of Higher Education, Hyderabad, Telangana, India.

Seismic Assessment and Retrofitting of elevated water tank using Active Tendon Control

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Abstract— **A seismic assessment and advanced retrofit study on reinforced concrete elevated water storage tank is presented in this paper. Need for retrofitting of old heritage water tank like Tala Tank in Kolkata, is very essential otherwise any time these old structures may collapse. The dynamic behaviour of the fluid is simulated by means of classical convective and impulsive mass model, for which a discrete three dimensional schematization is originally implemented in finite element model. The time-history assessment enquiry highlights excessive deformation of water tank or even collapse of the frame structure in the elevated water tank. Based on these results, one retrofitting technique is proposed namely an active tendon system. The mechanical parameters, design criteria and technical implementation details are illustrated. The verification time-history analyses in protected conditions show that a substantial enhancement of the seismic response capacities** of structure is attained as compared to original structure.

Keywords— **Dynamic of structure, Active Control, Elevated Water Tank, Finite Element Analysis.**

1. INTRODUCTION

Water storage tanks represent strategic lifelines especially in earthquake-prone regions, for their essential role in fighting fires that often occur during severe seismic events, as well as in mitigating the consequences of water shortage resulting from damage to municipal aqudent and pipelines, in the post-quake emergency phase. Water tanks have been traditionally build in elevated position over a supporting structure, so as to reach the pressurization required by the supply system simply by gravity, limiting the action of pumps to the refilling phase. As a consequence, elevated water tanks are normally rather tall and slender. This marks significant geometrical and structural differences with storage tanks for liquids of industrial use, such as oils, petroleum, nitrogen and liquefied natural gasses, most of which are broad in plan and ground supported.

The supporting structure of elevated tanks, mainly constituted by pre-normative R/C frames or R/C (or masonry) shaft-type shells, and in few cases by steel braced frames, is generally the weakest portion of the structural system, which determines a high seismic vulnerability of these facilities. This is also demonstrated by severe damages and collapses suffered by elevated tanks in past and recent earthquakes [1]. Another peculiar hazard is represented by the fact that, unlike industrial liquid tanks, water towers are often situated in urban areas, and even in city centres; therefore, their partial or global failure can cause heavy damages to the surrounding buildings and infrastructures, with serious consequences for the safety of a great number of in habitants. At the same time, many old water towers are now considered historically significant and have been included in the heritage listings of several earthquake-prone countries. This imposes their preservation and possible seismic retrofit by means of low impact structural solutions, respectful of their recognized architectural and engineering value.

2. Literature review:-

A definition of cable is ''a wire or wire rope by which force is exerted to control or operate a mechanism. Cable members have been traditionally used in civil structures. Suspended bridges, cable-stayed bridges, guyed towers, stadium roofs and tent structures are examples. Also, aeronautical engineers use cable members for control since cables usually involve less technical difficulties compared with strut control. Rohman [2] proposed the active control of a tall building using tendons as an alternative to an active tuned mass damper. Although the tendon control system may need larger forces than the tuned-mass damper control, when applied to a building subjected to wind loading, it provides more efficient control than a tuned-mass damper system. Yang et al. [3] developed an analytical procedure to compute the properties of the structural response of a tall building implemented by an active control system and excited by a random wind flow.

It was demonstrated that significant reduction of the acceleration response using either an active mass damper or an active tendon control system is possible. Soonget al. [4] implemented full scale active control experiment by providing tendon at lower floor. The control algorithms were based on the classic optimal closed-loop control theory. Agrawal et al. [5] had discussed time delay due to time taken in data acquisition and time delay due to a mechanical system to build up required control force. Lin [6] analysed soil–structure interaction effect on vibration control effectiveness of active tendon systems for an irregular building, modeled as a torsionally coupled structure, subjected to base excitations such as those induced by earthquakes.

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for the paper entitled:

Quality of Service in Cloud Environment

authored by :

Sirisha Potluri and Kambampati Krishna

presented by :

Sirisha Potluri

at the 6th International Advanced Computing Conference (IACC 2016)

organized by IEEE Computer Society – India Council and S R K R Engineering College during

February 27-28, 2016

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HYBRID SECURITY MODEL IN CLOUD COMPUTING

in ICEECE'16 on 22nd & 23rd March - 2016 at Vivekanandha College of Engineering for Women, Tiruchengode, Namakkal District, Tamil Nadu, India.

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International Conference on Emerging Trends in Mechanical Engineering (ICETiME-2016), September 23-24, 2016 at Faculty of Science and Technology, ICFAI Foundation of Higher Education, Hyderabad, Telangana, India.

A Study on Cloud Manufacturing Systems

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Abstract— **Nowadays, Manufacturing business may not sustain the competitive business without the support of Information Technology and Computer Aided Capabilities. Cloud computing can improve the productf design environment, enterprise resource planning, manufacturing resource management Manufacturing process management, by providing an optimized solution. Cloud computing provides manufacturing resources and manufacturing capabilities as manufacturing services on-demand thereby providing a feasible solutions for all kinds of users involved in the whole lifecycle of manufacturing. This paper discusses the various cloud models used in manufacturing sector to automate the manufacturing process.**

Keywords— Cloud computing, SaaS, IaaS, Paas, BPaas, Cloud Manufacturing.

1. INTRODUCTION

Due to rapid growth of data many industries are using cloud to compute their activities. Cloud computing can be stated as "sharing of computer, resources and IT related infrastructure over the internet". This technology enables on-demand self-service, broad network access, rapid elasticity, measured service and resource pooling. The two types of models used in cloud are deployments models and service models. Using deployment models a cloud can be deployed in an organization in four ways (private cloud, public cloud, community cloud and hybrid cloud). Cloud architecture contains software, hardware and other resources can be delivered to the user as a service. Infrastructure as a service (IaaS), Platform as a service (PaaS), Software as a service (SaaS) and Business processes as service (BPaaS) are cloud service models and users are charged based on the usage. As technology increases the risk factor in industries has also increases. In mechanical industries the application of cloud computing provides the automation of the plant and provides control from anyplace by using service models.

2. EXISTING SYSTEM:

The existing system is maintained manually by onsite engineers and automated sensor system. The decision has be taken based on system parameters by comparing automated sensor system and onsite engineer. The operation management is completely taken care by onsite an engineer who works in shifts. In case of emergency if it cannot be managed or handled by onsite engineer results in either the plant being shut down or projects being rushed to the plant. This process involves many risks and high cost is involved to rescue the organization.

3. PROPOSED SYSTEM :

To overcome the problems of existing system manufacturing systems can be automated using cloud technology. Using cloud computing the plant can be controlled from anyplace on the earth by using service models. This is called SCADA (supervisory control and data acquisition). Parameter management, real time monitoring, parameter variation at different conditions are handled by the control system. This control system uses sensors at different points in the system and the obtained from the sensors is fed to the control circuitry in the main control monitor. The monitoring panel is managed by the trained technical personal who watch the entire panel with a hawk eye to prevent any mishaps. Even though the entire operation of the system is automated, the management is in general on sensor based system with manual management.

The cloud server is programmed to provide services to control system. This cloud enabled control system can be deployed in four ways.

A. Private Cloud

The entire document should be in Arial font. Recommended font sizes are shown in Table 1.

By using this deployment model the services provided by the cloud are accessible only to the members of the organization. Usually government manufacturing industries and large scale manufacturing industries uses private cloud to automate the control system.

B. Public cloud:

By using this deployment model the services provided by the cloud are accessible to general public. The manufacturing industries can use these resources to automate the control system.

C. Community cloud:

By using this deployment model the services provided by the cloud are accessible by specific community of users from organizations that have shared interest. The manufacturing organizations having common background or with shared concerns within the community or society can form a community cloud to maintain the control system. Community clouds are an intermediary between private and public clouds. It may be managed and operated by one or more of the organizations in the specific community, a third party, or some combination of them, and it may exist on or off premises.

D. Hybrid cloud:

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Image Retrieval using Lower Order Zernike Moments

G. Sucharitha

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Koneru Laxmaiah University, Vijayawada, AndhraPradesh

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ABSTRACT:

Shape is one of the important features of Content Based Image Retrieval (CBIR). For shape classification Zernike moment is the dominant solution. In this paper more efficient lower order ZMs are introduced. The novelty of approach is giving an advantage of lower order and less complexity. To improve the speed of ZM calculation one of the best methods is reducing the order of a basis Zernike polynomial and make the moment consists of only real part instead of complex value. To make only real part in Zernike polynomial we made number of rotations are zero. Due to this adjustment not only the complex reduction but also reduced the redundancy from approximated equal moments. For more similar images we find that simple Euclidian distance approximately zero. Experiments demonstrated that it reduced the retrieving time and complexity of calculations.

Keywords: ZM, Shape, Euclidian Distance, CBIR.

* * *

Automated Traffic Priority for Emergency Vehicles

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Patnamraviteja44@gmail.com

ABSTRACT:

The project automated traffic priority for emergency vehicles using wireless technology refers for rescuing of emergency vehicles in traffic jam. The performance of the intelligent automated Traffic Light

Controller is compared with the fixed mode traffic light Controller and is more efficient in respect of less waiting time with the efficient operation during emergency mode wi th magnetometer interface. This could be done whenever an emergency vehicle movement is disturbed by heavy traffic, the magnetometer and xbee modules which are interfaced with microcontroller transmit the direction of emergency vehicle. At the receiving section the xbee receives the current direction of the emergency vehicle and corresponding automatic traffic signals are generated with the help of microcontroller. Moreover, the proposed system has simple architecture, user friendliness and has the scope for further expansion.

Keywords: Xbee, Magnetometer, Ambulance, Traffic signals.

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International Journal of Scientific & Engineering Research, Volume 7, Issue 6, June-2016 87
ISSN 2229-5518

Hydrocarbon Refrigerant mixtures as an alternative to R134a in Domestic Refrigeration system: The state-of-the-art review

D.V.Raghunatha Reddy, P.Bhramara, K.Govindarajulu

Abstract-The objective of this paper is to present review on the alternative refrigerants used in the domestic refrigerators to have better performance with minimum losses. This paper give the summary and range of various refrigerants used in the domestic refrigerators. of global warming which affect the environment by the use of refrigerant, and our aim is to reduce the effect of global warming as well as optimize the performance of domestic refrigerators by using the latest refrigerants. This review paper represents the recent developments done in domestic refrigerator. Performance of refrigerator is increased by using different refrigerants. R134a is used in domestic refrigeration and other vapor compression system. R134a is having zero ozone depletion potential (ODP) and almost good thermodynamic properties, but it has a high Global Warming Potential (GWP) of 1300.The higher GWP due to R134a emissions from domestic refrigerators leads to identifying a long term alternative to meet the requirements of system performance, Therefore it is going to be banned very soon for environmental safety. Some new refrigerants is been found by researchers which are environmental friendly refrigerants having low GWP and low ODP. Hydrocarbon refrigerants particularly propane, butane and isobutene are proposed as an environment friendly refrigerants. After reviewing the various literatures on the hydrocarbons (R290 and R600a) refrigerants and their mixture gives good performance in small capacity domestic refrigerator to replace R134a.

Keywords: Hydro fluorocarbon refrigerant, GWP, ODP, Alternative refrigerants, Hydrocarbon refrigerants, Propane (R290), Isobutene (R600a).

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1 Introduction

Refrigerator is one of the home appliance utilizing mechanical vapor compression cycle in it process. The Vapor Compression Refrigeration Cycle is a process that cools an enclosed space to a temperature lower than the surroundings. To accomplish this, heat must be removed from the enclosed space and dissipated into the surroundings. However, heat tends to flow from an area of high temperature to that of a lower temperature. Figure (a) shows an ideal single-stage vapor compression refrigeration cycle in which compression occurs in the superheated region. Many investigators have reported that GWP of HFC refrigerants is more significant even though it has less than that of chlorofluorocarbons (CFC) refrigerants. HCFCs (hydro chlorofluorocarbons) and CFCs (chlorofluocarbons) have been applied extensively as refrigerants in air conditioning and refrigeration systems from 1930s as a result of their outstanding safety properties. However, due to harmful impact on ozone layer, by the year 1987 at Montreal Protocol it was decided to establish requirements that initiated the worldwide phase out of CFCs. By the year 1992, the Montreal Protocol was improved to found a schedule in order to phase out the HCFCs. Moreover in 1997 at Kyoto Protocol it was expressed that concentration of greenhouse gases in the atmosphere should be established in a level which is not intensifying global warming ozone layer. Subsequently it was decided to decrease global warming by reduction of greenhouse gases emissions.

2 Analysis of vapor compression refrigeration cycle

Figure 2 shows the refrigeration cycle on p-h diagram. The refrigerant evaporates entirely in the evaporator and produces the refrigerating effect. It is then extracted by the compressor at state point 1, compressor suction, and is compressed isentropic ally from state point 1 to 2. It is next condensed to liquid in the condenser, and the latent heat of condensation is rejected to the heat sink. The liquid refrigerant, at state point 3, flows through an expansion valve, which reduces it to the evaporating pressure. In the ideal vapor compression cycle, the throttling process at the expansion valve is the only irreversible process, usually indicated by a dotted line. Some of the liquid flashes into vapor and enters the evaporator at state point 4. The remaining liquid portion evaporates at the evaporating temperature, thus completing the cycle. Fig:1

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International Conference on Emerging Trends in Mechanical Engineering (ICETiME-2016) , September 23-24, 2016 at Faculty of Science and Technology, ICFAI Foundation of Higher Education, Hyderabad, Telangana, India.

Use of Nano Materials in the Construction on NPP's

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Abstract— **Nuclear power plants (NPP's) are large and have complex facilities. These plants will however operate on very large temperatures and the materials used in their construction will experience significantly higher levels of radiation. It is therefore very important to understand the effects of radiation on these materials. Radiation will create the defects, and affect the strength and performance of the materials. One idea here is if we construct nuclear materials by using nano - materials we can make nuclear power plants more efficient. In this paper the brief introduction of nanomaterials will be elaborated and will discuss various ways in which some of these particles may make nuclear power plants more efficient.**

Keywords— **Radiation, Nano-materials , Nuclear Power Plants.**

1. Introduction

Nuclear reactor contains fissile material (like 92U235) and inside the reactor a continuous fission reaction takes place. As we know each fission releases enormous amounts of heat (nearly 200MeV), also high amount of radiation.

* Nano materials - objects with at least one dimension between 1 and 100 nanometers

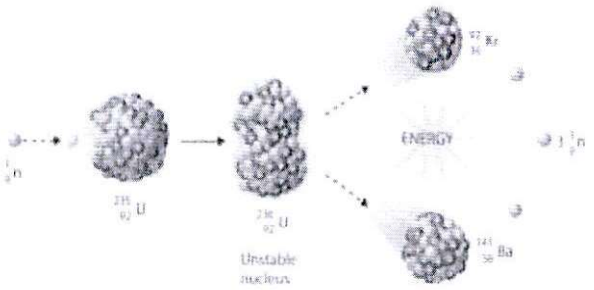

Fig 1 - Fission Reaction with ^{235}U

So Nuclear reactor should be constructed with those materials which are capable of holding (or bearing) high amount of radiation as well as heat for long time without developing cracks in the material (breakage).Taking these factors into account few studies are going on the topic - what if Nano-materials* are used for the construction of Nuclear Reactor. In this Paper we are presenting various researchers idea and approaches.

2. Nano-Technology & Nano materials

Nanotechnology deals with new approach in making things through understanding and control over the fundamental building blocks [1] (atoms, molecules).Nanotechnology is well-defined and well- structured.A material science based approach to nanotechnology leads to the development of *Nano - materials.* Those materials with structure at Nano-scale always exhibit unique electro-mechanical properties [2].

3. Synthesis:

A method to design Nano-materials by control of size (≈ 1 – 100nm), in order to attain our required property. Basically there are two approaches using which Nano-materials are developed

i. Bottom Up

ii. Top Down.

These two models are fundamentally different, both in the approach to creating structures and in the underlying science that will make them possible [3].
In *"Top down"* approach the size of structures will be reduced to nano size with the help of machining and etching techniques.

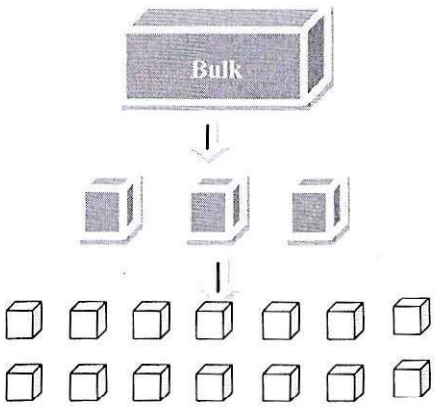

Fig. 2 - Top Down Approach

'Bottom up' approach, often referred to as molecular nanotechnology, implies controlled or directed self assembly of atoms and molecules to create structures [4]. Bottom up method is categorized into – *'chaotic process and controlled process'*

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3D Bio-printing of Skin: An Overview

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Abstract— Skin is the body's largest and important organ for sensing. Losing of the skin provides the results in fluid and heat loss and the risk of infection, where as in open wound and post-surgery it is very difficult to operate and perform any action at those areas. The traditional treatment for deep burns is to cover them with healthy skin harvested from another part of the body, which creates a lot of pain overall than original pain area. This paper covers with details of skin, various printing technologies of skin and various challenges and scenario of 3D bio printing of skin in future. Additive manufacturing-3D Printing had succeeded in making the things impossible to possible and also very simple way of creating artificial ears, knees, etc. In addition to this, Additive Manufacturing was proving better than traditional way of skin grafting to applying 3D printed skin to the area and within hours' time the tissue culture will abide to normal body and skin gets covered in specified area.

Keywords— Additive Manufacturing, Skin, Tissues, 3D Printing, Artificial Skin

1. INTRODUCTION

Skin grafting and skin burns are common cases which we hear regularly come across problems through skin. In case of high burn injuries, the barrier function of the skin is destroyed by oozing out the liquid and protein losses which results out a life threatening condition. Moreover, the skin acts as a sensory organ that can detect pain, contact, pressure, vibration, itching, and temperature. This contributes to our protection, but also to our general perception of the environment by complementing visual or auditory perceptions.

On the social level, the skin is essential in representation, communication, and manifestation of current mood. It is therefore important for daily living, especially for communication and interaction among individuals. In this context, people's skin colour may indicate their habits and preferences (e.g. having deeply tanned skin due to regular engagement in outdoor activities or frequent visits to a solarium). Also, the hair can send optical signals with social, cultural, psychological, or political content, depending on its form, colour, presence, or absence.

2. SKIN AND ITS STRUCTURE

Skin being the largest organ which covers the whole body with covering a surface area of 1.5–2 m^2 with the weight of 3–10 kg. Being its unique nature which represents like a barrier between the external environment and the inside of the person, thereby serving as a highly effective means of protection against environmental hazards such as chemical, mechanical, and thermal influences, irradiation, or pathogens. Apart from its protective function against external influences, the skin is crucial for the maintenance of temperature and water balance homeostasis, avoiding conditions such as dehydration or hypothermia.

The skin is composed of four layers, namely, the epidermis, the basement membrane, the dermis, and the hypodermis. (Figure 1) All of these structures, except the basement membrane, contain various specialized cell types and serve different purposes.

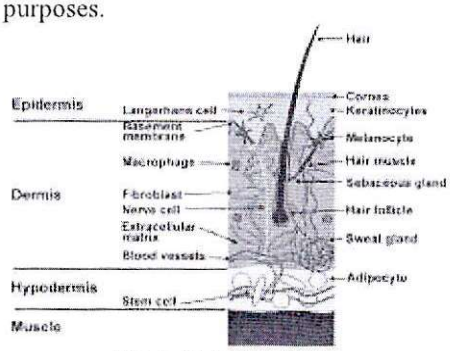

Fig.1-Details of Skin

2.1 EPIDERMIS

The epidermis is the topmost skin layer which consists of multilayered epithelium which are formed by keratinocytes. Based on the location, the epidermis are normally about 0.05 mm thick, but reaches several millimeters at the palms and the sole of the feet. Throughout life the epidermis get regenerated continuously with a turnover rate about 30–56 days. It is composed of four layers: the basal layer, the spinous layer, the granular layer, and the cornified layer (from inside to outside). In the basal layer, epidermal stem cells are responsible for the regenerative capacity of the skin. These are the source cells of all keratinocytes which forms the epidermis.

Epithelium the thin tissue which forms in the outer layer of the body's surface which are aligned with the alimentary canal and other hollow structures. For the formation of a stable epithelium, the cells are connected via cell-cell and cell-matrix junctions. Adherens junctions and desmosomes provide a mechanical connection and thereby mechanical strength between neighboring keratinocytes, while hemi desmosomes and actin-linked cell-matrix adhesions are responsible for the coupling of cells to the underlying basement membrane. The barrier, however, has a selective permeability that can be altered depending on the circumstances. Moreover, gap junctions form channels between the cytoplasms of neighboring cells via transmembrane proteins (connexins), which allows the exchange of low molecular substances (e.g. hormones,

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Paper Code: AMP-03

Title of the paper: Additive Manufacturing Techniques in Bio printing

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AMP-03

ADDITIVE MANUFACTURING TECHNIQUES IN BIOPRINTING

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ABSTRACT

Additive manufacturing is engraving its roots into various fields of manufacturing. It even has its unique approach towards Bio-printing, which has its roots in conventional additive manufacturing (AM) or layered manufacturing approaches. This paper deals with the review of various technologies available and also in brief about their comparisons and future challenges of Bio-printing. Bio-printing also helps in regenerative medicine with the ability of the machines that can be utilized in clinical rooms to achieve personalized tissue-on-demand and remanufacturing of organs.

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Models are validated by ...

MSO-16

OPTIMIZING THE TOOL LIFE OF A HYBRID MATERIAL USING GENETIC ALGORITHM

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ABSTRACT

Manufacturing sector considered as the backbone for economic development of any nation. For competing in the global market and registering high growth we need to concentrate on optimal methods of manufacturing. As the cost of material is occupying a 70 - 80 % of the total cost and with increasing manufacturing costs and decreasing the profit margins, it is more important for the manufacturers to choose right type of tooling that will produce accurate and precision parts every time at lower costs. The present paper will focus on the hybrid materials, PW30 and GW15, as a tool and various parameters which will affect the tool life. Various parameters that will be considered in this paper are cutting speed, depth of cut and feed rate. The process parameters of different hybrid materials are optimized using Genetic algorithm (GA).

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for participating and presenting a paper titled NSGA-II Approach for Multi-objective Optimization of Wire Electrical Discharge Machining Process Parameters in Inconel 718

in **5th International Conference on Materials Processing and Characterization** (ICMPC-2016) by the Department of Mechanical Engineering, **Gokaraju Rangaraju Institute of Engineering and Technology** (GRIET), Hyderabad, Telangana in collaboration with **Maulana Azad National Institute of Technology** (MANIT), Bhopal, INDIA, during **12-13 March 2016.**

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Characterization of LD Slag Filled Polypropylene-SGF Composites

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Abstract— **LD slag is a major solid waste generated in huge quantities during steel making. It comes from slag formers such as burned lime/dolomite and from oxidising of silica, iron etc., while refining the iron into steel in the LD furnace. Although a number of ways for its utilization have been suggested in the past, its potential as a filler material has not yet been explored. The present article reports on characterization of a new class of hybrid composites prepared by reinforcement of short glass fibers (SGF) in LD slag (LDS) filled polypropylene (PP) matrix. In this investigation, composites with different LDS content (0, 7.5, 15 and 22.5 wt%) in a polypropylene matrix base with 20 wt% SGF reinforcement are prepared by injection molding technique. The composites are characterized in regard to their density, porosity, micro-hardness and strength properties. This work also shows that LD slag possesses fairly good filler characteristics as it modifies the strength properties and improves the composite micro-hardness of the polymeric resin.**

Keywords— **Polypropylene, LD slag, SGF, Characterization, Industrial wastes**

1. Introduction

Polypropylene is commonly employed thermoplastic polymers because of its low price, stabilized properties and simple processability. In order to further enhance its functional properties and thus to extend the application domain, incorporation of particulate fillers is frequently employed. Available references suggest a large number of materials being used as fillers in polymers [1]. Various kinds of polymers and polymer matrix composites reinforced with metal particles have a wide variety of industrial applications such as heaters, electrodes [2], composites with thermal durability at high temperature [3] etc. Hard particulate fillers consisting of ceramic or metal particles and fiber-fillers made of glass are being used these days to improve the performance of polymer composites to a great extent [4]. The inclusion of such particulate fillers into polymers for commercial applications is primarily focused at the cost reduction and stiffness improvement [5]. Various researchers [6, 7] have reported that the wear resistance of polymers is improved by the addition of fillers. There have been various reports on the use of inorganic fillers like alumina and silica in polypropylene [8, 9] and polyethylene [10, 11]. Though a good number of works have been carried out on particulate filled polymers, the potential of LD slag, a solid waste, as a filler material in PP or in any other polymeric matrix, has not been reported so far. In view of this, the present work is undertaken to explore the possibility of fabricating a new class of thermoplastic composites using PP as the matrix base and LD slag as the particulate filler.

2. Experimental Details

2.1. Composite Fabrication

Injection molding machine is used for fabricating PP based composites samples. PP granules with 20 wt% of SGF mixed with different proportions of LD slag are preheated to 800C temperature for 3 hours. Since PP material is hydrophobic (maximum absorption capacity is 0.01%), moisture will be on the surface only. During preheating process, moisture on the surface is evaporated. The polymeric raw materials are fed into the barrel through the hopper and this process is called screw refilling. After screw refilling process, plunger moves linearly backward to maintain set back pressure in the barrel. Now, entire injection system is moved toward mold cavity by means of guide ways; injection nozzle is fed into the inlet of the mold. Screw plunger in the barrel moves forward and pushes the material through three heaters, which are maintained at a temperature of 2250C, 2300C and 2350C in the mold cavity. Mold cavity is completely filled with PP (solid state); 40 tonnes of clamping force is applied and held for

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Prediction of Machining Parameters in Turning Operation to Reduce the Tool Vibration and Cutting Forces using GRA Combined Taguchi

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Abstract— Now a day's one of the most important machining processes in industries is turning. Turning is affected by many factors such as the cutting velocity, feed rate, depth of cut and geometry of cutting tool, etc., which are input parameters in this project work. The desired product of dimensional accuracy and less surface roughness is influencing by cutting force and tool vibration which are the responses and the functions of these input parameters. In this present work, we determine the optimal setting of cutting parameters cutting speed (N)), depth of cut(d) , feed(f) and principal cutting edge angle (Φ) of the tool to get a minimum cutting force and tool vibration. In this project dry turning SS304 of diameter 30mm as a work piece and carbide insert tool (SCMT 09T308-TN5120) is done in an automatic lathe. This study highlights the use of Grey logic and use of Taguchi design to optimize the multi response in turning operation. For this purpose Taguchi design of experiment was carried out to collect the data for tool vibration and cutting forces. The result shows the optimum values of the input parameters and a confirmatory test is held to confirm the results.

Keywords— GRA, Optimization, Taguchi method, Tool vibration, Turning.

1. INTRODUCTION

In the modern industry technology is advancing. For that engineers should be ready to achieve product of good surface finish, economic production, less wear of cutting tool with optimizing the use of resources [1]. One of the most important manufacturing process in mechanical engineering is metal cutting which is defined as metal removal of chips from job to achieve the desired product of appropriate shape, size and surface roughness [2]. In metal cutting most regularly used method is turning in which a single point cutting tool does metal removal by giving feed in a parallel direction to the axis of rotation. Turning can be done in an automated lathe machine which does not require more labor or frequent supervision by operator.

Tool vibration plays an important role in turning. A large number of extensive study has been conducted in the past on tool vibration control [3,4,5]. Vibration in a turning is of 3 types [4]. Free vibration has little insignificance as compared to other 2 types. Self excited vibration is produced from instability in turning. Vibration in a machine is direct effect of dynamic nature of force in turning process which is called forced vibration [6]. It is needed to be reduced because an uncontrolled vibration brings wear in cutting tool, decreases the surface finish and also produces unhealthy noise. Tool vibration analysis [7] has revealed that cutting parameters not only have an effect on the amplitude of vibration, but also on the variation of the natural frequency of the tool. Vibration can be measured in terms of peak to acceleration, r.m.s of velocity and peak to peak displacement. Here in this project work peak to peak displacement is taken into consideration for measuring vibration

In addition to vibration cutting forces also affects the deformation of work piece, dimensional accuracy and chip formation. So it is also an important response in metal machining [8].

Our main concern now a day is to achieve improved quality and economic productivity with reduced cost and time. It is challenging to acquire good surface finish and less tool wear while working with materials having high strength, corrosive resistance and wear resistance in turning. In order to overcome the above problem, optimized cutting parameters are to be employed [9].So optimization of multi response is very much essential in industrial application. As compared to single response optimizing technique it is better because all factor is affected at a time by all the input factors. For this drive Taguchi method is introduced which is an important statistical tool that provides cost effective and systematic way to optimize cutting parameters. It has been successfully used in designing good quality at low cost in the field of automotive, aerospace etc. [10]. The theory of grey system is an advanced procedure for performing prediction, relational analysis, and decision making in many areas which is used for finding optimal solution in this project work [11].

Many studies are carried out on single response optimization. From engineering point of view multi objective optimization is better as compared to single response optimization. So the present work shows the application of grey relation combined with Taguchi's optimization design to find optimal setting of the input parameters (feed, speed, depth of cut and principal cutting edge angle) to minimize cutting forces and tool vibration (in terms of peak to peak displacement).

2. Methodology

It is a statistical method used to improve the quality of manufactured product [12]. According to Taguchi [13]

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Simulation of Coal Gasification process for CO_2 capture using 2-D CFD Model in a Fluidized bed for Indian Coal

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Abstract: **Fluidization process is very important in gasification and also its design. In this paper a model of fluidized bed gasifier with CO2 capture of an Indian coal is developed using MFIX software developed by NETL. Theevaporation and devolatilization processes are described using simplified chemical reactions, whereas carbonation reaction is modeled by the grain model. Initial and steady state stages of the gasification process are simulated. The simulated results demonstrate that a substantial increase in hydrogen content in product gas can be achieved by the addition of the CO2 sorbent material.**

Keywords: Multiphase flow, gasification, CO2 capture, Fluidization

1. INTRODUCTION

Coal gasification with CO2 capture is most promising clean energy technology for producing high quality syngas (essentially a combination of CO and H2) from which H2 and other petrochemical products/fuels can be produced. This technology is the result of increasing demand for an environmental friendly fuel to meet the future energy needs. Gasification process involves complex chemical reactions and mechanisms. Many studies have been carried out in the recent years to understand gasification process better. In this paper we attempt to simulate the gasification process of Indian sub-bituminous coal on a 2-D fluidized bed model.

Nomenclature

R_{ml}	Formation rate of species
$\vec{V}$	Velocity Vector
$\vec{I}$	Momentum Exchange
$\bar{\bar{S}}$	Stress tensor
ε	Volume fraction
ρ_m	Density of phase m
X	Conversion of solid reactant
Y	Mass fraction
P	Partial pressure, atm
T	Temperature, K
K	Prefactor for chemical reaction
E	Activation energy
C	Solid reactant density, mol/m^3
ΔH	Heat of reaction, kJ/mol

Subscript

g	Gas phase
s	Solid phase
m	Index of phase
l	index of lth species in phase m
α	Index of reaction

Superscript

0	Initial value
*	Equilibrium conditions

Jose et al [1], studied on coal gasification by steam with CO2 capture in fluidizing bed at low/medium temperature (600-800oC). In the experiment carried out by them, it was found that the H2 content in the syngas is as high as 80% in molar fraction [2]. The experimental study conducted by Lin et al consisted of coal gasification with continuous supply of coal/CaO mixture at high pressure. The results indicated that the H2 production is increases with pressure and syngas contained <3% CO and CO2.

One of the most important issues of coal gasification is the removal of CO2 from syngas. Various approaches for capturing CO2 are pre-, post- and oxy-combustion techniques. Post combustion process- an end of stack capture is well established and mature technology. Pre-combustion process has inherent advantage of availability of CO2 at higher partial pressure. High temperature sorbent based techniques are suitable for pre-combustion capture as viewed by G Suresh Kumar et al [3], and Calcium based sorbents are suitable for CO2 capture [4,5].

The three major reactions that occur in gasification process are:

Steam gasification:
$C + H2O \rightarrow CO + H2$ $\Delta H = 131.3$ kJ/mol
Water gas shift reaction
$CO + H2O \rightarrow CO2 + H2$ $\Delta H = -41.2$ kJ/mol
Carbonation reaction:
$CaO + CO2 \rightarrow CaCO3$ $\Delta H = -178.2$ kJ/mol
Regeneration process:
$CaCO3 \rightarrow CaO + CO2$ $\Delta H = 178.2$ kJ/mol

Designing of new gasifiers with CO2 capture need accurate simulation of the gasification process.Such

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A Review on Performance of Vapour Compression Refrigeration System using Nano Additive Refrigerants

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Abstract - **Now a days, researchers focused on use of Nano additive refrigerants in vapour compression refrigeration system (VCRS) because of their remarkable improvement in thermo-physical and heat transfer capabilities to enhance the Coefficient of Performance (COP) and reliability of refrigeration system. Based on results available in the literatures, it has been found that Nano additive refrigerants have a much higher and strongly temperature-dependent thermal conductivity at very low particle concentrations than conventional refrigerant. This can be considered as one of the key parameters for enhanced performance for refrigeration systems. In this review, we summarized the performance enhancement of vapour compression refrigeration system using Nano additive refrigerants reported by different researchers. Moreover, challenges and future directions of performance enhancement of VCRS using Nano additive refrigerants were presented.**

Keywords— **VCRS, COP, Nano additive refrigerants, performance, Thermal conductivity.**

1. INTRODUCTION

Nickel-based super alloys are widely used The coefficient of performance (COP) of a refrigeration system is defined as the ratio of heat removal rate on the evaporator side to the mechanical work input on the compressor side. The COP can be upgraded in two ways: firstly, by increasing the heat removal rate at the evaporator side, and secondly, by decreasing the compressor work. Many researchers have investigated the possibility of introducing nanoparticles in refrigerants to develop a new class of nano fluids called "Nano refrigerants". Use of nano-refrigerants will increase the heat transfer in refrigeration systems and thus enhance the system performance.

With the rapid advancement in nanotechnology, it becomes possible to obtain nano sized particles (1 to 100 nm.) of metals, oxides and carbides. These nanoparticles having high thermal conductivity are suspended in conventional heat transfer fluids which lead to emerging of new generation of heat transfer fluids called nanofluids. Nanofluids have been introduced by Steve Choi of Argonne's Energy Technology Division and Jeff Eastman of the Materials Science Division on Argonne National Laboratory in 1995.

Thermal systems like refrigerator, air conditioners etc. consume large amount of electric power. Many researchers have been carried out in last decade to enhance the heat transfer rate, to improve performance of the systems. To improve thermo physical and heat transfer capabilities of the system, nanoparticles are either suspended in the refrigerant or lubricating oil.

Nanofluids have the following characteristics as compared to normal solid liquid suspensions.

A) Higher heat transfer between the particles and fluid due to high surface area of the articles.

B) Better dispersion stability.

C) Reduces particle clogging.

D) Reduces pumping power as compared to base fluid to obtain equivalent heat transfer.

Nanoparticles could be of metal like copper, nickel, aluminum. Oxides like aluminum oxide, titanium oxide, copper oxide, silicon oxide. Base fluids are the thermo fluids like water, ethylene glycol, propylene glycol, engine oil and refrigerants. [2] Nanofluids are prepared by production of nanoparticles and then its dispersion in the base fluid. There are two methods used for the preparation of nanofluids namely single step method and two step method. In single step method, nanoparticles are simultaneously produced and dispersed, while in two step method, nanoparticles are first produced and then dispersed in the base fluid. [3]. Nanofluids are not simply the solid-liquid mixtures but they are the even suspension, stable suspension and durable suspension. There should not be any agglomeration of particles and no chemical change in the base fluid. To achieve all this, there are three ways A) to change pH value of suspension. B) to use surface activators/dispersants. C) to use ultrasonic vibration. All these techniques change the surface properties of the suspended particles and suppress clustering. It depends on the application how these techniques are used. [21]. Nanofluids have vast application in different fields like engine cooling, engine transmission oil, cooling electronic circuits, refrigeration, drilling lubrication, thermal storage, solar water heating ,nuclear cooling system, defense space application, biomedical application, drilling and lubrication .[17] This paper review application of nanofluids as a lubricants in vapor compressor refrigeration system. The below fig 1 shows the different types of Nano-particles with Length scale and some examples related to it.

Fig. 1 Length scale and some examples related [50]

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al Stimuli

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A Sojourn of Architectural Parallelism from Microprocessors to System-on-Chip

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ABSTRACT:

With the exponential growth of chip manufacturing technology, the computer hardware architecture has progressed upwards from uniprocessor to multicores, the parallel programming architecture techniques emerged as system-on- chip(SOC) – integrating many functionalities otherwise used to make a complete system . The dominant chip manufacturers (Intel, Motorola, ARM , Cypress and others) took the advantage of instruction and data level parallelism in order accomplish many design goals which were speculative in many ways: Superscalar design, Multimedia instruction set, Predicated execution and speculative loading, and many such interwoven features. In running paralleled with CPU design issues, the memory utilization and accessibility has provided a vertical closeness with CPU's performance. Instruction-level parallelism (ILP) in addition to thread-level parallelism, challenges has improved the performance of CPU and GPU and notably the ARM architectures. The Java byte code can also now be inter-weaved in the execution path, in order to achieve a full potential of the CPU capabilities. 'An attempt is made to travel the journey from chip to SOC and the exciting features and capabilities these contemporary processors offer for present day state-of-the-art technologies and making the world of web an exciting and wonderful gadget with conglomerating features.

Keywords: Super Scalar architecture, instruction and data parallels, threads and SOC

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Kinematic Design of Parallel Manipulator Using Isotropic Indices

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Abstract-**The kinetostatic performance of parallel manipulator depends on the kinematic structure and the manipulator posture of a particular kinematic structure in the work space. The manipulator performance is analysed by condition number which depends on the manipulator jacobian. This paper investigates the different isotropic postures which define isotropic index based on velocity. In this proposal, the concept of isotropy is used for the kinematic design of parallel manipulators.**

Keywords: Parallel Manipulators, Condition Number, Velocity Isotropy.

INTRODUCTION

A robot is known as Isotropic, if kinetostatic properties are homogeneous with respect to all the directions within the confined work space (1). Parallel Manipulators have a kinematic structure that has some more benefits over serial manipulator. Accuracy, high speed and high load to weight ratio are the benefits of parallel manipulator. The idea of robot isotropy was firstly initiated by Salisbury and Craig in 1982 (2).Since 1982, a lot of research gone through for parallel manipulators, particularly for design and controlling purpose. Salisbury and Craig proposed a new performance index called condition number of the Jacobian matrix. When the condition number of this matrix reaches the least value of unity, the manipulator is called Isotropic (3).

Various performance indices are evaluated to attain accuracy of manipulator structures was proposed by Stephen L.chiu (4). This theory discuss about the condition number, though it is not a true measure of optimum. It is related to manipulability in inverse proportion. As we know the main measure of the manipulability is the transmission ratio. To evaluate this transmission ratio, the concept of velocity ellipsoid came into picture. It helps us to develop the relation between transmission ratios and manipulator performance. The planar manipulator of two, three and four degrees of freedom and 3 DOF spatial manipulator contains few isotropic postures which are determined by Kircanski (5). Gosselin and Angeles (6) proposed a new concept called Global condition index. It defines the optimized the optimized kinematic analysis of Robot manipulator. In the entire workspace the GCI helps us to estimate the distribution of condition number. The dexterity indices that are used to define the performance characteristics of planar and spatial manipulators are proposed by Gosselin (7) based on the condition number of the Jacobian matrix.

CONDITION NUMBER

The condition number of Jacobian matrix J.

$$k = \|J\|\|J^{-1}\|$$

The condition number defines an upper bound for the amplification of the relative error. This definition of the condition number can be used with different matrix norms. In this paper, the Euclidean – or Frobenius – norm was used which is defined as:

$$\|J\| = \sqrt{tr(JWJ^T)}$$

Where W is the weight matrix

$$W = \frac{1}{n}\mathrm{I}$$

and J is assumed to be $n \times n$ or equivalently

$$\|J\| = \sqrt{\sum_{i=1}^{i=m}\sum_{j=1}^{j=n}|a_{ij}|^2}$$

VELOCITY ISOTROPY

A manipulator, if it can perform the same velocity in all the directions then it is said to be isotropic with respect to the velocity. It is evaluated by means of velocity ellipsoid.

INVERSE KINEMATIC ANALYSISOF PARALLEL MANIPULATOR

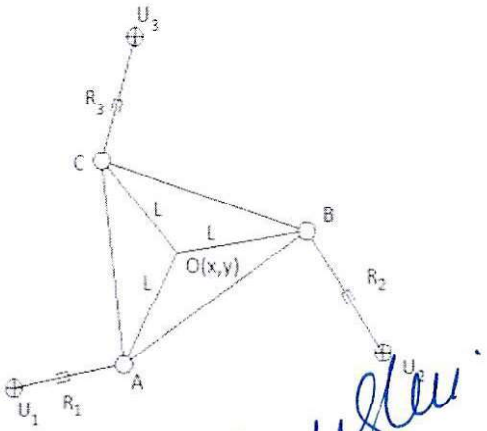

Fig.1 Kinematic model of 3RPR Manipulator

The dimension of the manipulator is denoted by L .R_i is the length of the *ith* actuator, where i= 1,..3 and by $O(x,y)$ the coordinates of the point of attachment of the *i*th leg to the moving platform. Moreover, the position of the point of the attachment of the *i*th leg

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Energy Consumption Optimization of a Robot Manipulator

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Abstract— Recently, the importance of sustainable manufacturing has been widely discussed. The optimization of energy consumption in product manufacture has been deeply analysed, mainly focusing on the energy directly absorbed by the manufacturing process. On the contrary, this paper focuses on the analysis and optimization of the energy consumption related the robot arm, probably the most mathematically complex robot anyone could ever build, we will present optimized solution for the movement of a three-arm manipulator using Genetic Algorithm(GA) with Analytical Hierarchy Process (AHP). A scheme is given for optimizing the movement of robotic arm with the help of AHP so that the minimum energy consumption criteria can be achieved. As compared to Direct Kinematics, Inverse Kinematics will evolve two solutions out of which the best-fit solution will be selected with the help of AHP and is kept in search space for future use. The Inverse Kinematics, Fitness Value evaluation task will simulate and testing will be done using Genetic Algorithm (GA). Although, four factors viz. Movement, Friction, Least Settling Time (or Min. Vibration) and Forces acting on the links are used for finding the Fitness Function / Fitness Values, however some more factors can also be considered. Finally, we will conclude which process, among, AHP and GA give optimised solution which meets our required criteria.

Keywords—: Robot Manipulator, AHP, GA, Energy, Inverse Kinematics, Direct Kinematics

1. INTRODUCTION

Many industrial countries witnessed an increase in prices of both electricity and fuel during the last decade. According to the recent statistics one of the large consumers of energy is manufacturing industry. The majority of the energy is usually consumed by robots used in the manufacturing industry.

During the last years, the rapid increase of the energy price together with strictly international and national policies has pointed out the problem of energy efficiency, moving companies' awareness from the reduction of the production time to the identification of an optimal trade-off between production time and energy consumption [2].

Robotic arm is commonly used in industries, in many field applications where technical support is required, manhandling is either dangerous or is not possible. In such situations three or more arm manipulators are commonly used. They are on great demand to speed up the automation process. Three link manipulators are the fundamental robotic arms.

According to [4], there is need to optimize the movement for energy consumption and various mechanical and control related attributes like friction, settling time etc., which will improve the performance. The total energy consumed by the robot is usually affected by the required torque on each joint and inertia tensors of each link.

Genetic algorithms are often viewed as function optimizers. An implementation of a genetic algorithm begins with a population of (typically random) chromosomes. These structures evaluate and allocate reproductive opportunities in such a way that those chromosomes, which represent a better solution to the target problem are given more chances to reproduce than those chromosomes which are poorer solutions [4].

Analytical Hierarchy Process is a pragmatic way of reaching a best solution from a given search space without modifying the solution. AHP has proved itself to be one of the best available methods to find the ranks or fitness values based on the application objectives [4].

2. PROBLEM STATEMENT

The paper focuses on the robot energy consumption in pick-and-place tasks. A task consists in the grabbing or release of an object in a specific position, thus representing a constraint to the robot configuration during the task execution. As an example the ABB -IRB140 industrial robot has been chosen.

Consider 3 links of the robot with 350mm, 360mm, 380mm lengths respectively, which has 5^0 of freedom and has a carrying capacity of 5kg, with a weight of 98 kg, power specification of 200-240 V AC ±10%, 50/60 Hz, 4.5 kVA; it can give accurate results within the range of 5-40^0C ambient temperature and 45-95 % (non-condensing) humidity and with a max. reach of 810mm.

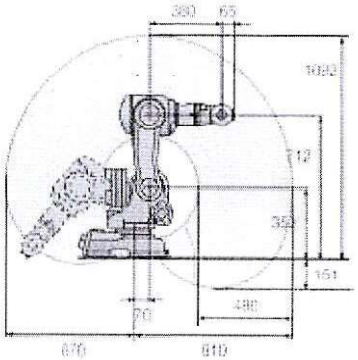

Fig. 1. Robot's frame

Courtesy: google images

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Simulation and Optimal Synthesis of A 4-Bar Mechanism by Hooke & Jeeve's Optimization Method

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Abstract— **This paper considers simulation and optimal synthesis of a four-bar linkage by method of controlled deviations. The simulation is carried out in MATLAB and optimal synthesis is carried out by method of Control Deviation. Through simulation we are going to show the plots between angles and time and also the coupler curve. The advantage of this approximate method is that it allows control of motion of the coupler in the four-bar linkage so that the path of the coupler is in the prescribed environment around the given path on the segment observed. The Hooke-Jeeves's optimisation algorithm has been used in the optimisation process. Calculation expressions are not used as the method of direct searching, i.e. individual comparison of the calculated value of the objective function is made in each iteration and the moving is done in the direction of decreasing the value of the objective function. This algorithm does not depend on the initial selection of the projected variables. All this is**
Illustrated on an example of synthesis of a four-bar linkage whose coupler point traces a straight line, i.e. passes through sixteen prescribed points lying on one straight line.

Keywords— **optimal, synthesis, four-bar linkage, coupler curve, Hooke-Jeeves's optimisation**

1. INTRODUCTION

A very important task in a design process is how to make a mechanism, which will satisfy desired characteristics of motion of a member, i.e. a mechanism in which one part will surely perform desired (given) motion. There are three common requirements in kinematic synthesis of mechanisms, path generation, function generation and motion generation. In dimensional synthesis, there are two approaches, synthesis of precision points and approximate or optimal synthesis.

Synthesis of mechanism by method of precision points is restricted by the number of given points and the increase of precision points, more than nine, is practically impossible. Optimal synthesis of mechanisms is, in fact, a repeated analysis for a random determined mechanism and finding of the best possible one. The optimisation algorithm contains the objective function defined by the problem of synthesis and it represents a set of mathematical relations; it must be chosen in such a way that the conditions perform desired tasks presented in a well-defined mathematical form. Penalty functions which are included in the objective function during synthesis of mechanisms are also called equalizing functions because they turn the restricted problem of optimisation into the unrestricted one.

In this paper, Hooke-Jeeves's optimisation method is used for synthesis of a four-bar linkage, which, as a method of direct searching, does not use deductions of the objective function, but it compares its values in each iteration and changes mechanism parameters in the direction of decreasing the value of the objective function.

2. SIMULATION OF 4 BAR LINKAGE:

In a four bar mechanism the link on which input motion is applied is known as driver. The output motion link is follower and the middle link connecting these two links is coupler link. The fourth link is grounded. A four bar mechanism has 1 degree of freedom. If the input link can rotate fully it is called as crank. A link that can't rotate fully is known as rocker. We used Grashof's Theorem to construct the 4-bar mechanism

Grashof's Theorem: If S is the smallest link, L is the largest link and P, Q are the intermediate links, then there will be at least one link which will be able to revolve/rotate if S+ L< P+Q. The four bar mechanisms that satisfy this criterion is known as grashofian mechanism.

MATLAB is used to Simulate the mechanism. The path followed by 4-bar linkage is presented in Fig.1.

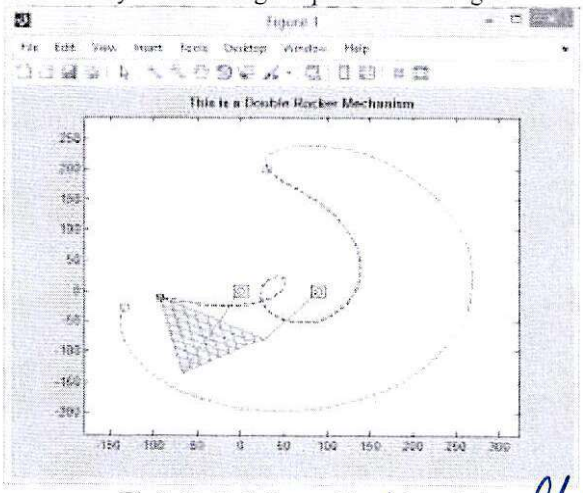

Fig1. Path followed by 4-bar linkage

Fig.2, shows the coupler curve, the motion of coupler.

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Semantic Web Applications for System Engineering

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ABSTRACT

Recent interests in semantic web technology blended with the progress in other engineering streams have given newer ways of system integration. The semantic web in the software research community and industry have adopted various aspects of software engineering for system integration . It is imperative to adapt the system engineering paradigms to technologies such as semantic web for quality with more suitability of applications running.

The semantic web holds great opportunities for system engineering. Its formal descriptive methods and distributed architecture have the potential of supporting systems engineering by providing a consistent description of their domain ontology. The description can bridge semantic gaps that cause problems in various scenarios –like , when integrating two systems that utilize different semantics to similar entities. Even though these systems might employ a common XML interface, the same concepts might have different connotations. These issues are addresses from applications perspective with a hypothesis that the system engineering usage these methods due to their complexity . In particular, following obstacles are typically :

a) Separation between the definition of the information system and the semantic meta-information requires knowing several languages and translating among them;

b) The lack of suitable complexity management mechanisms makes the readability of the domain scripts difficult for humans;

c) Different types of notation are used for the information handled by the system's processes and the processes themselves, requiring consistency and integrity checking.

This paper investigates semantic based approaches for system engineering applications and in particular on the World Wide Web. A general manufacturing system engineering (MSE) knowledge representation scheme, called an MSE ontology model, to facilitate communication and information exchange in inter-enterprise, multi-disciplinary engineering design teams has been developed and encoded in the standard semantic web language. The proposed approach focuses on how to support information autonomy that allows the individual team members to keep their own preferred languages or information models rather than requiring them all to adopt standardized terminology. The MSE ontology model provides efficient access by common mediated meta-models across all engineering design teams through semantic matching. This paper also shows how the primitives of Web Ontology Language (OWL) can be used for expressing simple mappings between the mediated MSE ontology model and individual ontologies.

Key Terms: Information system, system engineering, Knowledge Representation, XML, Web Semantics

1. Introduction

As all engineering discipline practices are increasingly becoming distributed and decentralized, the formal engineering ontologies are becoming popular solutions for addressing the semantic interoperability issue in heterogeneous environments and thus bridging the gap between legacy systems. Forth worthily, in this context, manufacturing systems have been transformed by the advances of cyber-enabled technologies – like cloud computing, wireless sensors, web services and others. Automation technologies are transcending the borders of flexible and programmable automation and entering the intelligent automation area. Automated manufacturing systems, planning and control are conducted in real-time by distributed software agents embedded in the hardware devices of manufacturing systems. The control units of future manufacturing systems have cognitive capabilities, such as machine learning, reasoning, and adapting to changes and they are integrated through a cohesive body of formal knowledge[1] . In this context, formal representation of engineering knowledge is of utmost importance. In particular, there is an eminent need for development of various ontological models including product and process models. Ontologies play a key role in any distributed intelligent system as they provide a shared, machine-understandable vocabulary for information exchange among dispersed agents. In an environment in which agents have no previous knowledge of each other's type, capabilities, and interaction models, development of standard communication models with shared semantics is a necessity. Ideally, the common terminological system of an agent-based framework should provide the required building blocks for construction of a shared body of knowledge that can be understood and interpreted by all agents who subscribe to the terminology.

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ɔdal Analysis of Power System and study of oscillatory instability

gvijay V Nair, M.S.R. Murty

ıwer systems and study through modal analysis ɔrtant results and critical information in the area ı for steady state and transient state condition. lores application of such an modal analysis in information on system model, eigenvalues, :tors of generating machines and controls, small in various inputs and its effects on outputs lation carried out on IEEE 39 Bus 10 Machine ıwer System model.

Eigenvalues, , small signal stability, oscillations

I. INTRODUCTION

ɜm dynamics simulation has evinced interest 's during last several decades. It continues with en today. Power systems are complex vast everal components from main energy sourcing nachines, their controls to network of nes. Challenges in managing and operating have never been felt before as much in the ɔ. The tremendous increase in the loads and ption especially in the developing countries perations near to their upper safe limits of the ns between operating line and stability have er and it is operated for optimum condition and unattended undesirable operation may lead to ning of the performance of the system even nstability. It is due to this reason that power : studies continue to attract attention from both ners and researchers with increased thrust. The machines leading to electro-mechanical e constantly generated interest for last decades ıapers have been published in this area. Several ‹plained under-lying reasons and causes for ıs along-with ways of their control[1-7]. These inherent part of the system response to the ıges system gets subjected through-out day. In the present day system and near to the upper ystem operates oscillations become significant be allowed to cause instability in the system. : important in analysis system stability. Small / analysis is determined by eigenvalue Eigenvalues near to the jw axis are critical ng the critical eigenvalues have different l methods [8-10]. Though the eigen modes :cillations are not always the critical ones they ystem and its performance in several ways. ability analysis has seen several methods of determining stability boundaries. Some of the methods in use are Arnoldi method, Subspace basec Dominant pole sensitivity, Jacobi Davidson method. assessments involve determining points of bi between the eigenvalues crossings and the jw-a complex-s plane. Notably two such bifurcation poi interest saddle node (SN) and hoff bifurcation results when one of the eigenvalue lands into the HB for pair of eigenvalues meeting jw-axis. Both are crucial and critical since it brings the system on of instability. Any further continuation of the variation in the same manner leads to highly undes unstable operations of the systems. In this ei locations and movement with the change in system (may be line power, control parameters) becomes Power system dynamic studies try and relate the e information with effecting major controls oı operations. Eigenvalues leading to eigenvec participation factors help in determining various mc and their observability and controllability w.r.t syst and outputs. Participation factors further provides in leading to positioning of controllers (PSS & FACT appropriate locations of system.

The growth of PS over the last decades and constraint of laying new lines while interconnec geographically long separated areas has not onl binding more generating machines to each other but rise of various oscillations especially inter-area os Damping these oscillations becomes important in stable operations and efficient transmission over These oscillations can never be eliminated or stopp occuring but can only be controlled and damped. several instances in history where these oscillations to power outages and tripping of the systems [22].

II. POWER-SYSTEM MODELING

A. *Power-System State Matrix*

The nonlinear power system model can be descril

$$\dot{x} = f(x, y, p)$$
$$0 = g(x, y, p)$$

where $x \in \Re^n$ *and* $y \in \Re^m$ are the state and variables respectively and p is the system parameter linear power system modeling is reduced into linea

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Direct Torque and Flux control of Induction Machine using Fuzzy Logic controller

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Abstract — **This paper presents implementation of Direct Torque and Flux control of induction machine using modified switching table and Fuzzy Logic Controller. The major concern in DTFC is selection of the switching state vector in order to meet Torque and flux demand of the drive. Major disadvantage of Conventional DTFC is high flux and Torque ripples due to hysteresis controllers and switching table cannot produce accurate voltage vector. Fuzzy logic controller can divide the torque error, flux error and stator flux angle into smaller subsections which results in optimal selection of switching state there by reduction in torque and flux ripples. The proposed methods are evaluated using simulation by Matlab/Simulink.**

Keywords— **Artificial Intelligence (AI), Direct Torque and Flux Control (DTFC), Induction Machine (IM), Fuzzy logic Controller (FLC), Voltage source Inverter (VSI).**

I. INTRODUCTION

Direct Torque and Flux Control (DTFC) is used for quick response and high efficiency control of Induction motor drives [1-3]. In DTFC both stator flux and torque are controlled from stator side by selection of appropriate inverter switching state from a predefined switching table [4-6]. However conventional DTFC suffer from disadvantages like high torque and stator flux ripples due to hysteresis bands especially at low speed and variable switching frequency. The drive exhibit sluggish speed response for sudden change in reference torque [1-7]. Several researches proposed different solutions in past decades for reduction of torque and flux ripples [7-11] using multi-level inverters [6-7], by determination of optimized flux based on motor torque [8], by effectively introducing a modulation between active state and zero switching state using adaptive Fuzzy [9]. Application of AI techniques like Fuzzy logic, Neural Networks applications in electrical drives gained great attention in recent years [13-16]. Fuzzy logic controllers are used to select voltage vectors [17], Neural Networks applications for switching state selection [13-15], PI controller replaced by Fuzzy controllers [18-19], and fuzzy logic based duty ratio controllers [5]. The effectiveness of DTFC is in selection of voltage vector based on switching table. Out of AI techniques based on literature, Fuzzy logic controller is easier to implement and it can handle the nonlinearity and ambiguity in switching table. Since it is based on expert rule base, it is independent of mathematical model of induction machine and can adapt to nonlinearities and parameters variation. Fuzzy logic controller can easily be implemented using DSP or FPGA using DSpace [21]. In this paper the conventional DTFC of Induction machine with modified switching table is compared with DTFC with Fuzzy logic controller. The Conventional DTFC and DTFC using Fuzzy logic controller are developed in Matlab/Simulink. Simulation results validate the reduction in torque and flux ripples and improved dynamic performance of the drive.

II. INDUCTION MACHINE MODELING

The mathematical model of induction motor is developed based on state variable approach referred to stationary reference frame (α, β) using the following equations. The mathematical model of induction machine is given by [20]:

$$\dot{X} = AX + BU\,; Y = CX \tag{1}$$

$$X = \begin{bmatrix} i_s^\alpha \\ i_s^\beta \\ \psi_s^\alpha \\ \psi_s^\beta \end{bmatrix}; U = \begin{bmatrix} V_s^\alpha \\ V_s^\beta \end{bmatrix}; Y = \begin{bmatrix} i_s^\alpha \\ i_s^\beta \end{bmatrix} \tag{2}$$

$$L_{ss} = s.L_s\,; s = 1 - \frac{L_m^2}{L_s L_r};\ T_r = \frac{L_r}{R_r}\ ; R_a = R_s + R_s\,\frac{L_m^2}{L_r^2} \tag{3}$$

$$A = \begin{bmatrix} -\frac{R_a}{L_{ss}} & -\omega & \frac{R_r}{L_{ss}L_r} & -\frac{\omega}{L_{ss}} \\ \omega & -\frac{R_a}{L_{ss}} & -\frac{\omega}{L_{ss}} & \frac{R_r}{L_{ss}L_r} \\ -R_s & 0 & 0 & 0 \\ 0 & -R_s & 0 & 0 \end{bmatrix} \quad B = \begin{bmatrix} \frac{1}{L_{ss}} & 0 \\ 0 & \frac{1}{L_{ss}} \\ 1 & 0 \\ 0 & 1 \end{bmatrix}$$

$$C = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \end{bmatrix} \tag{4}$$

R, L, V_s, i_s, ψ_s, ω resistance, inductance, supply voltage, stator current, stator flux and speed of induction motor. The electromagnetic torque developed by IM is given by [22].

$$T_e = \frac{3}{2}p(\psi_{s\alpha} i_{s\beta} - \psi_{s\beta} i_{s\alpha}) \tag{5}$$

The mechanical speed of motor is given by

$$\dot{\omega} = \frac{1}{J}(T_e - T_L) \tag{6}$$

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Optimal Duty Ratio Controller for Improved DTFC of Induction Motor using fuzzy logic

co-authored by

DR. S.F. KODAD , DR. B. SARVESH

during March 5-6, 2016 organized by IEEE MANIT Student Branch at Maulana Azad National Institute of Technology, Bhopal, India

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Optimal Duty Ratio controller for Improved DTFC of Induction Motor using Fuzzy Logic

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Abstract — **The aim of this paper is to develop an optimal duty ratio controller to improve dynamic performance of induction motor with reduction in Torque and Flux ripple using Fuzzy logic. The major disadvantage of conventional DTFC is High torque and flux ripples and variable switching frequency. In DTFC with duty ratio controller concept of duty cycle is introduced, instead of applying a selected voltage vector for the entire switching period if applied for a portion of the switching period determined by optimal duty cycle [20]. A PWM based duty ratio controller is introduced in conventional DTFC. The duty cycle can be optimized using fuzzy logic. The improved performance and effectiveness of DTFC with Fuzzy DRC compared to SDRC is evaluated using Matlab-Simulink environment.**

Keywords— **DTFC, Fuzzy Logic, PWM, SDRC, Fuzzy DRC.**

I. INTRODUCTION

In 1986 an advanced scalar control technique known as direct torque and flux control (DTFC) was introduced for voltage fed PWM inverter Drives [1, 14]. Direct Torque and Flux Control (DTFC) is widely used for induction motor drives since it provides very quick response with simple control structure [2-3]. Using DTFC stator flux and the torque can be controlled by selecting the appropriate inverter state from a predefined switching table [3]. The major disadvantages of conventional DTFC are high torque and stator flux ripples especially at low speed. Sluggish speed response during start up and abrupt change in Torque command [19]. Several techniques have been developed during the past decades to reduce torque and flux ripples [5]. The proposed solutions are (a) hysteresis band with variable amplitude based on fuzzy logic [6]. (b) Torque ripple minimization based on optimal flux value determination [7] (c) Using simple ramp duty cycle control [8] (d) by introducing a modulation using adaptive Fuzzy between the selected active state and a zero state [9] (e) improved steady state torque response was achieved using the duty ratio control and had shown less torque ripple compared to the conventional DTC [10] (f) Fuzzy logic control is used to determine duty ratio during each switching state [11]. The AI techniques like Fuzzy logic, Neural Networks applications in Electrical drives gained great attention in recent years. Fuzzy logic controllers are used to select voltage vectors, stator resistance estimator, Fuzzy adaptive PI controller [16] and duty ratio controllers.

The effectives of DTFC is in selecting the voltage vector, however applying the voltage vector for whole control period results in torque ripples[20]. The concept of duty ratio controller is applying the active switching state for just enough time to enough time to achieve the torque and flux reference values. The duty ratio controller applies active voltage vector only for a portion of switching period and then inserting zero voltage vector for the remaining switching period [12]. The duty ratio controller is designed using triangular based PWM converter of switching frequency 10 kHz compared with switching sector in order to develop the duty cycle. Fuzzy logic controllers are used in combination with PWM technique to develop optimal duty ratio. By selecting optimal duty ratio δ (0 to 1) active voltage vector state is applied for only for part of switching of time period. The proposed Fuzzy duty ratio DTFC is compared with conventional DTFC. Simulation studies using Matlab/Simulink prove that, reduced torque and flux ripple and better dynamic performance is achieved.

II. INDUCTION MOTOR MODEL

The mathematical model of induction motor is developed in Matlab/Simulink. To reduce complexity of 3 phase(a,b,c) it is represented by two axes (α, β) state space model given by:

$$V_\alpha^s = \frac{2}{3}V_a - \frac{1}{3}V_b - \frac{1}{3}V_c \quad (1)$$

$$V_\beta^s = 0 + \frac{1}{\sqrt{3}}V_b - \frac{1}{\sqrt{3}}V_c \quad (2)$$

The model is described as [13]:

$$\frac{dX}{dt} = AX + BU\,;\, Y = CX \quad (3)$$

$$X = \begin{bmatrix} i_s^\alpha \\ i_s^\beta \\ \psi_s^\alpha \\ \psi_s^\beta \end{bmatrix};\; U = \begin{bmatrix} V_s^\alpha \\ V_s^\beta \end{bmatrix};\; Y = \begin{bmatrix} i_s^\alpha \\ i_s^\beta \end{bmatrix} \quad (4)$$

$$L_{ss} = s.L_s; \qquad s = \left(1 - \frac{L_m^2}{L_s L_r}\right)$$

$$T_r = \frac{L_r}{R_r}; \qquad R_s = R_s + R_s \frac{L_m^2}{L_r^2} \quad (5)$$

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Atmosphere Pollution Monitoring by using Wireless Sensor Networks

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Abstract— Atmosphere contamination has major influence on the concentration of constituents in the air leading to effects like global warming and acid rains. To keep away from such adverse imbalance in the nature, an Atmosphere pollution monitoring system is extremely important. This paper attempts to find an effective solution for pollution monitoring using wireless sensor networks (WSN) on a real time source namely real time wireless air pollution monitor system. Commercially existing discrete gas sensors for sensing gases like CO_2, NO_2, CO and O_2 are calibrated by means of proper calibration technology. These precalibrated gas sensors are then incorporated with the wireless sensor motes for ground deployment using multi hop data aggregation algorithm. A Combination of light weight middleware and a web line to view the live toxic waste data in the form of numbers and chart from the test beds were developed and made accessible from anywhere on the internet. Other parameters like heat and humidity were also sensed along with gas concentration to enable data examination through data synthesis techniques. Experimentation carried out using the developed wireless atmosphere pollution monitoring system under diverse physical circumstances show that the system collects consistent source of real time fine particle pollution data. One of the finest issues that the world is facing these days is that of ecological pollution, increasing with each year and inflicts severe, permanent damage to the world. Ecological pollution consists of 5 basic kinds of pollution namely air, soil, water, noise and light weight particles.

Keywords— Wireless Sensor Networks (WSN), Light Weight Middleware, Gas Sensor Calibration, Web Interface, Multihop Data Aggregation.

1. INTRODUCTION

Wireless Sensor Network (WSN) is a good research area which is a fast evolving technology and gaining importance due to the number of potential applications. It is a dense wireless network of small, low-cost sensors, which accumulate and broadcast environmental data. By using WSN's monitoring and controlling of physical environments from remote locations can be done with better accuracies [1]. With the exponential increase of industries and automobiles have caused complex and serious problems like stratospheric ozone depletion, acid rain, climate change, and increased occurrences of diseases like cancer, asthma and chronic pulmonary diseases. Atmosphere pollution has now become a perennial problem to the world due to rapid industrialization and growth in the number of automobiles. Atmosphere pollution refers to the air contamination and the modification of the air interms of a physical, biological or compound modification in the ambiance can be termed as pollution. Along with explosive industrial growth, road transport is also one of the main contributors of air pollution which results in the climate change which has a dangerous domestic and global consequence [1]. In the road transport, air contamination is not only governed by the sources but also on the dynamics of the atmosphere [2].

Instruments used for air pollution monitoring are Fourier Transform Infrared (FTIR) instruments, gas chromatographs and mass spectrometers which provide accurate and selective gas readings, because of large size of the instruments, high Initial Investment and maintenance cost making them unfavorable for a larger scale monitoring applications [3].Gas sensors are becoming equally effective alternative [4] as they are low cost, compact and robust with versatile applications. Gas sensors monitoring methods are basically electrochemical, infrared, catalytic bead, photo ionization, and solid-state [3]. Present monitoring system mainly employs smart transducer interface module (STIM) with semiconductor gas sensors. Geosensor network with control action for monitoring [7] are also unfavorable due to high cost.

In this paper, an attempt is made to propose design a system which is cost effective, reliable, scalable and accurate for the real time air pollution monitoring with WSN. Electrochemical and resistive heating type sensors with proper calibration technologies were used to sense the gases like O2, CO2, CO and NO2. To increase the range of monitoring area, Zigbee [13] based wireless sensor networks with multihop data aggregation algorithm were implemented extend the range of monitoring area.

II. Calibration of Gas Sensors

Gas Sensors are calibrated by revealing the different concentrations of gas before interfacing to the wireless sensor mote for getting the exact readings. The sensors with the conditioning circuits are placed in the cavity and readings of regular parts per millions of the gas are to be

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Use of Nano Materials in the Construction on NPP's

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Abstract— **Nuclear power plants (NPP's) are large and have complex facilities. These plants will however operate on very large temperatures and the materials used in their construction will experience significantly higher levels of radiation. It is therefore very important to understand the effects of radiation on these materials. Radiation will create the defects, and affect the strength and performance of the materials. One idea here is if we construct nuclear materials by using nano - materials we can make nuclear power plants more efficient. In this paper the brief introduction of nanomaterials will be elaborated and will discuss various ways in which some of these particles may make nuclear power plants more efficient.**

Keywords— **Radiation, Nano-materials , Nuclear Power Plants.**

1. Introduction

Nuclear reactor contains fissile material (like 92U235) and inside the reactor a continuous fission reaction takes place. As we know each fission releases enormous amounts of heat (nearly 200MeV), also high amount of radiation.

* Nano materials - objects with at least one dimension between 1 and 100 nanometers

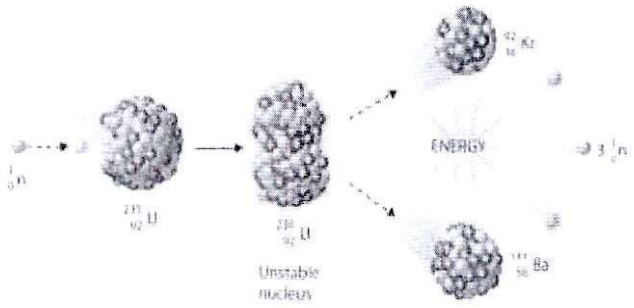

Fig 1 - Fission Reaction with ^{235}U

So Nuclear reactor should be constructed with those materials which are capable of holding (or bearing) high amount of radiation as well as heat for long time without developing cracks in the material (breakage).Taking these factors into account few studies are going on the topic - what if Nano-materials* are used for the construction of Nuclear Reactor. In this Paper we are presenting various researchers idea and approach.

2. Nano-Technology & Nano materials

Nanotechnology deals with new approach in making things through understanding and control over the fundamental building blocks [1] (atoms, molecules).Nanotechnology is well-defined and well- structured.A material science based approach to nanotechnology leads to the development of *Nano - materials*. Those materials with structure at Nano-scale always exhibit unique electro-mechanical properties [2].

3. Synthesis:

A method to design Nano-materials by control of size (≈ 1 – 100nm), in order to attain our required property. Basically there are two approaches using which Nano-materials are developed

i. Bottom Up

ii. Top Down.

These two models are fundamentally different, both in the approach to creating structures and in the underlying science that will make them possible [3].

In *"Top down"* approach the size of structures will be reduced to nano size with the help of machining and etching techniques.

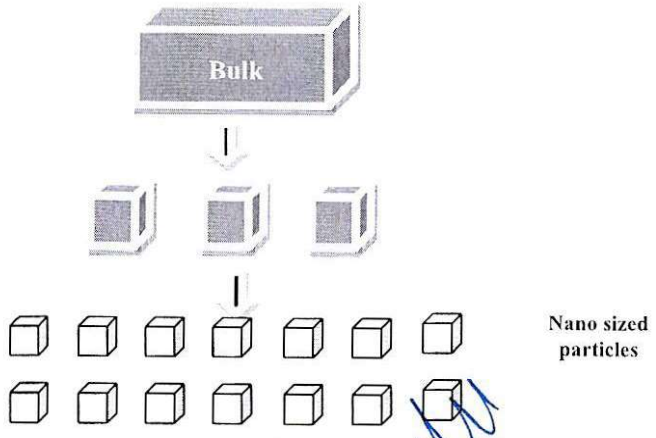

Fig. 2 - Top Down Approach

'Bottom up' approach, often referred to as molecular nanotechnology, implies controlled or directed self-assembly of atoms and molecules to create structures [4]. Bottom up method is categorized into – *'Chaotic process and controlled process'*

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Local Patterns in Image Indexing and Retrieval-A Survey

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ABSTRACT:

Due to the explosive growth in digital electronics and other technologies, millions of images are being created worldwide. Hence there is a need for a system that can manage all these images. The text based methods becomes less useful when the data base size is large. The CBIR overcomes the drawback by taking the inherent visual content of the image into account. Among the low level feature like color, texture, shape etc., texture plays a vital role in identifying the image from the database. Local patterns became very popular due to the simplicity and faster response. Many approaches were designed and developed by researchers based on Local patterns. In this paper, a survey on local pattern based image retrieval methods is presented. It has been noticed that there are many open issues still to be addressed in the field to reduce the sematic gap which is difficult to avoid in the retrieval systems.

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A REVIEW ON SULTAN MIZANZAINALABIDIN STADIUM ROOF COLLAPSE

Saumya Lathi[1], Shaik Awais [2], Priya S. Natesh[3]

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Abstract

Sultan Mizan Zainal Abidin Stadium is a multi-purpose stadium in Kuala Terengganu, Malaysia, constructed by a South Korean construction firm.After its opening and completion of the Sukma games complains of jet like noises coming from the steel structures were observed. Various causes of failure have been discussed in this paper.

Introduction

Sultan Mizan Zainal Abidin Stadium is a multi-purpose stadium in Kuala Terengganu, Malaysia, constructed by a South Korean construction firm. It is the biggest stadium in Malaysia and is commonly used for hosting football matches. The stadium has a capacity of 50,000 people and was initially built to replace the old Sultan Ismail Nasiruddin Shah Stadium. However just one year after its opening the stadium had an unfortunate incident in which almost half of the stadium roof collapsed on the seats below. Luckily no person was injured during the incident as only few electricians and cleaners were only present at the time of the incident but it left the Malaysian government and the engineers with a big question mark regarding the methods and materials used for the construction of the stadium. In this report I have analysed the various reasons and events that lead to the collapse of roof.

Failure reasons

The stadium had to be completed before the 2008 Sukma games and thus the contractors and builders were working on a very tight schedule and borrowed hours to complete the stadium before the deadline. This called for a last minute change in design which forced the builders to switch to light frame steel structure but the time spent to analyse the design and consistency of structure was questionable. After its opening and completion of the Sukma games complains of jet like noises coming from the steel structures were observed. The public work department in the report of the aftermath of the incident suggested that the root cause for this failure was design fault and inappropriate materials. In the detailed report by the investigation committee the following were highlighted as the main reason for the roof failure-

1. Inadequate design
2. Miss-alignment of roof
3. No quality control
4. Poor workman ship and materials
5. Improper design analysis by the contractor

The main fault lied with the load transmission of the design. As the structure was being built the following load had to be taken in consideration-

Self Load Distribution. During designing a structure the gravity load or load must be considered that in what way it will affect the structure and most importantly how this load

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CYPRESS STREET VIADUCT COLLAPSE

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Abstract

A portion of the Nimitz Freeway that linked the I-880 to the I-80, known as the Cypress Street Viaduct, was a 2 km two-tier highway with five lanes per deck, and traffic flowing at ground level. After a 1971 earthquake in the San Fernando Valley, the State of California initiated program to increase the resistance of highways and bridges to earthquakes. The Loma Prieta earthquake(in 1989) measured 7.1 on the Richter scale Even though Emeryville is about 81 km from the earthquake epicenter, the acceleration was amplified because the land originally had been part of the San Francisco Bay, but was filled with soil that had not been compacted. The Nimitz Freeway only collapsed in areas where it was built on non compacted bay fill. The freeway failed at the hinge between the top of the lower deck and the bottom of the upper deck.

Introduction

In 1949, the design of a new highway that was to service the City of Oakland, California began; by 1957, the construction of the Nimitz Freeway, or I-880, was complete (Yashinsky, 1998). A portion of the Nimitz Freeway that linked the I-880 to the I-80, known as the Cypress Street Viaduct, was a 2 km two-tier highway with five lanes per deck, and traffic flowing at ground level. The path that the Cypress Street Viaduct was required to follow resulted in certain portions of the bridge being constructed on soft mud; in much of the area, the bedrock was over 150 m below the surface (Yashinsky, 1998). The bridge was constructed using cast-in-place concrete with multi-celled reinforced box girders that typically spanned 80 feet (Moehle, 1997).

At the time of construction, the California State seismic criteria required designing for a lateral force of 0.06 times the dead load (Yashinsky, 1998). Over subsequent years there was great advancement in both construction and earthquake engineering technology, and although new technology was becoming available, the Cypress Street Viaduct was not being properly restructured to withstand a large-scale earthquake. After a 1971 earthquake in the San Fernando Valley, the State of California initiated a two-phase program to increase the resistance of highways and bridges to earthquakes: Phase 1 involved strengthening the connections between elevated road ways and their support columns; Phase 2 was to strengthen the support columns themselves (Doyle, 1989). While the structure was retrofit with cable restrainer units in 1977, Phase 2 was never carried out on the Viaduct (Yashinsky, 1998).

Causes of failure

The Loma Prieta earthquake measured 7.1 on the Richter scale. It was the strongest earthquake in the San Francisco Bay Area since the San Francisco earthquake of 1906. Both the earthquake of 1906 and 1989 were caused by the San Andreas fault line, which runs roughly along the coast of California. By 1989 numerous accelerometers had been installed around the Bay Area, including one in Emeryville, within one mile of the collapsed Nimitz. The ground acceleration at the Emeryville site, lasted about 15 seconds, was primarily in the lateral direction (the maximum vertical acceleration was less than 0.1g),

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REVIEW ON FAILURE OF HUSKY STADIUM, WASHINGTON

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Abstract

Every engineer's goal is to design an economical structure that meets code and operates in a way that best suits the owner, but a designer's main goal is the safety of the occupants once the building is finished. In this paper, the various reasons for the collapse of Husky stadium has been discussed and some suggestions have been pointed out which has to be taken care in Construction practices in general. It was concluded that the collapse was caused by insufficient lateral bracing during the construction process.

Introduction

The construction process has many risks including erection of the steel frame, ability of any temporary structures to support day-to-day operation, and the stability of any structures on site. "Husky Stadium" in Washington is an example of how stability of steel structures during construction must be a major concern for engineers, owners and all other people in any construction work.

Whether a collapse during construction is due to an error in the process or an unforeseen load being to an unfinished steel frame, the uncertainty of a structure's stability is a major concern during construction. With construction being as dangerous as it already is, engineers and contractors must work together where ever possible to try to predict some of the uncertainties that come with the construction process. In 1987 when the Husky's stadium was being expanded the collapse could have been avoided had the guy wires not been cut out of order during the demolition of the roof structure.

Construction is a very expensive process and getting a project done quickly often means a cheaper or more profitable project in the end. But with quickness many problems can be overlooked, accidentally caused, or exacerbated, and no amount of money saved is worth risking the lives of the many men and women that go to work on these sites every day.

Reason of failure

In 1987 the University of Washington hoped to add to their football team's home, Husky Stadium. This addition was to be a 17,000 seat addition to the North side of their stadium completed in time for the next season's opening game on September 5th, but the events of February 25, 1987 would make that goal seem very unreasonable.

After an extensive investigation, the overall design of the structure was deemed sufficient and the collapse was caused by insufficient lateral bracing during the construction process. The roof structure included guy wires which kept the roof structure from experiencing unusual torsional forces on the structure, and the demolition process required cutting of these guy wires. This had to be done in a very controlled and methodical sequence. Unfortunately some of these wires were cut out of order. This resulted in the twisting of the structure which caused the original crack in the roof truss support beams.

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KOLKATA FLYOVER COLLAPSE REPORT

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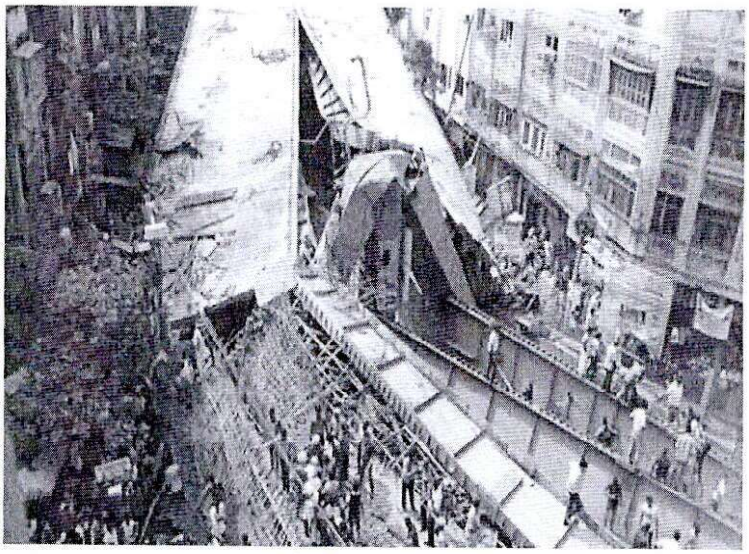
Abstract

The construction for the 2.2-kilometre (1.4 mi) Vivekananda flyover was contracted in 2008 and the work began in 2009. IVRCL, a construction firm based in Hyderabad, won the bid for the project. The reasons behind the collapse of flyovers/bridges are numerous. They typically fail due to the improper constructional practices, failure in the completion within the deadlines, usage of low sub-graded raw materials, improper design specifications consideration, failure in the precast structure like fractures or appearance of cracks.

Introduction

The construction for the 2.2-kilometre (1.4 mi) Vivekananda flyover was contracted in 2008 and the work began in 2009. IVRCL, a construction firm based in Hyderabad, won the bid for the project. The construction was scheduled to be completed in 2010 but overshot the deadline multiple times. The company was given an 18-month deadline by Chief Minister of West Bengal, Mamata Banerjee to complete the flyover by February 2016 and allocated a budget of nearly 165 crore but only about 60 percent of the work was completed. As of March 2015, IVRCL had a debt of 4,055 crore and reported losses of 672 crore. In December 2015, a consortium of banks that had lent to the company took over and the company had been banned from doing business in Uttar Pradesh and several other states.

On 30 March 2016, one day before the collapse, concrete was laid on the bridge and hours before the collapse, construction workers had heard the cracking noise of nuts in the cantilever.



A long time taking construction project took several people's life and hopes of the family. This was a not underestimating mistake. The government should take actions on the company officials and ask about the reasons for flyover collapse in Kolkata. The government

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A REVIEW ON I-35W MISSISSIPPI RIVER BRIDGE FAILURE

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Abstract

The I-35 W bridge over the Mississippi river in Minneapolis, collapsed suddenly on 1 august, 2007. The bridge was designed by Sverdrup & Parcel as per the 1961 American Association of State Highway Officials (AASHO, the precursor to AASHTO) standard specifications. Hurcon Inc. and Industrial Construction Company were the construction contractors with Industrial Construction Company building the steel trusses and deck. A failure analysis of the I-35 W bridge showed that the bridge failure was initiated at the gusset plates that connected the top chord members to a compression diagonal and tension diagonal.

Inroduction

The I-35 W bridge over the Mississippi river in Minneapolis, collapsed suddenly on 1 august, 2007. Approximately 300m of the 570m long bridge collapsed onto the water and ground. This event was peculiar because the bridge was a typical steel truss structure and the collapse occurred during the normal operating conditions.

Construction begin :1962

Opened : Nov 1967

Collapsed : Aug 1,2007.

Characteristics

Design :Continuous truss bridge

Total length:581m

Width : 34.5m

Height :35.1m

A failure analysis of the I-35 W bridge showed that the bridge failure was initiated at the gusset plates that connected the top chord members to a compression diagonal and tension diagonal. The demand to capacity ratio of gusset plate (U10) was enough to cause the failure of the plate and eventually the failure of the whole bridge. The stress distribution in gusset plates for bridge truss differs substantially from that in simple tension or compression connections and varies with member arrangements

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A REVIEW ON KANSAS CITY HYATT REGENCY WALKWAYS COLLAPSE

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Abstract

The Hyatt Regency walkway collapse took place at the Hyatt Regency Kansas City hotel in Kansas City, Missouri, on July 17, 1981. Two vertically contiguous walkways collapsed onto a tea dance being held in the hotel's lobby. The falling walkways killed 114 and injured 216. This paper presents a brief idea of the events that preceded the collapse of the walkways at the Kansas City Hyatt Regency Hotel, including the prior failure that occurred during construction and the evolution of the detail that caused the catastrophe.

Introduction

On the evening of July 17, 1981, approximately 1,600 people gathered in the atrium to participate in and watch a tea dance. Many people stood on the two connected walkways. At 7:05 p.m. the second-level walkway held approximately 40 people with more on the third and an additional 16 to 20 on the fourth level who watched the activities of the crowd in the lobby below. The fourth-floor bridge was suspended directly over the second-floor bridge, with the third-floor walkway offset several meters from the others. Construction difficulties resulted in a subtle but flawed design change that doubled the load on the connection between the fourth-floor walkway support beams and the tie rods carrying the weight of both walkways. This new design was barely adequate to support the dead load weight of the structure itself, much less the added weight of the spectators. The connection failed, and the fourth-floor walkway collapsed onto the second-floor walkway. Both walkways then fell to the lobby floor below, resulting in 111 deaths at the scene and 219 injuries. Three additional victims died after being transported to hospitals, bringing the total number of deaths to 114.

Three teams with particular roles to play in the construction system employed in building the Hyatt Regency Hotel, were contracted for the project:

- PBNDML and G.C.E. made up the "design team," and were authorized to control the entire project on behalf of the owner.
- Eldridge Construction Co., as the "construction team," was responsible for general contracting.
- The "inspection team," made up of two inspecting agencies (H&R Inspection and General Testing), a quality control official, a construction manager, and an investigating engineer.

At the time of the collapse, the hotel had been in service for approximately1 year. The Hyatt Regency consists of three main sections; a 40-story tower section, a function block, and a connecting atrium area. The atrium is a large open area approximately 117 ft (36 m) by 145 ft (44 m) in plan and 50 ft (1 m)high. Three suspended walkways spanned the atrium at the second, third, and fourth floor levels. These walkways connected the tower section and the function block. The third floor walkway was independently suspended from the atrium' roof framing, while the second floor walkway was suspended from the fourth floor walkway, which in turn was suspended from the roof framing.

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A REVIEW ON BABELDOAB BRIDGE COLLAPSE

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Abstract

The Koror-Babeldaob Bridge was completed in 1977, to connect the two main islands of the Palau archipelago. Its main span of 241 meters (790 ft) was the longest span post-tensioned concrete box girder bridge structure in the world at the time. Its two lane single cell box girder superstructure was built using cast-in-place segments and a permanent mid-span hinge. The bridge collapsed in September 1996, shortly after completion of construction contracts to replace its pavement and correct the increasing deflections of its main span. After the collapse, and in response to legal action by the owner of the bridge, OPAC Consulting Engineers was engaged by one of the legal defense teams to conduct engineering investigations of the bridge.

Just prior to collapse, the bridge had been structurally renovated to correct a dip that had formed near midspan. The renovation involved adding high strength steel tendons inside the box girder that were strategically angled and anchored to provide lift at midspan (a technique known as exterior post-tensioning). Many engineers naturally assumed that the collapse was linked to the renovation, that is, the post-tensioning and related work must have somehow weakened the bridge.

OPAC's technical Scope of Work included engineering records review, field observations, data collection, witness interviews, and analytical studies of the original design, the remedial measures, time-dependent structural behavior, and demands vs. capacities in critical structural elements. OPAC performed 3D analysis using SFRAME/S3D to support the studies. These studies led to development of an explanation of the causes of collapse that was supported by the field observations and was adopted as a consensus finding by the various engineers participating in the legal defense team. Since its collapse, the original Koror-Babeldaob Bridge has been replaced by a new bridge of completely different design.

Introduction

Koror Babeldaob Bridge, also called Koror Babelthuap Bridge or simply Koror Bridge, connects the islands of Koror and Babeldaob in the Republic of Palau. The design of the bridge began in 1974 and was based on the prevailing AASHO Standard Specifi cations at that time and was supplemented by ACI and CEB-FIP design recommendations on an as-needed basis.

The bridge was designed to meet the need for a link between the two major islands of Palau; Koror and Babelthuap. The latter contained the country's international airport and was the source of most fresh water but approximately 70% of the population lived on Koror, where the capital is situated.The channel between the two islands is about 30m deep with tidal flows of up to 3m/s and steep banks, which is why a single 240m span (then the longest concrete girder bridge in the world) was chosen

When the Koror Bridge was opened to traffic in April 1977, it was the world's longest concrete girder span. A few years later, the bridge began to deflect more than had been

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REVIEW ON TACOMA NARROWS BRIDGE FAILURE (1940)

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Abstract

The 1940 Tacoma Narrows Bridge, the first Tacoma Narrows Bridge, was a suspension bridge in the U.S. state of Washington that spanned the Tacoma Narrowsstrait of Puget Sound between Tacoma and the Kitsap Peninsula. It opened to traffic on July 1, 1940, and dramatically collapsed into Puget Sound on November 7 of the same year. At the time of its construction (and its destruction), the bridge was the third-longest suspension bridge in the world in terms of main span length, behind the Golden Gate Bridge and the George Washington Bridge. This paper discuss the various reasons for the collapse of the bridge.

Introduction

- Construction of a bridge between *Tacoma and the Kitsap Peninsula* dates back to 1889 with a Northern Pacific Railwayproposal for a trestle,
- Several noted bridge engineers, including *Joseph B. Strauss,* who went on to be chief engineer of the Golden Gate Bridge, and David B. Steinman, who went on to design
- Following Moisseiff's design, bridge construction began on September 27, 1938. Construction took only nineteen months, at a cost of $6.4 million, which was financed by the grant from the PWA and a loan from the RFC.
- The Tacoma Narrows Bridge, with a main span of 2,800 feet (850 m), was the third-longest suspension bridge in the world at that time,

Attempt to control structural vibration

Since the structure experienced considerable vertical oscillations while it was still under construction, several strategies were used to reduce the motion of the bridge. They included

- Attachment of tie-down cables to the plate girders, which were anchored to 50-ton concrete blocks on the shore. This measure proved ineffective, as the cables snapped shortly after installation.
- Addition of a pair of inclined cable stays that connected the main cables to the bridge deck at mid-span. These remained in place until the collapse, but were also ineffective at reducing the oscillations.

Collapse

The bridge collapsing, in a frame from a 16mm Kodachrome motion picture film taken by Barney Elliott

- The wind-induced collapse occurred on November 7, 1940, at 11:00 a.m. (Pacific Time), because of a physical phenomenon known asaeroelastic flutter(Aeroelasticity is the branch of physics and engineering that studies the interactions between the inertial, elastic, and aerodynamic forces that occur when an elastic body is exposed to a fluid flow.The study of aeroelasticity may be broadly classified into two fields: static aeroelasticity, which deals with the steady or steady response of an elastic body to a fluid flow; and dynamic aeroelasticity, which deals with the body's dynamic (typically vibrational) respon

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A REVIEW ON THE TETON DAM FAILURE

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Abstract

The Teton dam was an earthen dam on the Teton River in Idaho, UnitedStates. It was built by the Bureau of Reclamation, one of eight federal agencies authorized to construct dams. Located in the eastern part of thestate, between Fremont and Madison counties, it suffered a catastrophic failure on June 5, 1976, as it was filling for the first time. The collapse of the dam resulted in the deaths of 11 people and 13,000 cattle. The dam cost about $100 million to build, and the federal government paid over $300 million in claims related to its failure. Total damage estimates have ranged up to $2 billion. The dam has not been rebuilt.

Introduction

Dams impound water in vast reservoirs to provide flood control, hydroelectric power, recreation, and other benefits. The earliest use of dams was probably irrigation. Dams have been very useful to the development of civilization. However, the potential energy of the water reservoir can cause considerable damage if the dam fails.

The danger is more than theoretical. Throughout history, dams have failed and lives have been lost. Levy and Salvadori (1992) point out that a dam failure in Grenoble, France, was recorded as early as 1219. For dams built in the United States before 1959, on the average one in fifty failed.

Some of the factors influencing dam safety and performance can be reviewed through the case of the Teton Dam, a large earthen dam in eastern Idaho that failed on June 5, 1976.

History

There had been interest in building a dam in the eastern Snake River Plain for many years to control spring runoff and provide a more constant water supply in the summer. The area had suffered a severe drought in 1961, followed by serious flooding in 1962. The Bureau of Reclamation (USBR) proposed the Teton Dam in 1963, and Congress passed without opposition an authorizing bill the following year. The planned dam was to be an earthen structure 310 feet (94 m) high and 0.6 miles (1.0 km) long and create a reservoir 17 miles (27 km) in length. The impounded water would be used to generate hydroelectric power. An environmental impact statement was issued for the dam in 1971, but it did not raise the possibility of a collapse.

The primary contractor for the dam was Morrison-Knudsen Co. of Boise, assisted by Peter Kiewit Sons Co. of Omaha, Nebraska. The $39 million contract was awarded in December 1971 and work began in 1972.

The dam site is composed of basalt and rhyolite, both of which are considered unsuitable for dam construction because of their high permeability.This was confirmed by long-term pump-in tests at rates of 165 to 460 US gallons (620 to 1,740 liters) per minute.

In addition, an investigation of the area by geologists of the U.S.GeologicSurvey indicated that it was seismically active: five earthquakes had occurred within 30 miles (50 km) of the

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International Conference on Emerging Trends in Mechanical Engineering (ICETiME-2016)), September 23-24, 2016 at Faculty of Science and Technology, ICFAI Foundation of I ligher Education, Hyderabad, Telangana, India.

Free Vibration Analysis of Magneto-Rheological Smart Sandwich Beam: Experimental Study

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Abstract— **Semi active constrained layer damping treatment is one of the damping technique to control the vibration in dynamic condition has been using for the study of vibration behaviour in smart sandwich structures. Smart sandwich beam consists of three layers with smart material as a core layer; top and bottom are face layers. In this paper free vibration analysis has been carried out on air gap sandwich beam and MR sandwich beam sealed with natural rubber under fixed-free condition. Experimentation has been carried out for free vibration analysis of the above two models. Investigate the peak to peak amplitude of the two models for different magnetic field strength by varying the current. Magnetorheological materials display quick variations in their rheological properties to offer greater prospective for applications in smart structures requiring high bandwidth when subjected to changing magnetic field**
Keywords— **Free Vibration, sandwich Beam, Magneto-Rheological Fluid, Semi active vibration control.**

1. INTRODUCTION

A beam is an important slender structural member in engineering structures such as supporting members in buildings, railways, bridges, satellites, robot arms, airplane wings, etc. The smart sandwich beam is a layered assembly structure consists of two aluminium outer layers and MR fluid layer placed between them to create light weight and strong structural element. The development of smart sandwich structures will continue to be demand for the need of light weight, good stability under compression, providing outstanding stiffness to weight and strength to weight features. Many methods are available to control the structural vibrations like passive vibration control, active vibration control and semi-active vibration control. Among these techniques semi-active vibration technique is one of the emerging trends to control the continuous elastic structural vibrations for researchers. To control the dynamic vibrations of the structure either use active vibration control or semi-active vibration control technique. AVC could unjustified for vibration application because added cost and power constraint which prevent the performance gains. A range of SAVC concepts have been invented alternatively for various structural applications to control the vibrations, which could propose better performance compared to active and passive systems. MR Smart Sandwich approach control the structural vibration easily over a broad range of frequencies through variations in distributed stiffness and damping properties in the structure response with varying electric or magnetic field. SVAC offers better performance and economical compare to active and passive vibration control. Ahmed [1] investigated the flexural vibration characteristics of curved sandwich beams using finite element displacement method. He studied various displacement models to investigate their effect on the natural frequencies of curved fixed-fixed sandwich beams. The effect of shear deformation on the first three modes of the fixed-fixed curved sandwich beams is very small was found by him. Rao [2] derived the governing equations for the vibrations of a dual core unsymmetrical sandwich beam with considering the both rotatory and longitudinal translator inertia effect. He used approximate methods to show the frequencies of flexural modes are significantly affected at higher frequencies. Vibration modes of four families which are divided as per the displacement ratios obtained by him. Lall et al. [3] developed two formulations depend on simplified an exact method for damping analysis of a partially covered sandwich beam. They derived an expression for the modal system loss factor as the ratio of energy dissipated per cycle to the maximum strain energy during a cycle of harmonic motion using the first formulation and analysis is carried out by a Rayleigh-Ritz method. The first method gave the modal system loss factors only while the Rayleigh- Ritz and classical methods gave the modal system loss factors as well as the associated resonance frequencies are obtained by them. Hodges et al. [4] presented the methods to predict the natural frequencies and mode shapes of composite beams. They solved the equations of motion in two ways i.e., finite element method and exact integration method. Natural frequencies and mode shapes for a variety of ply layups are obtained by them. Bhimaraddi [5] implemented to fulfil continuity conditions at the interface using linear displacements and shear stresses. He found the loss factors of viscoelastic damped simply supported beam using three layer sandwich beam theory. Current models on constrained layer damping are examined by him are not appropriate when the center layer is thick. Qing Sun et al. [6] studied the dynamic characteristics of smart sandwich beam with different MR materials. They used oscillatory rheometry technique to find the relationship between the complex shear modulus of MR materials and magnetic field in the pre-yield regime. A structural dynamic demonstrating methodology was examined and vibration characteristics of MR smart structures are anticipated for different magnetic field levels.

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Mr. A.CHANDRASHEKHAR

ASST. PROF. MECHANICAL, IFHE UNIVERSITY, INDIA

HAS PARTICIPATED AND PRESENTED A PAPER ENTITLED

1445: ANALYSIS OF PERFORMANCE INDICES OF PLANAR PARALLEL MANIPULATORS

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ANALYSIS OF PERFORMANCE INDICES OF PLANAR PARALLEL MANIPULATORS

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Abstract
This paper deals with the performance analysis of one of the most commonly used parallel manipulator is been discussed. Performance analysis explains the difference performance factors of parallel manipulators like Condition number, Manipulability index, Transmission index, Minimum singular value, Stiffness index etc. In this Paper we are going to deal with indices like Transmission index, stiffness index and condition number. Three different structures are considered for the analysis. In each structure, for the entire dexterous workspace best postures of the manipulators are identified based on the performance measures.

Keywords
Parallel manipulators, Performance Analysis, Transmission index, stiffness index and condition number.

I. Introduction

Manipulators have been used in most the fields now a days. The main classification of robots is series robot and parallel robots. Out of these series robots are simple and easy to use but parallel are little complex in building and analysis but they are more robust then series manipulators. In recent days research is going on usage of Parallel manipulators in many fields like even in medical fields. Parallel manipulators are classified based on their number of legs (the joints connecting the base pod and movable pod) as III legged, IV legged, V legged, VI legged etc. and based on the joints as prismatic, revolute etc. In this paper I am working on a manipulator with 3 legs with RPR (Rotating-Prismatic-Rotating). This is a spatial manipulator. I developed an inverse kinematics for the manipulator and for out the performance. By plotting the performance indices at different structures we can select the best structure for that particular configuration. This method can help us to find the best manipulator for different environment and different usage.

A. Planar 3RPR Parallel Manipulators

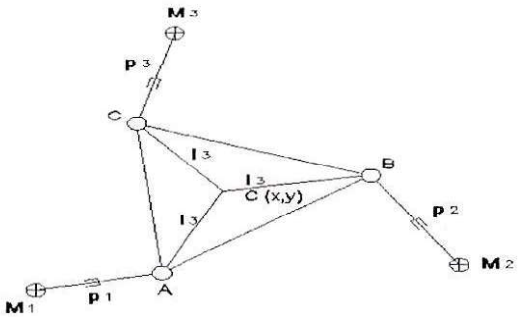

Fig. 1. 3 RPR planar Manipulator

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II. GEOMETRY OF 3RPR MANIPULATOR

This planar 3 degrees of freedom parallel manipulator can also be built using prismatic joints. Here actually the 3R architecture of the legs is changed to an RPR architecture where the prismatic joint is the one that is actuated. This is shown in Fig.1, where, the distance between each of the Mi's -which do not refer to motors here but to free pin joints-is set equal to unity. The assumption of symmetry is also made here. The potential compensations of this manipulator over the one based on revolute actuators are easier kinematic equations and

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4th International Conference on Research Trends in Engineering, Applied Science and Management (ICRTESM-2017)

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Certificate of Publication

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Published a paper in

IJETMAS, June 2017, ISSN 2349-4476

Titled as

"CFD Analysis On Conical and Bell Nozzle"

Dr K. Agarwal
Editor, Academic Science

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PERFORMANCE ANALYSIS OF PLANAR PARALLEL MANIPULATORS

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Abstract— In this paper the performance analysis of one of the most commonly used parallel manipulator is been discussed. Performance analysis explains the difference performance factors of parallel manipulators like Condition number, Manipulability index, Transmission index, Minimum singular value, Stiffness index etc. In this Paper we are going to deal with indices like manipulability, minimum singular value and condition number. Three different structures are considered for the analysis. In each structure, for the entire dexterous workspace best postures of the manipulators are identified based on the performance measures.

Keywords— Parallel manipulators, Performance Analysis, Manipulability, Condition number and Minimum Singular Value.

I. INTRODUCTION

Manipulators have been used in most the fields now a days. The main classification of robots is series robot and parallel robots. Out of these series robots are simple and easy to use but parallel are little complex in building and analysis but they are more robust then series manipulators. In recent days research is going on usage of Parallel manipulators in many fields like even in medical fields. Parallel manipulators are classified based on their number of legs (the joints connecting the base pod and movable pod) as 3 legged, 4 legged, 5 legged, 6 legged etc and based on the joints as prismatic, revolute etc. In this paper I am working on a manipulator with 3 legs with RPR (Rotating-Prismatic-Rotating). This is a spatial manipulator. I developed an inverse kinematics for the manipulator and for out the performance. By plotting the performance indices at different structures we can select the best structure for that particular configuration. This method can help us to find the best manipulator for different environment and different usage.

A. Planar 3RPR Parallel Manipulators

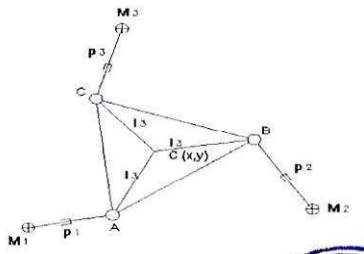

Fig. 1. 3 RPR planar Manipulator

II. GEOMETRY OF 3RPR MANIPULATOR

This planar 3 degrees-of-freedom parallel manipulator can also be built using prismatic joints. Here actually the 3R architecture of the legs is changed to an RPR architecture where the prismatic joint is the one that is actuated. This is shown in fig.1, where, the distance between each of the Mi's -which do not refer to motors here but to free pin joints-is set equal to unity. The assumption of symmetry is also made here. The potential compensations of this manipulator over the one based on revolute actuators are easier kinematic equations and lesser mechanical interference. The applications for which this manipulator could be used are in medical field, manufacturing fields etc.

III. INVERSE KINEMATICS ANALYSIS OF 3RPR MANIPULATOR

Referring to Fig. 1, We denote by l_3 the dimension of the gripper .by p_i the length of the ith leg or actuator, and by (x_i, y_i) the coordinates of the point of attachment of the ith leg to the gripper. Moreover, the position of the point of the attachment of the ith leg to the base is given by (x_{oi}, y_{oi}),quantities that are given eqns. (5.1).As in the case of the manipulator with revolute joints, the Cartesian coordinates are given by the position of the centroid of the gripper $C(x,y)$ and by its orientation, defined here by angle $\emptyset$. We can then write

$$x_i = x - l_3 \cos \emptyset_i - x_{oi}, \quad i=1,2,3$$
$$y_i = y - l_3 \sin \emptyset_i - y_{oi}, \quad i=1,2,3 \qquad (1)$$

Where angles $\emptyset_i$ and the pairs (x_{oi}, y_{oi}) are given by

$$\emptyset_1 = \emptyset + \pi/6$$
$$\emptyset_2 = \emptyset + 5\pi/6$$
$$\emptyset_3 = \emptyset - \pi/2 \qquad (2)$$

and

$$\{x_{01}, x_{02}, x_{03}\} = \{0, 1, 1/2\} \qquad (3)$$
$$\{y_{01}, y_{02}, y_{03}\} = \{0, 0, \sqrt{3}/2\} \qquad (4)$$

The inverse kinematic problem, which has only one solution here, can then be solved using:

$$p_i = \sqrt{x_i^2 + y_i^2}, \quad i = 1,2,3 \qquad (5)$$

Therefore, given a certain position and orientation of the gripper, the required length of the actuators can be computed directly from (5).

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Control of Motorised Robot Arm using Matlab

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Abstract—**This paper introduces the ability of a Matlab code to control the motion of a motorized robotic arm. The arm was controlled using a separately excited DC motor and the paper also describes how this motor should be chosen. The arm of the robot has one degree of freedom. Its control system was selected with the help of MATLAB Simulink Software. The aim of this paper is to demonstrate the effectiveness of using Matlab code over conventional control scheme, the simulation results are presented.**

Keywords— DC Motor, Comtrol System, Robot arm, MATLAB Simulink Software

I. INTRODUCTION

The development of high performance and highly effective motor drives has given an integral part of the advancements in industrial automation. These motor drives are especially crucial for motion control. To place the object in the required position, optimum amount of force and torque are required at the right time. This need is taken care by the motion control so as to ensure an efficient manufacturing process.

This precision process of motion control can be achieved using a DC motor since it is a SISO system. The motion control can run the DC motor over a wide range of speeds by adjusting the terminal voltage supplied. However there are a few practical control issues associated with DC motors:

1. Changes in Load Dynamics
2. Unpredictable and variable inputs
3. Noise and vibration propagation

Due to these issues, constant gain conventional feedback controllers fail to maintain the optimum performance levels. This paper is an attempt to replace them with a matlab code controlling ANN with the incorporation of feed forward.

Advantages of ANN:

1. Adaptability
2. Ability to learn
3. Parallelism
4. Capability to approximate
5. High tolerance

II. SELECTION OF DC MOTOR

A DC motor with a constant field and armature control is taken. Fig. 1 represents the electrical model of the DC Motor. The amplifier supplies the input voltage, $e_a(t)$. R_a, L_a and K_b represent the resistance, inductance and back electromotive force (emf) constant of the motor respectively. The armature windings rotate in a fixed magnetic field. This induces a back emf voltage, $e_b(t)$. $e_b(t)$ is directly proportional to the speed at which the motor is running. That is,

$$e_B(t) = K_B \frac{d\theta}{dt} \quad (1)$$

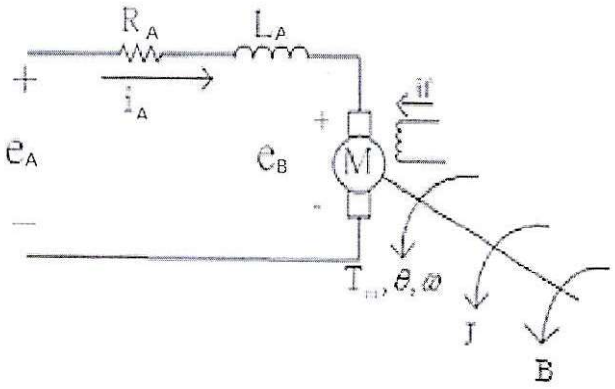

Fig.1. DC motor with a constant field

Taking Laplace transform on both sides of the equation gives us:

$$e_B(s) = sK_B\theta(s) \quad (2)$$

Using Kirchhoff's voltage law, we get :

$$e_A(s) = R_A I_A(s) + L_A s I_A(s) + e_B(s) \quad (3)$$

This can written as:

$$I_A(s) = \frac{e_A(s) - K_B s\theta(s)}{L_A s + R_A} \quad (4)$$

The torque generated in the motor is directly proportional to the current flowing in the armature;

$$T(s) = K_t I_A(s) \quad (5)$$

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Modeling and Simulation of Continuous Casting with Simulink

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Abstract— There is a rapid advancements commercially available numerical simulation technology to use in casting industry. Software's are available for most of the applications like thermal, flow modeling, calculation of grain structure, porosity, hot tearing, and solid-state transformation. Our study focuses on a numerical simulation application for continuous casting using Simulink in Matlab.

Keywords—casting industry; numerical simulation technology;continuous casting.

I. INTRODUCTION

Casting is usually a type of manufacturing process in which the desired product is made by pouring the molten metal into a hollow cavity called mold. Now, this molten metal is allowed to solidify for a time to make it to the desired shape. The solidified part is ejected or broken out of the mold to complete the process. Generally, metals or various cold setting materials are used as casting materials. It is often used for making complex shapes that are difficult or uneconomical to make by other manufacturing methods.

II. ADVANTAGES OF CASTING

Casting may be defined as a ***"metal object obtained by allowing molten metal to solidify in a mold",*** the shape of the object being determined by the shape of the mold cavity.

Though, there are several other processes like machining, forging, welding, rolling etc., the inbuilt advantages form the basis to choose metal casting process. Some of the reasons for the success of the casting process are:

- Complex shapes even external or internal can be done by casting which eliminates the operations, such as machining, forging, and welding.
- Some metals can only be shaped by casting due to their physical properties.
- Good bearing qualities are obtained in casting metals.
- Fabrication of the product can be simplified using casting.
- The product can be manufactured as a single piece using casting where it takes assembling of the parts using other operations.
- The mass production is made possible by adapting the metal casting process.

III. CONTINUOUS CASTING

Continuous casting is the process where semi-finished billet, bloom or slab is obtained from the molten steel for subsequent rolling in the finishing mills. Continuous casting makes the process of metal sections with low-cost and better quality due to the standardized process and as well as control over automation. Usually steel is preferable for this process, although aluminum and copper are also used.

A. Range of continuously cast sections

- There is different type of casting know to be billet, bloom or slab casters.
- Conventional slabs: 100-1600 x 180-250 mm x 12 m
- Wider slabs: 3250 x 150mm
- Thin slabs: 1680 x 50 mm
- Conventional bloom casters: 200 x 200 mm the bloom length: 4 m - 10 m
- Billet casters: 200 mm x 12 m long.
- Rounds: either 500 mm or 140 mm in diameter.
- Conventional beam blanks look similar to I-beams in cross-section: 1048 x 430 mm or 438 x 381 mm overall.

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Exemplifying Classification and Association Rules Techniques of Data Mining for Transportation Engineering in Indian Scenario

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ABSRACT

The transportation engineering filed large amounts of data are generated during studies on traffic management, accidents analysis, pavement conditions, roadway feature inventory, traffic signals and signal inventory, bridge maintenance, road characteristics inventory and many more such studies. Based upon these data, decision-makers arrive at decision to solve a respective problem. The well established filed of data mining can help us to delve into the decision making process. The basic requirements include the ability to identify what data is available, determine the characteristics of the data, extract the data of interest, transform the data into formats necessary for the application. In real life the situation of transportation domain, diverse fields of data need to be collected to integrate and to arrive at the solutions. Recent research study in the field of data mining techniques has opened a new horizon for decision-makers for applications in transportation engineering[1].

This paper is an attempt to find the catastrophe causes and thereby reducing the accidents and especially the road accidents happening in India, exploring various parameters from a scientific ways in order to propose a viable solution.

Keywords: Data mining, transportation and safety, road mishaps

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References

[1] Data mining applications in transportation engineering – SK Barlai , IIT, Kharagpur
TRANSPORT- 2003, Vol XVIII, No 5, 216-223

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Soft robotic treatment for club foot

Chandrashekhar.A, R. Rajeev, P. Abhilash

Abstract— The type of robots that are usually made up of some flexible matter like fluids, gels, elastomers etc are called as soft robots. The materials used for making soft robots have the properties of biological organs especially that of tissues. These are the emerging biological supportive machines which can help to reduce the casting and bracing process in ponseti method for club foot. Repeated casting related to the foot increases the cost effectiveness and become obstacle for natural muscle growth .CPS (controlled pressure suit) for the artificial muscles maintains rigidity and flexibility than bracing process introduction of soft materials recurrently used .This CPS often optimized for the given design criteria but are unable to execute instantaneous changes augmentations of "softness" in CPS to complement, adapt, and reconfigure to the casting process.

Keywords—soft robots, bracing process, casting process and controlled pressure suit.

I. Introduction

CLUB FOOT is a medical term usually defines the range of condition of the abnormality of the foot which is present at birth. In this condition the foot of the baby is not in its exact position or orientation. Different characteristics for this abnormality may be present which may vary from mild to severe:

- Foot of the baby (in most cases the heel) is usually smaller than normal.
- The orientation of the foot may be downward.
- The front part of the foot is sometimes inclined towards the other foot.
- In some cases foot will also turn inner side and in few cases the bottom of the foot may also turn upwards.

Club foot is not a painful abnormality but it should be treated at the beginning stage or few months after the birth of the baby as this abnormality can cause many problems after baby grows. The early treatment also helps the babies to lead a normal life from their childhood.

A. Club Foot

Club foot is result of position of the baby in the mother's womb in few cases along with combination of external factors like environmental and genital which is not yet well understood. In few cases it was also evident that in a family if a person has club foot then the abnormality was also seen in infants. Beyond the foot problem club foot also affect muscles, nervous system, bone system and also a huge chances of brain stroke or injury.

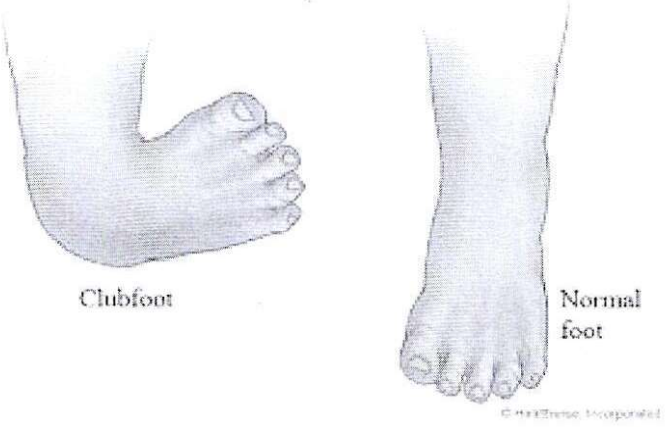

Fig. 1 Club Foot

B. Symptoms of club foot

Club foot is not a painful abnormality but it should be treated at the beginning stage or few months after the birth of the baby as this abnormality can cause many problems after baby grows. As the foot is twisted from the normal position it will make the leg shorter than the unaffected leg.

C. Clubfoot Treated

In **Nonsurgical ponseti method** using the techniques like manipulations in a gentle manner and casting process the leg of the infants can be corrected in time duration of about six to nine weeks. This treatment can be successful only by getting a good understanding of the anatomy and functionality of the foot along with the knowledge of bones, ligaments and muscles reaction and responses that are seen during the process of manipulation and casting process. In this method treatment is started in the first or second week of the birth of the infants so as to take the benefit of the favorable elasticity of the tissues which are present in the foot. With the treatment the foot is moved by manipulating softly. After that for casting five to seven casts are used from the foot to the thigh. During casting knees should be at right angle. Following correction the clubfoot deformity tends to relapse. To prevent relapses, when the last plaster cast is removed a splint (bracing) must be worn full-time for two to three months and thereafter at night for 3-4 years.

Surgical correction of the feet means the correction when the child is unable to take the braces or if parents are not able to fulfill the cost requirements of bracing then the partial recurrence of the club foot happens. The heel cord and joint capsule in the back of the ankle may need to be released (limited posterior release), or a tendon that helps to move the

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Traceability Management System Using RFID In Vehicles For Parking: A Review

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ABSTRACT

Using long range RFID enable users to gain access the easy way: a transponder or tag behind the windshield or otherwise attached to the car, is remotely read by a long range reader. Without any delay the barrier opens and the vehicle can pass through. Long Range Automatic Vehicle Identification Systems offers the highest level of convenience you can offer to your employees, suppliers and customers. AVI systems are designed to be connected to access control systems. The same systems you use for building access control , can also be extended to support vehicle access control which will enable you to extend the development of security policies. Time schedules and conditional authorizations can easily be implemented for vehicles.

KEYWORDS: RFID (Radio Frequency Identification), AVI (Automatic Vehicle Identification), Transponders,

1.INTRODUCTION

Radio-frequency identification (RFID) is an automatic identification method, relying on Storing and remotely retrieving data using devices called RFID tags or transponders. The technology requires the cooperation of an RFID reader and an RFID tag. An RFID tag is an object that can be attached to an object for the purpose of identification and tracking. This can be done by using radio waves. Some tags can be read from several meters away and beyond the line of sight of the reader. An RFID tag is an object that can be incorporated into a product, here it is vehicles for the purpose of identification and tracking using radio waves.

Vehicle tracking has increased in use over the past few years and, based on current trends, this rise should continue. Tracking offers benefits to both private and public sector individuals, allowing for real-time visibility of vehicles and the ability to receive advanced information regarding legal existence and security status.

2. RELATED WORK

The present day metropolitan areas have seen a burgeoning growth in human population as well as vehicles. With shrinking spaces, operating a managed, busy and expensive parking lot having multiple gates can pose significant challenges, especially to a private organization that also owns some of the vehicles in the lot. The parking area has to be secure, with barrier-enforced entrances and exits. It also has to have an automated, efficient monitoring system that allows for accurate vehicle tracking as well as easy in-and out access for drivers.

With this RFID vehicle tracking system, vehicle information can be automated gathered to enable vehicle management to be more efficient and safe. With RFID vehicle tracking system with high identification accuracy, parking areas or gated communities can manage their vehicles efficiently without human intervention as well as easy in-and-out access for drivers and with low deployment and operation cost. RFID's also offers a turnkey solution for parking operators that require the ability to

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Design and Structural Analysis of Missile Nozzle

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ABSTRACT

Nozzle is the component of a missile, rocket or air breathing engine that produces thrust. Converting the pressure of the hot chamber gases into kinetic energy and directing that energy along the nozzle axis. The nozzle considered for analysis in this project work is designed for short range missile and is made of marging steel 250 alloy. In this work stress analysis of this nozzle under the different static test pressures are considered. Nozzle is modeled in SOLIDWORKS and analysis is carried out in ANSYS 14.0. Finite Element Analysis is carried out to find the stresses, thermal flux and displacement in nozzle components. Finally, from the results it is concluded that the structure is safe and has adequate margin of safety in components of nozzle assembly.

Keywords: SOLIDWORKS, ANSYS, Nozzle, Missile.

1. INTRODUCTION

Nozzle is the component of a missile, rocket or air-breathing engine that produces thrust. Converting the pressure energy of the hot chamber gases into kinetic energy and directing that energy along the nozzle axis.

The propellant is composed of a fuel, typically liquid hydrogen (H2), and an oxidizer, typically liquid oxygen (O2). The propellant is pumped into a combustion chamber at some rate (m) where the fuel and oxidizer are mixed and burned. The exhaust gases from this process are pushed into the throat region of the nozzle. Since the throat is of less cross-sectional area than the rest of the engine, the gases are compressed to a high pressure. The nozzle itself gradually increases in cross-sectional area allowing the gases to expand. As the gases do so, they push against the walls of the nozzle creating thrust. Mathematically, the ultimate purpose of the nozzle is to expand the gases as efficiently as possible so as to maximize the exit velocity (V exit). This process will maximize the thrust (F) produce by the system since the two are directly related by the equation

Where F=Thrust force
M=Mass flow rate,
V=Exit exhaust gas velocity at nozzle exit,
p= Exit pressure of the exhaust gases at the nozzle exit
P = Ambient pressure of the atmosphere
A= Exit cross-sectional area of the nozzle exit.

1.Expansion Area Ratio

In theory, the only important parameter in missile nozzle design is the expansion area ratio (e), or the ratio of exit area (A exit) to throat area (A Throat).Fixing all other variables (primarily the chamber pressure), there exists only one such ratio that optimizes overall system performance for a given altitude (or ambient pressure). However, a missile typically does not travel at only one altitude. Thus, an engineer must be aware of the trajectory over which a missile is to travel so that an expansion ratio that maximizes performance over a range of ambient pressure can be selected. Nevertheless, other factors must also be considered that tend to alter the design from this

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Selection of the Best 3RRR Manipulator Using AHP

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Abstract: Analytical Hierarchy Process (AHP) is one of the multiple attribute decision making (MADM) methods. MADM are not continuous. It had a limited number of alternatives which are predetermined. MADM specifies how to reach a solution of our choice. MADM requires inter-attribute and intra-attribute comparissions. In this paper Analytical Hierarchy Process which is one of the famous and most used MADM methods used to find the best robot that can be used from given set of robots based on the user's preferences on characteristics. In this Paper information related to multiple 3RRR Parallel Manipulators is collected and is used to find out the best alternative based on the user preferences.

Keywords: Analytical Hierarchy Process, MADM, Alternatives and Attributes.

1 Introduction

MADM has four main parts they are alternatives, attributes, weight importance of each attribute and measures of performance of alternatives with respect to attributes. In this method we have represented as alternatives, Ai (for i=natural numbers), attributes, Bj (for j=natural numbers), weights of attributes, wj (for j=natural numbers) and the measures of performance of alternatives, mij (for i=natural numbers; for j=natural numbers). If a table is given with all the required information which includes attribute and alternative information and also the process of making the decision is given, then the work of the person who wants to give the decision criteria is to use any decision making method and find the best alternative. Before going for solving the decision table one must make sure that they should convert all the units of different elements into same unit by normalizing. Few methods of MADM that have high potential to find best solution are discussed below (116).

The different types of multiple attribute decision making (MADM) methods are

- Sensitivity Analysis
- Graph theory and matrix approach
- Simple additive weighting method (SAW method)
- Analytical hierarchy process (AHP)
- Technique for order preference by similarity to ideal solution method (TOPSIS)
- Compromise ranking method (VIKOR)

Out of the above methods the suitable method selected for this paper is Analytical Hierarchy Prodess.

2 Problem Statement

Different types of Parallel manipulators with their configurations have been taken and using MADM methods the best alternative is picked and kinetostatic analysis along with optimization using

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Study of Electrical Conduction and Interface Properties of ZnO and GaSb in a MOSCAP structure

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ABSTRACT:

Gallium antimonide (GaSb), a III-V compound semiconductor materials receiving special attention as the channel material due to its high electron mobilities and high critical fields. To enhance the next generation low power, high speed, energy efficient electronic applications, GaSb can be employed in conjunction with other compound semiconductor material that shows interesting optoelectronic applications. One such compound semiconductor material is Zinc Oxide (ZnO).It is one of the attracting photonic materials for devices such as ultraviolet detectors, laser diodes, LEDs due to its wide band gap and high electron mobility. Few or no work has been done in realizing MOSFETS using these two materials. In this paper a MOSCAP structure was analyzed taking GaSb as substrate, whereas ZnO as the dielectric material using SILVACO TCAD tool at 300K.Electrical characterization of ZnO/n-GaSb MOSCAP structure is analyzed. Capacitance-voltage(C-V) was found out at a high frequency of 1Mhz. The threshold voltage (V_{th}) and the flatband voltage (V_{fb}) were obtained from the C-V characteristic graph and found out to be -0.46v and 0.05v respectively. The electrical parameters like leakage current density and dielectric breakdown were analyzed from Current-Voltage (I-V) characteristics and found to be -0.038 A/nm^2 at a breakdown voltage of -2.4×10^8 V/cm. Interface trap density (D_{it}) was found to be in the order of 10^{18} cm^{-2}ev^{-1} by Terman's method. This high value of D_{it} can degrade the channel hole mobility, thus leading to degradation of device properties. Hence, further study is needed for the improvement of the interface quality between these two upcoming materials.

Keyword: ZnO, GaSb, TCAD, Terman method, Interface trap density

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has participated / presented a paper entitled "Effect of moisture Content, Equivalence ratio and Temperature on Syngas Composition of Indian Coals using Thermodynamic Equilibrium modeling"

at the First International and Eighteenth National ISME Conference on **Mechanical Engineering: Enabling Sustainable Development (ISME-2017)** held during February 23-25, 2017 at National Institute of Technology, Warangal, India.

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Implementaion of SVM-DTC of Induction Motor using FPGA

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Abstract— **This paper presents implementation of space vector modulation based direct torque control (SVM-DTC) of induction motor using economical Spartan-6 FPGA board. The major advantage of FPGA compared to DSP processor for implementation of advanced control algorithms like DTC is parallel processing and less execution time. The major drawbacks in practical implementation of conventional DTC are variable switching frequency and high sampling frequency to implement hysteresis controllers. Whereas SVM-DTC operates at constant switching frequency and does not require high sampling as hysteresis controllers are replaced with PI controllers. The VHDL code for SVM-DTC with PI controllers is simulated, synthesized using Xilinx ISE 14.3 design tool. The proposed VHDL code is verified experimentally by interfacing VSI fed induction motor using Spartan 6 XC6SLX25 FPGA board. The experimental results show that fast dynamic response and improved steady state response is achieved in SVM-DTC of induction motor.**

Keywords—SVM-DTC, FPGA, Induction motor, VHDL

I. INTRODUCTION

Takahashi and Noguchi [1], in 1986, proposed a new vector control scheme for fast response and high-efficiency control of an induction motor. The torque and flux of an induction motor are controlled by selecting an optimal voltage vector based on a switching table, called the direct torque and flux control of the induction motor. The major drawback of the switching table based DTC is variable switching frequency, and high torque and flux ripples. Implementations of hysteresis controllers require high sampling frequency and results in variable switching frequency [2-3]. Hence, based on the comparison, the SVM-DTC is the best solution for the implementation of DTC over a wide speed range with constant switching frequency [2]. The DSP processor has fixed architecture and performs all it's sequentially with results in high sampling and execution time. Whereas FPGA does not have fixed hardware, parallel processing of the logic arrays with less computation time. So FPGA are emerging as an alternative to the DSP controllers due to its flexibility and ability to implement the complex algorithms in industrial control systems [4-5]. FPGA have potential in improvement of controllers as its design methodology supports parallel functioning with minimum response time and maximum operational performance allow rapid prototyping of the complex control schemes like direct torque control and field oriented control [6-7]. Few researchers use dSPACE to implement direct torque control scheme [7-9]. Implementation of direct torque control of induction motor using FPGA is given in [10-13]. Most of the researchers employ Xilinx System Generator (XSG) for implementation of part of control algorithm. In this paper complete control logic algorithm is developed step by step using Very high speed integrated circuit Hardware Descriptive Language (VHDL). Xilinx ISE 14.3 is used for simulation, synthesize, mapping and placing of code in FPGA device. Xilinx ISE converts the BIT file to the PROM or ACE file to configure the target device Spartan 6. The robustness and effective implementation of the scheme is validated using Experimental results.

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II. SVM-DTC OF INDUCTION MOTOR

The SVM-DTC with stator flux-oriented control is implemented in this research. The SVM-DTC operates at constant switching frequency. The block diagram of SVM-DTC is shown in Fig.1.

$$V_{sd} = \frac{2}{3}V_a - \frac{1}{3}V_b - \frac{1}{3}V_c \quad (1)$$

$$V_{sq} = 0 + \frac{1}{\sqrt{3}}V_b - \frac{1}{\sqrt{3}}V_c \quad (2)$$

$$i_{sd} = \frac{2}{3}i_a - \frac{1}{3}i_b - \frac{1}{3}i_c \quad (3)$$

$$i_{sq} = 0 + \frac{1}{\sqrt{3}}i_b - \frac{1}{\sqrt{3}}i_c \quad (4)$$

$$\psi_{sd} = \int_0^t (V_{ds} - R_s i_{sd}) \; and \; \psi_{sq} = \int_0^t (V_{qs} - R_s i_{sq}) \quad (5)$$

$$\widehat{\psi_s} = \sqrt{\psi_{sd}^2 + \psi_{sq}^2} \quad (6)$$

$$\theta_s = \tan^{-1}\left(\frac{\psi_{sq}}{\psi_{sd}}\right) \quad (7)$$

$$T_e = \frac{3}{2}p(\psi_{sd} i_{sq} - \psi_{sq} i_{sd}) \quad (8)$$

The motor speed is sensed using a speed sensor, which converts the mechanical speed into an equivalent voltage value compared with the reference speed. The speed error is processed through a PI controller, generating the

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2017 IEEE International Conference on Technological Advancements in Power and Energy (TAP Energy)

Simplified Robust Damping Control Design of SVC in Power System Using LMI Approach: Polytopic Representation of Operating Conditions

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Abstract—**This paper proposes design of dynamic out-put feedback controller feeding supplementary control signal to FACTS device for improving damping in system. Feedback controller design involves infinity control, model reduction, and closed loop pole-placements in addition to exposure to uncertainties in load conditions on system. A well designed controller satisfying infinity norm on the resulting closed loop system with output feedback meeting multiple objectives from pole-placements inside a conic sector in complex s-plane, robust to changing load conditions on system is attained. A Polytopic representation of system for changing operating point with load conditions called polytopic linear differential inclusion (PLDI) is considered in the design. The Proposed controller design simplifies steps otherwise involved in robust controller design. LMI framework is used in obtaining controller parameters. Controller designed is dynamic and is obtained by reducing the order of the original system to smaller value. The resulting feasible solution yields optimum values of matrix variables and hence a controller parameters both feasible and optimum**

Index Terms—**Robust controller, closed loop pole placements,infinity norm,polytopic representation, quadratic stability.**

I. Introduction

Electro-mechanical oscillations are a source of constant worry in power system. Oscillations of small frequency from 0.1 to 2 Hz are constantly generated with changes in system parameters namely load conditions [1]. With ever increasing load demand on system, transmission lines operate near to their optimum thermal ratings. These oscillations tend to reduce the transmission capacity of lines.Oscillations of small damping may affect stability and interferc with power transmission even leading to black-out [2]. High gain AVRs in excitation system and weak transmission lines over long distances are main cause for generation of oscillations. Action of AVR causes reduction in damping torque. One of the earliest control used to add damping was *Power System Stabilizers (PSS)* [3] and [4] . PSS would add component of electrical torque against variations in rotor speed from the set point. PSS output signal is added to the reference input. In tuning PSS, its parameters like gain and time constants are varied to meet desired output response. This method of adjusting PSS parameters is called classical tuning. It has some disadvantages like under-performance in case of change in operating condition. In addition PSS is ineffective against inter area oscillations. FACTS devices like *SVC,TCSC* have also been used as supplementary damping control [5] especially for inter-area oscillations. With advances FACTS devices in addition to voltage control act as supplementary damping controls.FACTS devices opens possibility of wide area control in power system. Remote signals could be used in feedback and input to FACTS based controller for damping inter area oscillations.With advent of *p*hasor measurement units (PMUs)wide area control in power system has become significant. Signals in real time from remote and local regions are available to controllers and used as feedback for any desired control action [6], [7], [8]. In [9]- [11] highlights inter-area oscillation damping through wide area control. In various norm based techniques like H-infinity, H-2 [15], [16] offers means to over come draw backs faced in nominal operating point based controller tuning. H-infinity technique causes minimization of sensitivity of chosen system variable over unstructured disturbance inputs. H-2 norm bounded system would result minimizing control effort in design. Use of H-infinity and H-2 bounded norm on system yields better performance of controller in changing operating points as compared to classical tuning. To make controller action robust in face of system uncertainties and time varying conditions lot of attention was garnered by norm based controllers.In recent time *LMI* i.e linear matrix inequality based controller design in power system has gained importance. LMI allows optimum design of controller under multiple constraints like H-infinity, H-2, mixed sensitivity, thereby allowing robust control action.In [19] damping of oscillations with mixed sensitivity approach to H-infinity control is used in FACTS controller, in [18] *LMI* is used in state feedback based controller design feeding to PSS. In [20], [21] *LMI* is used in coordinated decentralized control approach in large power systems with FACTS devices,in [22] *LMI* based control design using superconducting magnetic energy storage devices in damping of power oscillations is

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Big Data Challenges -Survey

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Abstract - **Data is everywhere, we have data in different forms, eg:- photos, videos, documents etc., each and every gadget we use nowadays leaves a trace ,which is stored for later use by the companies, the data then collected and then analyzed for the betterment of the product. This data keeps on increasing day by day. This data may be structured or unstructured. Big data is a tool which is used to deal this type of bulk data. In this paper, we mainly focused on type of data and what are the challenges we face when we try to analyze this data and finally discuss how Big data can be used to process this type of data.**

Keywords : Bigdata ,data

I. INTRODUCTION

Economy and the use of technology had developed drastically, so the volume of data being increased day by day and the history shows that data is being increased exponentially every year. There is lot of valuable information which is being hidden in this data which has to be retrieved in order to get benefitted the data which is being obtained from various sources. so it is stored in the terms of terabytes a day which is not at all an easy task ,in terms of storage or may be in terms of retrieval.

Figure 1
Data is growing at a 40 percent compound annual rate, reaching nearly 45 ZB by 2020

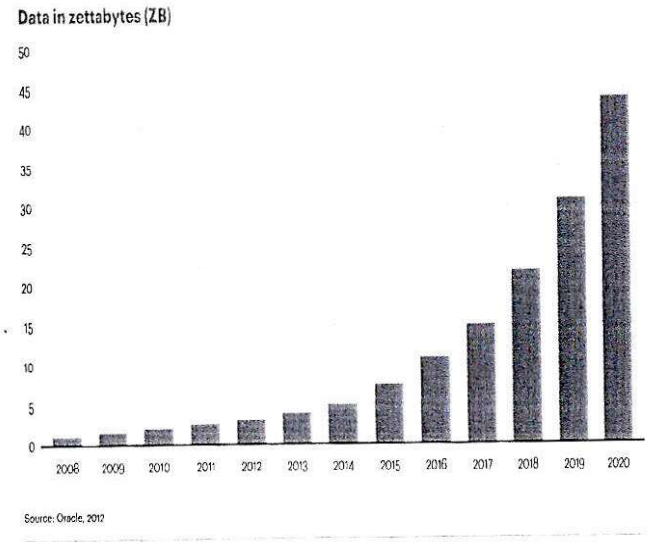

Fig. 1. exponential growth in data over a decade.

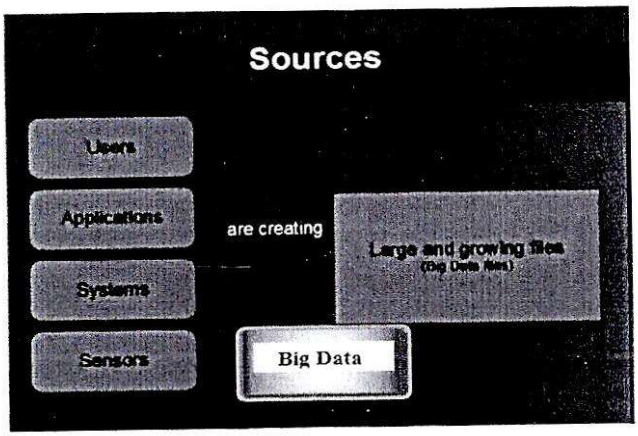

Fig. 2. Sources of data

In order to analyze large piles of data, which is extremely complex we have to use certain set of tools that make easier to navigate through it and sort the data easily. So Big data is used to do data analysation in an efficient manner.

Data may be:

- Structured
- unstructured

Structured - in terms of tables. eg., Relational data.

Unstructured data - which does not have a pre-defined data model, typically may be in the form - text data or speech etc.., eg. Word, PDF, Text, Media Logs.

Big data deals with both structured and unstructured data.

II. CHARACTERISTICS OF BIG DATA :

"Big Data" refers to datasets whose size is beyond the ability of typical database software tools to capture, store, manage and analyze. Big data is characterized by 4 V's:

- Volume
- Velocity
- Veracity and
- Variety.

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Smart Shopping Cart with Automatic Billing System through RFID and ZigBee

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ABSTRACT:

Contemporary embedded systems are habitually based on microcontroller's i.e. CPUs in the company of integrated memory as well as peripheral interfaces but ordinary microprocessors by means of external chips for memory and peripheral interface circuits are also still common, especially in more complex systems. Radio frequency identification (RFID) technology may not only be useful for streamlining inventory and supply chains: it could also make shoppers swarm. ZigBee is based on an IEEE 802.15 standard. ZigBee devices often transmit data over longer distances by passing data through intermediate devices to reach more distant ones, creating a mesh network; i.e., a network with no centralized control or high-power transmitter/receiver able to reach all of the networked devices. This paper provides centralized and automated billing system using RFID and ZigBee communication. Each product of shopping mall, super markets will be provided with a RFID tag, to identify its type. Each shopping cart is designed or implemented with a Product Identification Device (PID) that contains microcontroller, LCD, an RFID reader, EEPROM, and ZigBee module. Purchasing product information will be read through a RFID reader on shopping cart, mean while product information will be stored into EEPROM attached to it and EEPROM data will be send to Central Billing System through ZigBee module. The central billing system gets the cart information and EEPROM data, it access the product database and calculates the total amount of purchasing for that particular cart. Main aim of this paper was to provide an automatic billing to avoid queue in malls and super markets.

Keywords: Product Identification Device, EEPROM, RFID, ZigBee, Central Billing System.

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A local SNR based de-noising analysis for speech ABR of human subjects

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Abstrct - **De-noising of Neuro-biomedical signals is a very critical area of biomedical signal analysis. Very recently in 2009, wide approval has come for wavelets for de-noising the biomedical signals. In this research we designed a highly innovative de-noising technique "Translation Invariant wavelet algorithm" for local SNR analysis for Speech Auditory Brainstem Responses. The neural signal data is collected using single electrode EEG from 5 healthy human subjects. In this research we found TI wavelets algorithm is very advantageous for de-noising the neural signals, and hence it can work as a filter for biomedical signals.**

I. INTRODUCTION

There is increasing interest in recording auditory brainstem responses to speech stimuli (speech ABR) as there is evidence that they are useful in the diagnosis of central auditory processing disorders, and in particular in some children with learning disabilities (Johnson et al., 2005). However, the frequency content of natural speech is neither concentrated in frequency nor in time, the recording of speech ABR of sufficient quality may require tens of minutes (Dajani et al., 2005). Even with a synthetic consonant-vowel stimulus, a recording time of several minutes was required (Russo et al., 2004). Speech ABR is believed to originate in neural activity that is phase-locked to the envelope or harmonics of the stimulus. As a result, the recorded responses are remarkably speech-like. In fact, speech ABR is quite intelligible if played back as a sound (Galbraith et al., 1995). As a result, methods used for Voice Activity Detection (VAD) may be useful for the detection of speech ABR (Ranganadh et al., 2012, 2013). Once the response is detected, then noise suppression algorithms could in principle be applied to improve the Signal-to-Noise Ratio (SNR). We found the speech like response in these brainstem speech evoked potentials collected from single electrode EEG and also we detected Voice by using VAD algorithms including our own methodology of Signal-to-Noise Ratio Peak Valley Difference Detection Ratio, which confirmedly detected Voice amazingly all the times with higher SNRs (Ranganadh et al., 2012, Ranganadh et al., 2013). Collecting data and Noise reduction in biomedical signals collected from single electrode EEG for Brainstem Speech evoked potentials of Audiology is a highly advanced, huge and interesting area of research and relatively new. In our research we have collected data (Dajani et al., 2005; Johnson et al., 2005; Russo et al., 2004) from single electrode EEG signals, collected in an audiology lab of University of Ottawa. The major component evoked potential, reflects coordinated neural ensemble activity associated with an external event. Evoked potentials offer important information to study the neural basis of perception and behavior. In these signals in addition to evoked potential, potentials caused by background activity are also present. This background activity unrelated to any specific event "noise" to be suppressed and evoked potentials have to be extracted. In clinical and cognitive researches the extraction of evoked potentials is an essential task. To remove the background activity most widely used ensemble averaging process requires a large number of trials, which take more time for data acquisition and is more nuisance for the subjects. In addition to this, averaging process considers that "no variations at all in amplitude, latency or waveform of the evoked potentials across many trials, which is not valid in practice (W. Truccolo et al., 2003). If there is a violation in this consideration, dynamics of the cognitive process is lost. So there are plenty of methods have come up to extract the evoked potentials, basing on the application, they work in their limitations to an extant with some tradeoffs. In our research to improve the Signal-to-Noise Ratio we have designed TI wavelets algorithm which successfully improved Signal-to-Noise Ratio for extracting evoked potentials. In this we specifically observed the SNR improvement at local places of the 100,200,….,800 Hz of the ABR signal. This work is done on 5 different human subjects collected data. TI wavelets technique found to be working successfully.

II. TRANSLATION INVARIANT WAVELET ALGORITHM

Translation-Invariant (TI) Wavelet Filtering Estimator: instead of the conventional wavelet based filtering estimators we are considering the TI wavelet based estimator filtering technique. In this filtering technique problems such as pseudo Gibbs phenomenon near the discontinuities (R.R. Coifman et. al., 1995) can be overcome. To do the process with TI wavelets evoked-potential estimation filtering the steps are

1) *1. We shift the data.*
2) *2. Threshold the shifted data.*
3) *3. Unshift the thresholded data.*
4) *4. Then average the results for all shifting.*

We did this process for each individual data sets. We considered shifting and un-shifting the signal in the frequency domain and we did 1,2,3,4,5 shifts for each individual data set and averaged the results. We utilized two popular thresholding techniques: hard thresholding, soft thresholding. Soft thresholding sets the wavelet coefficients with the magnitude less than the threshold to zero, but it reduces the remaining coefficients in magnitude by the threshold also when compared to hard thresholding, soft thresholding does not contain noisy spikes, so we strongly considered soft thresholding and it provides smooth estimates. We have implemented this TI wavelets algorithm on our brainstem speech evoked potential

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AUTOMATED VEHICLE SPEED CONTROL SYSTEM AND PATH FOR EMERGENCY VEHICLE THROUGH RF AND ZIGBEE

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Abstract—**The traffic control system is an embryonic technology where it uses most of the advanced technologies such as Wi-Fi, GSM, GPS, etc. for automated vehicle control system to have safe congestion less driving in the city. This paper gives another way to have a safe driving of the vehicle. A device will be fixed to a vehicle which alerts the driver about the speed limit and occurrence of an emergency vehicle. Basically, the device will consist of two main operations, Vehicle speed control system (VSCS) and Path for an emergency vehicle (PEV). The VSCS consists of a radio frequency (RF) module which receives the information about the speed limit and alert driver; if the driver doesn't decrease the speed the device will reduce the speed of the vehicle automatically. The PEV is another operation which initially receives information about the emergency vehicle position, speed, lane, etc. This information will be provided to the driver to make a way for emergency vehicles if the driver doesn't make required free space the device automatically takes control of the vehicle. The prototype model of the device consists of an onboard microcontroller, ZigBee transceiver, receiver, obstacle detector, RF Transmitter & Receiver, relay driver unit, etc.**

Index Terms—**vehicle speed control system; path for an emergency vehicle; ZigBee; Relay Driver**

I. INTRODUCTION

IN the past decade, there has been a vast improvement in automotive embedded systems on vehicles. Many vehicles are being built with computer based functions with the help of embedded system. An in one piece range of functions such as navigation, tracking system, traffic information update, stabilising and safety system etc has been implemented on current vehicular technology. Latest cars are manufactured with nearly 35% of the electronics component cost of their overall vehicle cost. Since 1990, embedded electronic and software technologies are increasing steadily at the rate of 10% in the market [1]. On the other hand, because of the increase in usage of vehicles in developing countries such as India, the traffic congestion has also become the worst in nature. India is the fastest growing country in the world. Because of its dense population and increase in usage of the vehicle in urban areas, traffic rule violation has become common [2]. This results in the number of accidents increasing. The worst part is an emergency vehicle such as ambulance, fire service,etc., is also stuck with those traffic congestions.

Some of the technologies such as ZigBee, RFID, GSM, etc are used in vehicular technology. The ZigBee runs at low-power and can be used at all the levels of work configurations to perform predefined tasks. It manocuvres in industrial, scientific and medical (ISM) radio bands. Data transmission rates variegate from 20 Kbps in the 868 MHz frequency band to 250 Kbps in the 2.4 GHz frequency band. The ZigBee uses 11 channels in case of 868/915 MHz radio frequency and 16 channels in case of 2.4 GHz radio frequency [3], [4]. It also uses 2 channel configurations, CSMA/CA and slotted CSMA/CA [5]. On the other hand, sensors play a critical role in vehicles [6]. A sensor, a device is used to quantify the physical quantity of the environment and commute it into an electrical signal. Some of the sensors used in vehicles are Transmission fluid temperature sensor, Turbine speed sensor (TSS), or input speed sensor (ISS), Variable reluctance sensor, Vehicle speed sensor, etc.

The proposed work is categorised into section II provides literature survey. Section III gives you idea about the proposed model. Section IV deals with programme flow of proposed model as control flow. Section V provides detailed information and features of hardware components used in the prototype. Section VI gives the interconnection or circuit diagram in-formation of device placed on the vehicle. Section VII gives conclusion and enhancement can be made for this model.

II. LITERATURE SURVEY

Because of increase in usage of the vehicle and increase in the population of urban cities leads to more congested traffics. In [7], the deployment of roadside units (RSU) merits and demerits were discussed, RSUs are used to have a vehicular network for passage of message. RSUs are more effective when they are connected. The usage of a large number of disconnected RSUs leads to less or no benefit in message spreading. On the other hand [8], deals with the comparison of various strategies for vehicle run off road and return. The an independent ROR(run off road) revival controller should be able to as expected execute safe and effective vehicle recovery in a broad range of roadway conditions without placing the vehicle's people in a more hazardous situation than would have been without the controller. [9] Discuss the IoT in smart cities. By implementing sensors and GPS on-vehicle monitoring of traffic may be realised. It can also be used to have a data on acoustic and air quality on the roads. The collected data may help in many ways for the city authorities and citizens to discipline the traffics. In [10], RFID and GPS-based automatic lane clearance system for an ambulance were proposed. The spotlight of this work is, without human intervention clearing the lane to reduce the time duration of the ambulance to reach the hospital. The path and location of

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Micro Strip Patch Antenna Design Using Defected Ground Structure

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Abstract— **A simple microstrip patch antenna consists of metallic patch and ground between which is a dielectric medium called the substrate. Microstrip patch antennas are used for communication purposes especially in military and civil applications. In this paper a simple microstrip patch antenna is designed using Defected Ground Structure(DGT) at a resonant frequency of 2.4 GHz. The gain of the designed antenna is 8.27 dB and VSWR of 1.18. It was observed that the dimension of a microstrip patch antenna operating at 4.7 GHz had been successfully reduced up to 34 % of the original dimension while having larger bandwidth**

Keywords: VSWR, Radiation Pattern, beamwidth, directivity, gain,Microstrip

I. INTRODUCTION

Antenna is one of the important elements in the RF system for receiving or transmitting signals from and into the air as medium. Without proper design of the antenna, the signal generated by the RF system will not be transmitted and no signal can be detected at the receiver. Antenna design is an active field in communication for future development. Many types of antenna have been designed to suit with most devices. One of the types of antenna is the microstrip patch antenna (MPA). The microstrip antenna has been said to be the most innovative area in the antenna engineering with its low material cost and easy to fabricate which the process can be made inside universities or research institute. The idea of microstrip antenna was first presented in year 1950"s but it only got serious attention in the 1970"s [1].

Due to MPA advantages such as low profile and the capability to be fabricated using lithographic technology, antenna developers and researchers can come out with a novel design of antenna which will reduce the cost of its development. Through printed circuit technology, the antenna can be fabricated in mass volume which contributes to cost reduction. MPA are planar antennas used in wireless links and other microwave applications. It uses conductive strips and patches formed on the top surface of a thin dielectric substrate separating them from a conductive layer on the bottom surface which is the ground for the antenna[2]. A patch is typically wider than a strip and its shape and dimension are important features of the antenna. Microstrip Patch Antenna [MPA][3] are probably the most widely used antennas today due to their advantages such as light weight, low volume, low cost, compatibility with integrated circuits and easy installation on the rigid surface. Furthermore, they can be easily designed to operate in dual-band, multi-band application, dual or circular polarization. They are important in many commercial applications [5]. They are extremely compatible for embedded antennas in handheld wireless devices such as cellular phones, pagers etc. These low profile antennas are also useful in aircraft, satellites and missile applications, where size, weight, cost, ease of installation, and aerodynamic profile are strict constraints [6].

MPA with inset feed has been studied extensively over the past two decades because of its advantages. However, length of MPA is comparable to half wavelength with single resonant frequency with bandwidth around 2%. Moreover, some applications of the MPA in communication systems required smaller antenna size in order to meet the miniaturization requirements. So, significant advances in the design of compact MPA have been presented over the last years.

Many methods are used to reduce the size of MPA like using planar inverted F antenna structure (PIFA) or using substrate with high dielectric constant [7]. Defected Ground Structure (DGS) is one of the methods to reduce the antenna size. DGS is relatively a new area of research and application associated with printed circuit and antennas. The evolution of DGS is from the electron band gap (EBG) structure [8].The substrate with DGS must be designed so that it becoming metamaterial[4]. The substrate with DGS is considered as metamaterial substrate when both. relative permittivity, εr and permeability, μr are negative.

The invented metamaterial antenna will have comparable performance and smaller size to conventional one. The substrate that I used was RO3003. The metamaterial antenna behaves as if it were much larger than it really is. By

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Certificate of Participation

This is to certify that Dr./Mr./Ms. Mavva Pavani from IFHE University, Hyderabad Participated / Presented paper titled RFID Smart Security Access Control System. in "2nd National Conference on Recent Advances in Electronics" held on 24th & 25th February, 2017 at ICFAI Tech School, IFHE, Hyderabad.

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This is to certify that Dr./Mr./Ms. Pavani Mavva from IFHE University, Hyderabad. Participated / Presented paper titled Monitoring Urban Co Emission Using Wireless Sensor Networks in "2nd National Conference on Recent Advances in Electronics" held on 24th & 25th February, 2017 at ICFAI Tech School, IFHE, Hyderabad.

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Monitoring Real-Time Urban Carbon Monoxide (CO) Emissions Using Wireless Sensor Networks

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Abstract. In this paper, we propose a wireless sensor network based portable pollution monitoring system for monitoring the carbon monoxide (CO) concentration levels on the real time basis. Carbon Monoxide which is a critical and primary pollutant in air significantly affects the health of the people. With the rapid industrialisation and the exponential growth of automotive vehicles had led to the deterioration of air quality in the urban areas. Our design consists of Testbed of five nodes with calibrated carbon monoxide sensors for measuring CO concentration levels. By using the multi-hop mesh network, the CO sensors are integrated onto the Waspmote to communicate between the various nodes for the information exchange. The derived concentration levels of carbon monoxide from the different sensors on the board are made available on the internet through the platform which consists of Light Weight Middleware and Net Interface deployed on the server. Designed prototype had been implemented and tested in collecting the emission levels of CO in the Hyderabad city which had shown the consistent results under various circumstances.

Keywords: Wireless sensor networks · Middleware · Calibration · Web interface · Electrochemical sensors · Transducer technology · Respirable Suspended Particulate Matter

1 Introduction

In the last four decades, the world had witnessed an enormous increase in the number of industries and automobile vehicles leading to the deterioration in the air quality. Excessive emission of air pollutants beyond the specific levels had grave consequences on the environment and also on the health of the people. Air pollution monitoring systems [1] are used for measuring the concentration levels of various air pollutants, and the analysis of this data is required for the policy makers to take necessary and appropriate steps to reduce the air pollution for the welfare of their people. Traditional Air Quality Monitoring stations are deployed in limited number due o their large size, power limitations, high maintenance cost and huge initial investment cost involved. Wireless Sensor Network (WSN) presents an attractive and alternate solution for the

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S.C. Satapathy and A. Joshi (eds.), *Information and Communication Technology for Intelligent Systems (ICTIS 2017) - Volume 2*, Smart Innovation, Systems and Technologies 84, DOI 10.1007/978-3-319-63645-0_62

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Optimization of link and resource management in heterogeneous network

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Abstract- **Concern for mobility in heterogeneous networks is addressed in this paper. Heterogeneous network users the mobility of use of spectrum and signal coding approach has been made to stress. Regarding use of spectrum use coding and signaling a new approach to processing centers. A new approach to spectrum utilization levels in the use of spectrum in HetNet overhead signal has to overcome the issue. The lack of mobility in a heterogeneous network, to achieve the goal of fairness, coordinating a multiobjective approach is proposed for the optimal use of resources. Resource utilization problems between network users efficient use of spectrum is defined, indicating minimal overhead. Observations developed simulation than traditional methods significantly improve the use of resources in communication.**

Index Terms- **cross spectrum utilization, resource sharing, signaling overhead, spectrum allocation.**

I.INTRODUCTION

Dynamic heterogeneous networks shared wireless channels in multi-hop wireless networks that are set up by a group of mobile nodes. The fixed infrastructure, dynamic topology, and energy range of band with variable capacity restrictions, limited physical security and not linked to the operation attribute. In recent years, large-scale heterogeneous networks in the study guide [1] - [4], and have many strange routing protocols have been proposed. Most of the current routing protocols assume a homogeneous mobile nodes, network nodes all have the same properties, for example, the same power transmission (range), and the data rate, productivity, reliability and security of the node. However, a heterogeneous homogeneous network, scalability suffers to some extent that the number of nodes increases faster network performance is degraded. In addition, many heterogeneous network nodes realists are really heterogeneous [5] - [7]. For example, the network is a war on, portable wireless devices carried by soldiers, and the most powerful and reliable communications equipment, vehicles, tanks, airplanes and satellites is carried by; These devices / nodes transmission power, data rate, processing capacity, reliability, etc. are different in terms of the characteristics of communication. Therefore, the more different types of nodes as these network elements to the model have to be realistic. There are also many advantages The most efficient routing protocol design and modeling of various types can be used as nodes. With a multitude of heterogeneous network resources are limited. A common radio channel and dynamic topology due to the transfer of packets in such networks suffer interference and attenuation. Network load is loaded through transmission errors. Manet recently entered the growing demand for multimedia communications to support. It has a high bandwidth and get a lot of traffic in real time with the crowd, chances. Packet loss and bandwidth congestion leads to deterioration and also spends time in rush recovery. This article is a conscious approach to gathering such data rate routing, queue delay, link quality and MAC overhead parameters to consider as proposed. When considering all these parameters, a weight is being evaluated. Received between routes, the route with the least cost index is selected, all nodes within the network node, which is based on weight. To present the stated work, the rest of the paper is outlined in 5 sections. Section 2 outlines the MAC processing overhead in heterogeneous network. The proposed approach of optimization of processing overhead with respect to rate allocation is outlined in section 3. The simulation result

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Design of Low Cost Portable 12 Lead Wireless ECG Device Using TI ADS 1198

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Abstract— **In this paper, we presented the design of low-cost, compact and wireless 12 lead Electrocardiogram analog front-end (AFE) system using TI ADS 1198. ECG analog front-end (AFE) systems are designed with ASICs or custom designed ICs which are too expensive to be used. The main components of a conventional ECG system include instrumentation amplifiers, operational amplifiers that implement active filters and analog-to-digital converters (ADCs). There has been high demand for the development of low-cost ECG systems as the market requires systems more and more affordable. In the present work, we used the latest high-performance delta-sigma (ΔΣ) ADCs from Texas Instruments (ADS1198) as components of an ECG AFE system to optimize the cost from a system design perspective. The main parts of the present work are hardware and software design. The schematic and layouts are created along with the significant parts of the software.**

Keywords: **Low Cost Electrocardiography; Onboard oscillator; Analog Digital Converters; Analog Front End Unit; Integrated programmable gain amplifiers; ASICs.**

I. INTRODUCTION

In developing countries, the technology driven health monitoring aids have become very crucial for the prevention of diseases. In the last ten years, the diagnosis and monitoring of the heart conditions have gained importance as there has been an enormous growth of cardiac diseases across the developed and developing nations. For the early discovery of human heart abnormalities, the necessity has increased for the development of low-cost and low-power, portable ECG machines imposing constraints on engineers and designers to make systems more and more affordable. With the recent advancements in the domains of communications, ICs and sensors, Wireless ECG systems had gained its importance as a technical aid for monitoring abnormalities related to human heart.

From the existing literature, it was observed that the wireless ECG system has limitations concerning mobility and portability as these early systems use computers to acquire, process and display the data [1-8].The specialized and dedicated software is installed in the computers for processing the data which has increased the cost due to licensed softwares [9]. There has been an increase in the hardware cost as some systems had used the proprietary modulation schemes for the transmitter and receiver modules reducing the flexibility of exchange of data [10 & 11].The accuracy of wireless ECG systems depends mostly on the resolution of Analog - Digital converters employed. Most of the systems had used the 10 bit/12 bit ADCs [11,12,13] which had affected the accuracy. ECG analog front-end (AFE) systems with the anti-aliasing Butterworth filters had introduced the severe phase distortion to the ECG signal [14]. Mobile devices have been used for display and processing the signals which require expensive and dedicated software to be installed on the mobiles phones.

In this paper, an attempt is made to present a low power handy, stand-alone, inexpensive, accurate, and easy to use ECG system.

II. NATURE OF ECG SIGNAL

An electrocardiogram is an electronic device that records the movement of electrical current throughout the heart for the duration of a heartbeat. The representation of the movement of electrical current is depicted as shown in the figure 1.

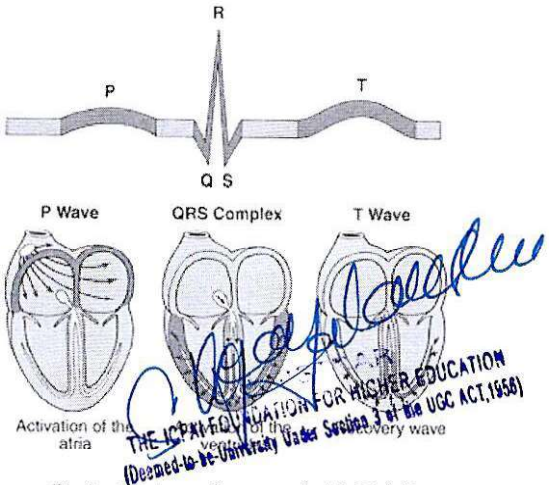

Fig 1: Electrocardiogram period P-QRS-T

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A review: Growth Techniques of Gallium Antimonide (GaSb)

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ABSTRACT:

Present era electronic applications demands for high speed, high noise resistive devices. For the next generation low power, high speed, energy efficient electronic applications silicon has almost reached its limits. Thus various new promising materials are coming into picture, out of them III-V compound semiconductor materials are one. Substrates either in the form of thick (bulk) or thin film are getting higher attention. Gallium-antimony (GaSb), a family member of III-V compound semiconductor has attracted researcher and industries for its excellent physical properties. These physical properties can be exploited to push semiconductor device into giga scale integration. In this review paper, growth techniques of bulk and thin film of GaSb semiconductor material have been summarized from the various literatures.

Keywords: GaSb, Czochralski (CZ) method, Bridgman (BG) technique, travelling heater method (THM), Vertical gradient freeze (VGF) technique, Liquid phase electro-epitaxy (LPEE), Thermal-evaporation technique, Molecular Beam Epitaxy (MBE).

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End-End Delay Minimization Using Real Time Routing Protocol for Wireless Sensor Networks

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Abstract— **A real-time routing protocol was presented for wireless sensor networks, called SPEED based on stateless algorithms with minimal control overhead and feedback mechanism. By the novel combination of the feedback control and non- deterministic geographic forwarding end-to-end real-time communication is accomplished in the sensor networks with desired delivery speed. SPEED is a highly scalable and efficient routing protocol when the resources of each node are scarce. The SPEED routing protocol provides primarily three types of real-time communications, real-time unicast, multicast and anycast. We evaluated SPEED protocol via simulation using Network Simulator (NS2) and compared it with other routing protocols: Ad hoc On-Demand Distance Vector (AODV) and Dynamic Source Routing (DSR). In this paper, the protocols DSR and AODV along with SPEED were studied and performance standards of these protocols are simulated using Network Simulator (NS2) for different mobility.**

Keywords: Realtime Communication, Sensor Networks, Feedback Control, Network Protocols

I. INTRODUCTION

Wireless Sensor Networks (WSNs) are finding wide applications in the real-time environments to gather and analyse the information intelligently without the human intervention. Wireless Sensor Networks consists of several hundreds of sensor nodes of low-power, multi-functional, working in unattended surroundings having sensing, communication and computation capabilities. Improvements in the wireless communication technologies, computation technologies and integration of Micro-Electro-Mechanical System (MEMS), made it possible to develop various WSNs.

WSNs [1] consists of small devices called sensing nodes, which collect information from cooperating with each other and consist of Central Processing Unit for information processing, memory for storage, battery for power and transceiver for sending, getting information among the various nodes in the network. The dimension and number of nodes vary with the applications and basically the cost of networks depends upon on the parameters like memory size, processing speed and battery. For example, in military or surveillance applications, it might be microscopically small.

In hostile environments where human involvement may be too dangerous, sensor networks will provide a robust service. WSNs can be a perspective to design new applications for handling emergency and military operations that require real-time information for effective planning and coordination. The importance and use of wireless sensor networks are increasing rapidly, but it also imposes a limitation in terms of power because of limited battery lifetime. In WSNs the only source of life for the sensor nodes is the battery and each node depends on power for its operations, which has turned out to be the main concern in WSNs. Even the breakdown of a single node can upset the entire system. Each sensing node in the WSNs can be in any of the modes (i) active (for receiving and transmission operations) (ii) idle (iii) sleep mode. In active mode, nodes take power while getting or sending information. In idle mode, the nodes take the equal quantity of power similar to the active mode, whereas, in the sleep method, the nodes will shut down for the power saving.

In this paper, a SPEED protocol to facilitate soft real-time communication based on stateless algorithms and feedback control mechanism in larger networks is presented.

II. LITERATURE SURVEY ON ROUTING PROTOCOLS

Many routing protocols were proposed by the researchers for the wireless sensor networks and evaluated these protocols by way of various performance measures with the help of different simulators.

Samir Das.R et al. [2] assessed the reactive protocols, Dynamic Source Routing (DSR)and Ad-hoc On-Demand Distance Vector (AODV) using three performance measures with varying pause times using the NS-2 simulator. Broch.J et al. [3] evaluated the routing protocols TORA, DSR, DSDV and AODV with Network Simulator-2 for 50 nodes of varying pause times. Jyoti Raju et al. [4] compared WRP-Lite with DSR. WRP-lite has a great extent improved delay and hop performance when compared to DSR. Samir Das.R et al. [5] discussed the performance of SPF, DSDV, TORA, DSR, AODV protocols for 30 and 60 nodes using the Maryland Routing Simulator. Boukerche.A [6] presented the

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Real Time Pollution Monitoring Using Wireless Sensor Networks

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Abstract— **Wireless Sensor Networks are gaining importance in the area of research, mainly of their wide potential applications. Atmospheric contamination in the various elements of air leading to hazardous effects of global warming and acid rains which have become a crucial apprehension for the wellness of the population. An atmosphere pollution monitoring system is extremely important to keep away from such adverse imbalance in nature. In the proposed paper, an attempt is made to develop a real-time pollution monitoring using wireless sensor networks (WSN). With the rapid growth in the industries which are the main sources of air pollutants, the problem of air pollution is becoming a serious concern for the health of the population. The concentration of major air pollutant gases like Carbon dioxide (CO_2), Nitrogen dioxide (NO_2), carbon monoxide (CO) and oxygen (O_2) from the air are sensed by using the commercially available gas sensors. Each of these sensors is properly calibrated as per the standard methods and these gas sensors are then incorporated with the wireless sensor motes using multi-hop data aggregation algorithm. Air pollutant data are collected from the developed test beds in the form numbers and this data is made available on the Internet through the combination of light weight middleware and a web interface. Air pollution monitoring with Wasp mote is simple and economical due to its features of wireless communication among the sensors.**

Keywords: Sensor Networks, Light Weight Middleware, Sensor Calibration, Routing Protocol, Web Interface, Data Aggregation, Multihop Technique

I. INTRODUCTION

Wireless Sensor Network (WSN) is a good research area which is a fast evolving technology and gaining importance due to the number of potential applications. It is an intense wireless network of small, low-priced detectors, which collect and distribute environmental data. By using WSNs supervising and controlling of physical environments from remote locations can be acted with improved accuracies [1]. With the exponential industrial growth and automobiles have caused complex and dangerous consequences like stratospheric ozone depletion, acid rain, climate change, and increased occurrences of diseases like lung cancer, asthma and chronic pulmonary diseases. Air pollution has now become a recurring problem in the universe due to rapid industrialisation and increase in the number of automobiles. Atmospheric pollution refers to the air contamination and the modification of the air in terms of a physical, biological or compound modification in the ambience can be termed as pollution. Rapid developments in the automobile industry and transportation mechanisms leading to atmospheric changes which have a dangerous impact on the environment [1] along with the industrialisation. In the road transport, air contamination is not only governed by the vehicles but also depends on the climatic conditions of the environment [2].Instruments used for atmosphere pollution monitoring are Fourier Transform Infrared (FTIR), mass spectrometers and gas chromatographs which give precise and selective gas readings.Because of the bulk size of the instruments, high initial investment and maintenance cost making them unfavourable for a larger scale monitoring applications [3].Gas sensors are becoming equally effective alternative [4] as they are low cost, compact and robust with versatile applications. Gas sensor monitoring methods are basically electrochemical, catalytic bead, photo ionisation, infrared and solid-state [3]. Present monitoring methods mainly employ smart transducer interface module (STIM) with semiconductor gas sensors. Geosensor network with control action for monitoring [7] are also unfavourable due to high cost.

In this paper, an attempt is made to propose and design a system which is economical, consistent, precise and scalable for the real-time pollution monitoring using with WSN. Electrochemical and resistive heating type sensors with proper calibration technologies were used to sense the gases like O_2, CO_2, CO and NO_2. To increase the range of monitoring area, multiple data aggregation algorithms was implemented for the Zigbee [13] based WSNs.

II. CALIBRATION OF GAS SENSORS

Gas sensors are calibrated by exposing them to different concentrations of gas prior to deployment on a Wasp mote for obtaining the most accurate results. Conditioning circuits along with the sensors are positioned in the chamber and

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Dynamic Stream Control Mechanism For Qos In Heterogeneous Network

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Abstract: with the development of hybrid model of data streaming the need for rate controlling in such network has emerged. Various methods were proposed in past for the development of rate controlling approach in heterogeneous mode of operation. For the streaming of data in different network the available resource per node need to be evaluated and is to be adaptively allocated for different link nodes. The variability wrt. the available resource is hence a concern matter for Heterogeneous network, to provide services in different mode of communication.

Keyword: Adaptive rate controlling, Heterogeneous network, Data streaming, variable data rate.

I. INTRODUCTION

Computer networks by nature are dynamic environments, where many users and applications share resources. Application management in networked environments is associated with effective management of networked resources with respect to their static characteristics as well as the dynamic changes of their state. During the past years, management systems have tried to overcome the heterogeneity of network resources, operating systems, and protocol of different domains, resulting in standard protocols like SNMP that are widely used today. When later application management become an important issue, SNMP-MIB was extended to include application-related resources. The demand for Quality of Service (QoS) raised by multimedia applications, introduced resource reservation protocols like RSVP as additional standards. An application - oriented resource management system using Common Object Request Broker Architecture (CORBA) is presented in [16]. Resource management has common functionality that is independent of resource type. CORBA [10, 11] is intended to support the production of flexible and reusable distributed services and applications. This paper present a support management operation to guarantee QoS for a variety of resource types, while possessing a uniform operation interface at the application level. This system allows a plug-in approach for various resources. A similar goal is also a major research topic of active and programmable networks [15]. This architecture enables users to inject customized programs into the nodes of the network in which the switches perform customized computations on the messages flowing through them. The development of active networks is motivated by the increasing requirement of user-driven computation and by the emergence of mobile code technologies that make dynamic network service innovation available. Dynamic resource management and adaptive QoS is another related field, which focuses on developing resource management mechanisms with different kinds of customized services. Some recent approaches [4, 5, 6, 13] are based on dynamic management using CORBA. Some other approaches are based on management rules for specific protocols of the network or of other layers [8, 9]. An SNMP-based network management schema using CORBA was proposed in Bell Laboratory [8]. For the development of resource adaptability for such network in this paper a integrated approach to such a network is proposed. The rest of the paper is presented in eight sections. Where in section II the design constraint wrt. QoS in heterogeneous network is been focused. In Section III the information transformation approach for resource adaptability is been defined. The transportation mechanism for such a network is defined in section IV. Section V defines the control strategy outlined for the proposed approach. The observations obtained for such a network is presented in section VI. The conclusion is presented in section VII.

II. QOS MODELING

For the development of a Heterogeneous network environment various constraints need to be considered in the designing phase. Three different resource requirement sessions can be raised from the user application:

A. Guaranteed QoS

The requirement is specified in terms of parameters of services. For example, for a switch-like resource, these parameters would be bandwidth, delay, reliability and jitter. The return code for this application requirement is simple: it informs the user application whether the request was completed successfully, appended to a waiting list or rejected.

B. Priority level QoS session

The user desires a certain level of service from the system, but with no particular parameters as the case in the first session. The return code is similar to the first session, with the addition of the Resource Evaluator's object reference.

C. "Best effort" service

The user wishes to have the best possible results from the system as a whole. The service request message is tagged with the current values of the "benefit" function and the signature of the Resource Evaluator that can provide it. Replies are of the same format as for the priority level QoS sessions.

III. STREAMING MECHANISM

An important characteristic of the Resource Evaluators is that, although their management mechanism is resource and/or system specific, their operational interface as well as the

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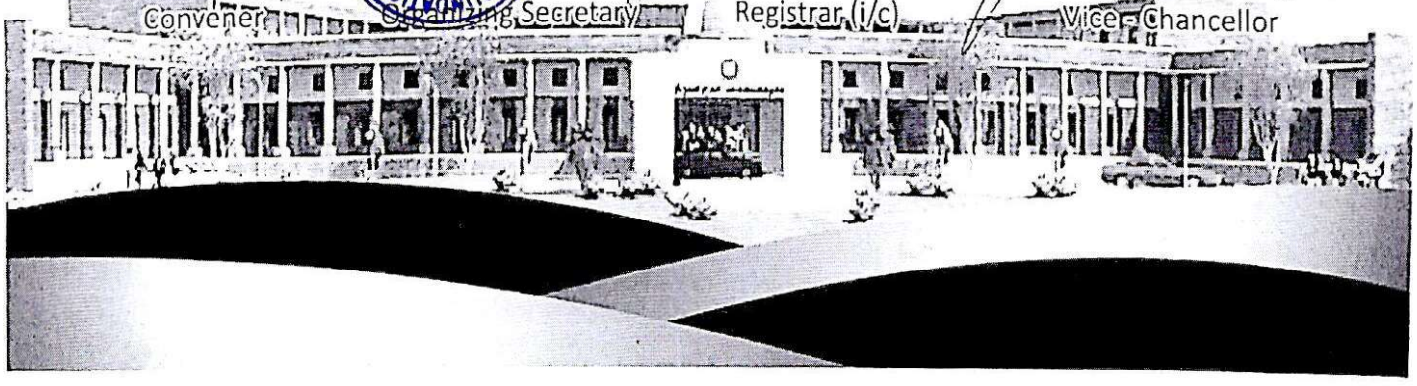

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Title of the paper Thermal Convection in an Inclined Porous Layer with Effect of Heat Source

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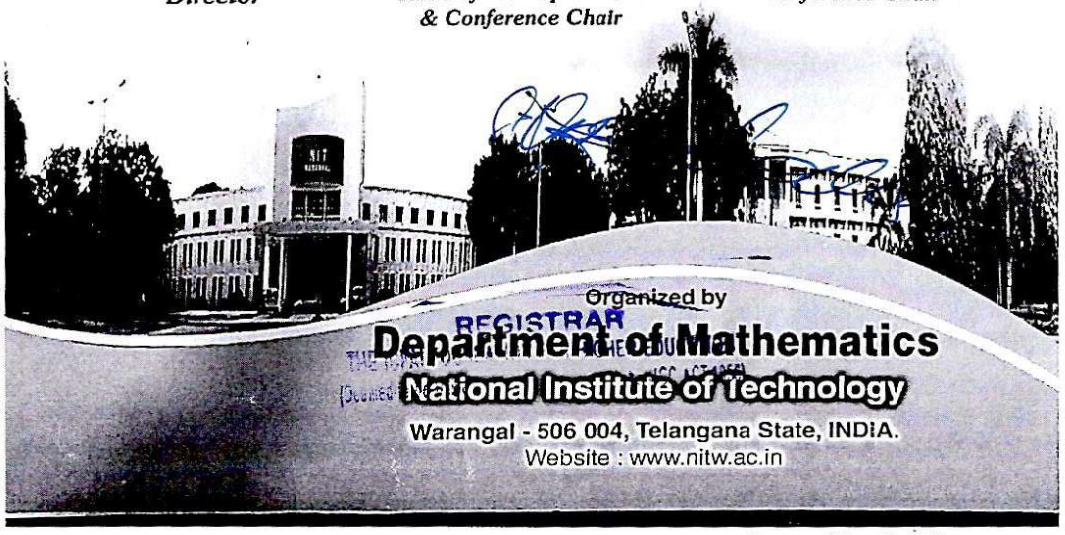

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2nd International Conference on Advancements in Aeromechanical Materials for Manufacturing (ICAAMM 2018)

Advancements in Aeromechanical Materials for Manufacturing

IOP Conference Series: Materials Science and Engineering Volume 455

Telangana, India
13 – 14 July 2018

Part 1 of 2

Editor:

M. S. N. Gupta

ISBN: 978-1-5108-8001-6
ISSN: 1757-8981

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Asudeb Dutta

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Ammonia Sensing Behaviour of ZnO Thin Films and Nanostructures

S P Ghosh, K C Das, N Tripathy, G Bose, D H Kim, T. I. Lee, J.M. Myoung, J.P. Kar

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FST, IFHE University, Hyderabad.

Yonsei University, Seoul, Republic of Korea

Gachon University, Gyeonggi-do, Republic of Korea.

ABSTRACT:

This research work focuses on the ammonia sensing behaviour of ZnO thin film and nanostructures. ZnO thin films were deposited by using RF sputtering technique at 150W and 4×10^{-3} mbar pressure. Post-deposition rapid thermal annealing (RTA) of ZnO thin films were carried out at 1000°C for 600sec. ZnO nanostructures (nanowires/nanorods) were hydrothermally grown by using equimolar solution of Zinc nitrate and hexamethytetramine. Morphology of ZnO thin films and nanostructures were investigated using scanning electron microscope (SEM). A comparative study on the sensing behaviour of ZnO thin films and nanostructures were carried out by adopting current voltage measurement technique. Annealed film has shown higher sensitivity than as-deposited film. It has been observed that nanowires show higher sensitivity than nanorods. All the gas sensitivity measurements were carried out at room temperature.

Keywords: Ammonia, Nanostructures, Sensitivity, Thin film, Zinc Oxide

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S. Vijayalakshmi

Anjanna Matta
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Abstract

This study analyzes the effect of stress relaxation on the mechanism of instability of the thermal convection. It is also worked-out the effect of heat source on the onset of Hadley- Prats flow in a horizontal fluid saturated porous medium with inclined temperature gradients. This investigation is analyzed by using linear stability analysis for a large number of parameter values. The horizontal components of these inclined gradients induce a Hadley circulation, which becomes unstable when vertical components are sufficiently large and this instability is analyzed using three dimensional normal modes. The vertical thermal Rayleigh number is treated as the eigenvalue. The system that constitutes the eigenvalue problem. Which is solved by using Chebyshev tau-QZ method for various modes of thermal instability.

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A Survey of Reconfigurable Antenna Systems

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Abstract— **The antenna that possesses the ability to modify its radiation properties dynamically in real time is referred to as a reconfigurable antenna. This paper discusses the concept of reconfigurable antennas and the study of different reconfigurable wireless communication antennas. Reconfigurable antennas are used to operate for various applications just by change of their pattern, polarization and frequency. Reconfiguration techniques and types of antennas are varied based on their applications. Properties of antenna such as gain, bandwidth, directivity, radiation pattern, return loss, radiation efficiency etc are varied based on their shapes, dimensions, thickness, dielectric constant, and conducting material and feeding techniques. The flow of the paper is: section II deals the design concepts for re-configurable antennas. Section III deals the various techniques in design of frequency reconfigurable antennas. Section IV deals with pattern reconfigurable antennas. Section V deals with polarization reconfigurable antennas. Section VI deals with compound configurability and conclusions and future scopes are discussed in section VII.**

IndexTerms—Reconfiguration, directivity, polarization, bandwidth, operating frequency, metamaterials.

I. INTRODUCTION

Antenna is a transitional structure between guided wave and free-space wave and a necessary and critical component of an electrical communication system[3]. Modern telecommunication systems require the increased functionality of a communicating antenna within a confined volume place puts a greater burden on today's transmitting and receiving systems. Because of the requirement for antennas to provide additional functionality and to have increasingly flexible properties, all while occupying the same or smaller physical volumes than before, the reconfigurable antennas are a solution to this problem and these antennas ability to modify their radiation characteristics, frequency of operation, polarization or even a combination of these features in real time. Since reconfigurable antennas are engineered to reversibly and intentionally alter their performance metrics, they possess the potentiality to add substantial degrees of freedom and functionality to mobile communication and phase array systems.

Re-configurability in antenna allows us for spectrum reallocation in multi-band communication systems, dynamic spectrum management, therefore reducing the number and size of antennae in a system. Antenna re-configurability could provide the ability to tune the antenna's operating frequency, could be utilized to change operating bands, filter out interfering signals, or tune the antenna to account for a new environment. If the antenna's radiation pattern could be changed, it could be redirected toward the access point and use less power for transmission, resulting in a significant savings in battery power. Reconfiguring an antenna is achieved through deliberately changing its frequency, polarization, or radiation characteristics. This change is achieved by many techniques that redistribute the antenna currents and thus alter the electromagnetic fields of the antenna's effective aperture.

II. DESIGN CONCEPTS FOR RECONFIGURABLE ANTENNAS

Reconfigurable antennas, almost all of them have made use of some kind of a switching mechanism. Once these antennas are constructed and placed on a certain platform, they can be reconfigured remotely without having to reconstruct the antenna or the platform upon which the antenna structure is mounted.

Reconfigurable antennas can be classified into four different categories[2].

- Category 1: A radiating structure that is able to change its operating or notch frequency by hoping between different frequency bands is called frequency reconfigurable antenna. This is achieved by producing some tuning or notch in the antenna reflection coefficient.
- Category 2: A radiating structure that is able to tune its radiation pattern is called radiation pattern reconfigurable antenna. For this category, the antenna radiation pattern changes in terms of shape, direction, or gain.
- Category 3: A radiating structure that can change its polarization (horizontal/vertical, LH/RH circular polarized, etc.) is called polarization reconfigurable antenna. In this case, the antenna can change, for example, from vertical to left-hand circular polarization.

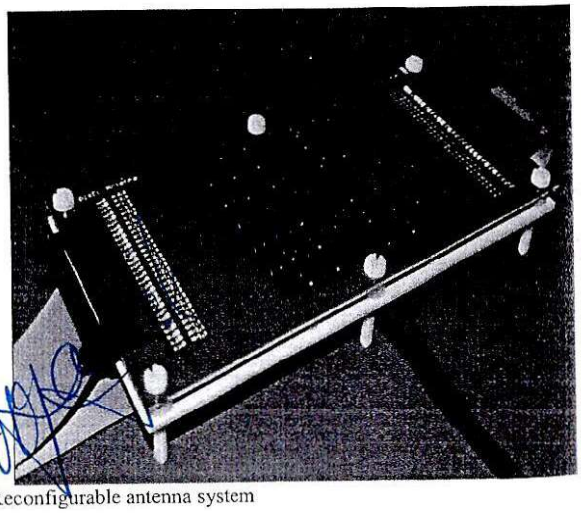

Fig. 1. Reconfigurable antenna system

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IOP Conference Series: Materials Science and Engineering Volume 455

Telangana, India
13 – 14 July 2018

Part 1 of 2

Editor:

M. S. N. Gupta

ISBN: 978-1-5108-8001-6
ISSN: 1757-8981

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ISSN: 2456 - 4664

International Journal of Advanced Trends in Engineering and Technology

Impact Factor 5.965, Special Issue, January - 2018

1st International Conference on Innovations in Mechanical Engineering (ICIME-2018)

On 5th & 6th January 2018 Organized By

Guru Nanak Institute of Technology & Guru Nanak Institutions Technical Campus, Hyderabad

MANUFACTURING AND TESTING OF DISC BRAKE MATERIAL - AMC 3

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Cite This Article: Md. Hameed, Shaik Himam Saheb & K. Govardhana Reddy, "Manufacturing and Testing of Disc Brake Material - AMC 3", International Journal of Advanced Trends in Engineering and Technology, Special Issue, January, Page Number 71-75, 2018

Abstract:

Braking system is an integral part of automobile mechanism. For certain unique automobiles like go-kart systems, the braking system must be designed with accurate and material importance. This is done to keep in accordance with various parameters such as economy and weight of the automobiles etc. the braking systems have to provide enough force in order to decelerate by completely locking the wheels. The report concentrates on explaining the engineering aspects of designing a braking system and its material for go-kart. This report explains objectiveness, assumptions and calculations made in designing a go-kart braking system. A comparative study for the braking system made of grey cast iron (i.e; conventional material), Ti-alloy, 7.5 wt% WC and 7.5wt% TiC reinforced Ti-composite and 20% SiC reinforced Al-Cu alloy (AMC1) and 30% SiC reinforced Al-Cu alloy (AMC2) was done. The purpose of this project was to analyze the test results and implement a better perspective for the installation of braking system in a Go-Kart automobile mechanism. The test parameters considered are compressive strength, coefficient of friction, wear rate, specific heat, specific gravity etc. which are believed to be the most important parameters for the operation of a braking system.

Literature Review:

Ding et al. (2000) have designed and manufactured a front brake rotor by semisolid stirring plus liquid forging process. Then the brake rotors are subjected to dynamometer test and the performance of the MMC brake rotor is compared with the conventional cast iron rotor. They have concluded that the MMC rotors have higher wear resistance, low temperature rise, high friction coefficient. Pai et al. (2001) have presented the low cost processing of MMCs, surface treatment of reinforcement, process parameters and the role of alloy additions with the special reference to the Al-graphite system, Al-silicon carbide, and Al-short fibers carbon systems. They have also highlighted the manufacturing of MMC components like piston rings, pistons, cylinder sleeve and connecting rods for light weight automotive applications. Pillai et al. (2001) in their investigation, they have concluded that the semisolid processing of aluminium composites have better properties like minimum interfacial reactions, uniform distribution of reinforcements and high percentage of reinforcement can be added with the matrix alloy. Degischer and Prader (2000) have presented the functions of thematic network in assessing the applications of metal matrix composite materials in all technical fields. They have also presented the role of the thematic network in sharing information on processing, testing, modeling, application and marketing of MMCs. Goni et al. (2000) have suggested that the high processing cost of MMCs, as the important barrier for using it in automotive applications. They have also suggested that the cost of MMC components can be reduced either by locally reinforcing the reinforcement or by reinforcing the MMC inserts in the required positions of the automotive components. Degischer et al. (2001) have presented the functions of thematic network in developing the processing and applications of MMCs. They have also presented the activities of the thematic network in sharing information on processing, testing, modeling, application and marketing of MMCs

About Existing Braking System:

Three major problems exist with this aluminum-composite rotor. First, because of the density difference between aluminum and SiC, segregation or inhomogeneous distribution of SiC particles during solidification cannot be avoided. Also, adding SiC particles in an aluminum matrix dramatically reduces the ductility of the material, resulting in low product liability. The third problem is a lack of a solid lubricant, such as graphite. The lack of graphite in the system results in low braking efficiency, adhesive wear, and galling. In a cast iron rotor, graphite is always present in the iron. As the break wears, the graphite is freed from the iron matrix to be used as a solid lubricant on the wear surface. Apart from these problems there are no disadvantages of the existing braking system but we can further improve the efficiency and performance of the braking system of the automobile by making the new composition of AMC 3 material with composition of the Aluminium of 35%, copper of 40% and silicon carbide of 25% Here manufacturing with stir casting technology and it can be proved by the a method of selection for any material, it is named as a digital logic method.

Experimentation Procedure of New Composition of Brake Material (AMC 3):

Composition of the AMC 3 material are Aluminium of 35%, copper of 40% and silicon carbide of 25% The experimental arrangement has been assembled by the coupling gear-box motor and mild steel four blade stirrer rod. The melting of the aluminium (40%) scraps and silicon carbide powder (SiC – 120 grit size) is carried out in the graphite crucible into the coal-fired furnace. First the scraps of aluminium were preheated for 3 to 4 hours at 450°C and SiC powder also heated with 900°C and both the preheated mixtures is then mechanically mixed with each other below their melting points. This metal-matrix AMC3 is then poured into the graphite crucible and put in to the coal-fired furnace at 1000°C temperature. The furnace temperature was first increases above the composites completely melt the scraps of aluminium and copper and then cooled down just below the components temperature and keep it in a semi-solid state. At this stage the preheated SiC were added with manually mixed with each other. It is very difficult to mix by machine or stirrer when metal-matrix composites are in semi molten state with manual mixing taking place.

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Smart Solar Dustbin for Smart Cities

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Abstract—In the recent years, Urbanization hits the world remendously. It causes an increase in waste production. Municipality takes many measures to maintain the cleanliness of he cities. But still, it's a major issue to be considered. This paper s a way to achieve good cause. In this paper, Smart solar bin is built on microcontroller Aurdino UNO board which is interfaced with a GSM modem, IR sensor and Ultrasonic sensor. IR sensors are fixed at the top edge of the bin. If garbage is not thrown perfectly inside the bin it will play the buzzer sound. So that people can not take it for granted. It will reduce the waste dump around the dustbin. And Ultrasonic sensor is fixed at the top of the dustbin which will measure the stature of the dustbin. The threshold state will set at some value. Aurdino will be programmed in such a way once the garbage reaches a threshold value its will trigger the GSM modem which will send the SMS alert to the municipality authority until the garbage in the dustbin is squashed. Once the dustbin is squashed, people can reuse the dustbin. This whole system will power on by solar rechargeable battery. Once these smart bins are implemented on a large scale, by replacing our traditional bins present today, waste can be managed efficiently as it avoids unnecessary lumping of wastes on roadside.Foul smells from these rotten wastes that remain untreated for a long time, due to negligence of authorities and carelessness of the public may lead to long term problems. This may even cause dreadful diseases.

Keywords — Aurdino Uno, GSM Modem, Ultrasonic sensor, IR sensor.

I. INTRODUCTION

Though the world is in a stage of up gradation, there is yet another problem [1] that has to be dealt with. Garbage! Pictures of garbage bins being overfull and the garbage being spilled out from the bins can be seen all around. This leads to various diseases as large number of insects and mosquitoes breed on it. A big challenge in the urban cities is solid waste management. Hence, smart dustbin is a system which can eradicate this problem or at least reduce it to the minimum level. Our present Prime Minister of India, Sri Narendra Modiji has introduced the concept of implementing 100 smart cities in India. "Swachh Bharat Abhiyan" was initiated to ensure a clean environment.

The Majority of viruses and bacterial infections develop in a polluted environment. Safeguarding the environment using technology sources is needed at present. The Majority of the public environment seems to be polluted with the waste material. So, modernization of the restaurants is needed by imparting the smart technology [2]. Amounts of waste are largely determined by two factors: first, the population in any given area, and second, its consumption patterns.

According to the UN, between now and 2025, the world population will increase by 20% to reach 8 billion inhabitants (from 6.5 today). With this increase in population, the responsibilities towards waste management also increases. Our waste administration frameworks and our economic situations, even taking care of business, are unequipped for taking care of the developing measures of waste universally. So unless a new paradigm of global cooperation and governance is adopted, a tidal wave of uncontrolled dumpsites will be the principal waste management method, especially in Asia.

On the west coast of America, San Francisco leads the way with a landfill disposal diversion rate of 72% and the city has set itself a target of zero waste to landfill by 2020. This paper gives us one of the most efficient ways to keep our environment clean and green. Dustbin is a common means and a basic need everywhere. It is observed that often the garbage gets collected due to irregular removal of garbage present in the dustbin. In the proposed paper, a new model for the municipal dustbins which intimates the center of municipality for immediate cleaning of dustbin has been proposed [3].

II. PROBLEM DEFINITION

Instead of using plenty of bins in an unordered fashion around the city, minimal number of smart bins can be used. Using only one sensor at the surface level instead of three not only makes it affordable but also achieves the same result also using IR sensors for detecting the garbage is thrown inside the bin or not. If not then it play a buzzer sound.

III. DESIGN OF THE PROPOSED SYSTEM

Smart bin is built on Aurdino board platform. It is interfaced with a GSM modem (SIM 900A) and the bin is equipped with Ultrasonic sensor (HC-SR04) and IR sensors.

A. ULTRASONIC SENSOR

The ultrasonic sensor has two pins: Trigger and Echo, which are used for calculating the distance of the object by generating sound waves and thus calculating the time duration of the echo that is generated.

B. GSM MODEM

A GSM modem is a specialized type wireless modem that works with a GSM wireless network. It accepts a SIM card, and operates over a subscription to a mobile operator, just like a mobile phone. A GSM modem can be an external device or a PC Card / PCMCIA Card. An external GSM modem is connected to a computer through a serial cable or a USB cable

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through **Paper Presentation/Productivity Competition/Poster Presentation**

on Process Optimization of Robot Manipulator Using ANN.

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AIR TOUCH:THE NEXT GENERATION SCREENING

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Abstract — **With the rapid developments and advancements taking place in the field of Technology , consumer appliances are becoming more handy with better features and economical. In this paper, we present the innovative technology used for screening and displays. Air Touch is a technology built in air for the screening purposes making it more comfortable and interesting. The literature presented in this paper will helps us understanding the technology behind this Airtouch and how to enrich its availability to the general public. This technology mainly fabricates air as a source of operation for media or data transmission purposes and allows one to be more swift in handling their gadjets and it is going to replace the present screening devices like Light Emitting Diode(LED) Displays and Liquid Crystal Display(LCD)**

Keywords:Light Technology,Vaccum Tubes, Cold Cathode Florescent lamps, Human Machine Interface, Touch Screens , Liquid Crystal Display, Light Emitting Diode , Aerodynamic Llayer

I.INTRODUCTION

In the present decade people are more concerned about the environment and the amount of pollutants we are emit while using any appliances. But this generation comes up with new ideas in which one can save the environment and enjoy his interests too. The air touch technology is a big change in the world of technology that is going to hit the markets. It is having wide range of applications and a great impact on the future coming electronic world. The special feature is its skin friendly.

Before this technology we have been using cathode ray tube, it is a vacuum tube which contains one or more electron guns and a phosphorescent screen and is used to display images. It modulates, accelerates and deflects electron beam(s) on to the screen to create images. It is used in televisions, computer monitors also, thus occupying their own sizes in the past. It has an evacuated glass envelope which is large, heavy and relatively fragile. For safety purpose, the face is made up of thick lead glass so as to be highly shatter-resistant and to block most x-ray emissions, particularly if the CRT is used in a consumer product. In late 2000's CRT's have been replaced wit technologies like LCD, plasma and OLED screens wit lower manufacturing costs, less power consumption an light in weight.

An LCD uses the liquid crystal display to produce image This is thinner and lighter than a CRT. It is a combinatio of two states of matter, the solid and the liquid. It uses th light modulating properties of liquid crystals. These us the same basic technology except that the arbitrary image are made up of a large number of small pixels, while othe displays have larger elements. In this two polarized pan filters and electrodes are used along with several othe layers, light is projected from a lens on layer of liqui crystal (formed as electric current, flows through th crystal) forms the coloured image. This LCD works on th principle of blocking light. These screens do not us phosphorous, hence do not suffer image burn-in, when static image is displayed on a screen for a long time. In th LCD's the basic was Twisted Nematic (TN) LCD's whic is operated between parallel polarisers, where as In-Plan Switching (IPS) LCD's feature crossed polarisers .Henc these have replaced TN LCD's in particular in sma phones(iphones). The LCD panels produce no light their own, they require external light to produce a visibl image i.e the back light technology. The basic back ligh technology is CCFL (cold cathode florescent lamps)place at the opposite edges of the display.

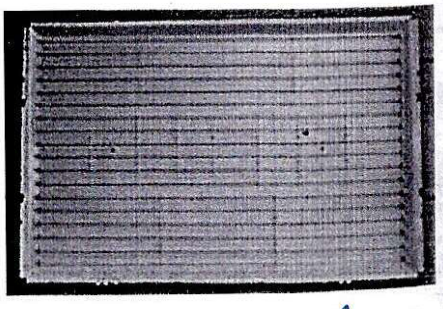

Fig 1: Cold cathode florescent lamps for Liquid crystal display.

On later stages the LED's replaced these CCFL's due the advantage that LED's consume less power, conve power to light more efficiently so that less energy is lo

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Academic Science

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(ICETSEM-2018)

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"A method for work space optimization of a Hybrid robot using Genetic Algorithm"

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Hydrocarbon Refrigerant mixtures as an alternative to R134a in Domestic Refrigeration system: The state-of-the-art review

D.V.Raghunatha Reddy, P.Bhramara, K.Govindarajulu

Abstract- The objective of this paper is to present review on the alternative refrigerants used in the domestic refrigerators to have better performance with minimum losses. This paper give the summary and range of various refrigerants used in the domestic refrigerators. of global warming which affect the environment by the use of refrigerant, and our aim is to reduce the effect of global warming as well as optimize the performance of domestic refrigerators by using the latest refrigerants. This review paper represents the recent developments done in domestic refrigerator. Performance of refrigerator is increased by using different refrigerants. R134a is used in domestic refrigeration and other vapor compression system. R134a is having zero ozone depletion potential (ODP) and almost good thermodynamic properties, but it has a high Global Warming Potential (GWP) of 1300.The higher GWP due to R134a emissions from domestic refrigerators leads to identifying a long term alternative to meet the requirements of system performance, Therefore it is going to be banned very soon for environmental safety. Some new refrigerants is been found by researchers which are environmental friendly refrigerants having low GWP and low ODP. Hydrocarbon refrigerants particularly propane, butane and isobutene are proposed as an environment friendly refrigerants. After reviewing the various literatures on the hydrocarbons (R290 and R600a) refrigerants and their mixture gives good performance in small capacity domestic refrigerator to replace R134a.

Keywords: Hydro fluorocarbon refrigerant, GWP, ODP, Alternative refrigerants, Hydrocarbon refrigerants, Propane (R290), Isobutene (R600a).

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JNTUH College of Engineering, Hyderabad, India

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1 INTRODUCTION

Refrigerator is one of the home appliance utilizing mechanical vapor compression cycle in it process. The Vapor Compression Refrigeration Cycle is a process that cools an enclosed space to a temperature lower than the surroundings. To accomplish this, heat must be removed from the enclosed space and dissipated into the surroundings. However, heat tends to flow from an area of high temperature to that of a lower temperature. Figure (a) shows an ideal single-stage vapor compression refrigeration cycle in which compression occurs in the superheated region. Many investigators have reported that GWP of HFC refrigerants is more significant even though it has less than that of chlorofluorocarbons (CFC) refrigerants. HCFCs (hydro chlorofluorocarbons) and CFCs (chlorofluocarbons) have been applied extensively as refrigerants in air conditioning and refrigeration systems from 1930s as a result of their outstanding safety properties. However, due to harmful impact on ozone layer, by the year 1987 at Montreal Protocol it was decided to establish requirements that initiated the worldwide phase out of CFCs. By the year 1992, the Montreal Protocol was improved to found a schedule in order to phase out the HCFCs. Moreover in 1997 at Kyoto Protocol it was expressed that concentration of greenhouse gases in the atmosphere should be established in a level which is not intensifying global warming ozone layer. Subsequently it was decided to decrease global warming by reduction of greenhouse gases emissions.

2 ANALYSIS OF VAPOR COMPRESSION REFRIGERATION CYCLE

Figure 2 shows the refrigeration cycle on p-h diagram. The refrigerant evaporates entirely in the evaporator and produces the refrigerating effect. It is then extracted by the compressor at state point 1, compressor suction, and is compressed isentropic ally from state point 1 to 2. It is next condensed to liquid in the condenser, and the latent heat of condensation is rejected to the heat sink. The liquid refrigerant, at state point 3, flows through an expansion valve, which reduces it to the evaporating pressure. In the ideal vapor compression cycle, the throttling process at the expansion valve is the only irreversible process, usually indicated by a dotted line. Some of the liquid flashes into vapor and enters the evaporator at state point 4. The remaining liquid portion evaporates at the evaporating temperature, thus completing the cycle. Fig: 1

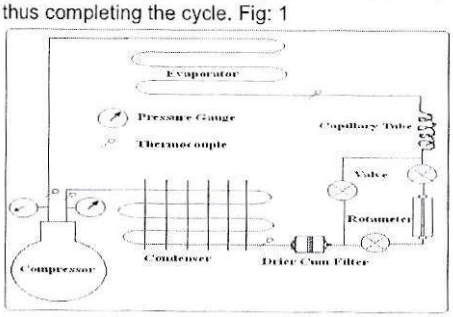

Fig1: Vapor compression refrigeration cycle

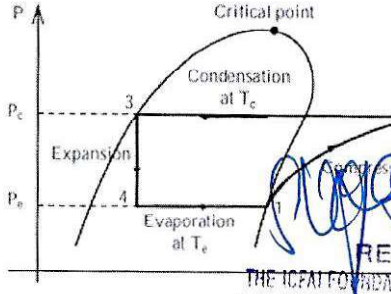

Fig2: p-h diagram Vapor compression refrigeration cycle

The refrigeration process that employed in the domestic refrigerator is based on a vapor compression cycle as shown in Figure

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Comparison of Medical Models Construction by Additive Manufacturing (3D Printing) Techniques

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Department of Mechanical Engineering, Faculty of Science and Technology, IFHE University, Hyderabad, India.

Abstract - Additive Manufacturing (AM) known as 3D Printing is one of the advanced manufacturing methods to produce physical models from virtual model. Selective Laser Sintering (SLS) and Fused Deposition Modeling (FDM) are well known techniques in powder and solid based processes respectively. One of the medical application of AM technique is preplanning of surgery. For this, the surgeons are using prototype models of mandible for measurement, evaluation of the diseases and surgical procedures. However manufacturing of the accurate prototype model is one of the unsolved problems. This paper presents dimensional error between the 3D CAD mandible model to AM mandible models of cyst in mandible patient, also comparison of dimensional error between fabricated models of SLS and FDM techniques. It has been observed that the dimensional error between SLS and FDM mandible models from 3D CAD mandible model at 6.17% and 8.5% respectively, and the difference of dimensional error between FDM to SLS mandible was 1.15 mm.

Keywords- 3D Printing, Additive Manufacturing, Selective Laser Sintering, Fused Deposition Modeling, Medical Model.

1. INTRODUCTION

The term Additive manufacturing (AM) is a process of manufacturing technology that can construct physical models from input as Computer Aided Design (CAD) data. It is a layer-by-layer manufacturing technology as opposed to subtractive manufacturing process (Wohler, 2003). AM machines are used to generate complex physical models with in less time and cost, compare to traditional prototyping technique (Syed et al, 2018). These systems also provide high dimensional accuracy and good surface finish for the use of visualization or functional testing of the model (Manmadhachary et al, 2016). Now a day's AM machines are used in wide range of applications such as medical surgeries, manufacturing industries (Parthasarathy, 2014 & Pinlian, 2017).

Currently Bio fabrication is largely used in the various medical fields like oral and maxillofacial surgery, dental surgery, reconstructive surgery and orthopedics, heart surgery etc. (Attaran, 2017 & Ugur et al, 2017). In most of the cases medical models are fabricated for patient specific (Adithya et al, 2018). CT and MRI images are common input source to fabricate medical models with high accuracy in less time. These medical models are used in tissue engineering, preplanning of complex medical surgeries, manufacturing of prosthesis, forensic pathology, surgical simulation, diagnosis, design & manufacturing of implants and as well as medical tools (Mehra et al, 2011 & Santosh et al, 217 and Krishnaa et al., 2017). High accuracy is required in case of fabricating medical models because these models should be fit in replaced body part (El-Katatny et al, 2010 & Salmi et al, 2013). Various AM technologies are commercially available in the market such as Vat photo polymerization, binder jetting, material jetting, material extrusion, sheet lamination, powder bed fusion and directed energy deposition systems. Among all of them the current work deals with accuracy of Selective Laser Sintering (SLS) and Fused Deposition Modeling (FDM) medical models. Recent studies in bio

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on Comparison of Medical Models Construction By Additive Manufacturing (3D Printing) Techniques

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Numerical investigation for influence of pre-twist on stress behavioral characteristics of curved blade

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Vibroengineering PROCEDIA, Vol. 22, 2019, p. 153-157. https://doi.org/10.21595/vp.2018.20072

Received 11 July 2018; accepted 22 July 2018; published 15 March 2019

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Abstract.

To assist designers in developing blade design based on conventional and composite materials, an overview of material characteristics and stress analysis methods was taken for consideration. The significant effect of loading on the pre-twisted curved blade are evaluated in terms of its deflection and corresponding stresses. A more simplified approach was not satisfactory and furthermore to establish the feasibility of composite blade detailed stress analysis has been carried out for various pre-twist angles of composite and mild steel blade using a thick shell element. The suitability of the finite element method in predicting the stresses in externally loaded laminates is examined from the viewpoint of satisfaction of all boundary conditions and results. From the results it can be shown that the three-dimensional finite element analysis provides a useful insight for predicting deflection and stresses. The influence of ply angle for the distribution of inter laminar stresses along y and z-axis are determined.

Keywords: composites, deflection, finite element method, inter laminar stresses, pre-twisted blade.

1. Introduction

The application of pre-twisted blades in the recent decades have pulled a lot of consideration particularly for marine propulsion, tilt rotors, wind turbine blades and helicopter applications. From a basic perspective and structural point of view the effect of pre-twist not only influences on the torsional property but also on the bending rigidity. In addition to the pre-twist establishes a coupling between torsion and extension for isotropic materials also. Additionally, for composite materials a coupling exists between bending and shear. The manufacturing of the blade involves various parameters which are of complicated nature there by making the boundary conditions more complex which results in solving the structural analysis more cumber some process. Consequently, for these complicated geometries theoretical approaches of classical beam or plate theory are used for solving the problem. To find out the solution of this finite elements of either beam, plate or shell elements are used for pre-twisted blades. An extensive research regarding static, dynamic analysis was carried out by Rosen [1] for pre-twisted beams. For a refined structural analysis of pre-twisted blades he suggested an

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requency is decreased from
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from 7.30 GHzto 2.8 GHz.
his paper experimentally
n the characteristics of
na mainly used in wireless

trate, Rresonant frequency

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Reconfigurable Microstrip Antenna for Switchable Multiband Communication.

TN Murthy

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ABSTRACT:

In this paper a proposed design, a novel printed frequency reconfigurable micro-strip square slot antenna for switchable wireless applications like Bluetooth, WiMAX and WLAN presented. A new micro-strip monopole antenna with triple band coverage capability is proposed. The presented antenna utilizes a simple uniform square shaped radiating stub which has a single band radiation characteristic. It has a small size of approximately 20×20 mm2 in which in order to be able to cover lower frequencies; as for Bluetooth applications. By implementation of PIN diodes within the antenna structure switchable frequency responses are achieved. The presented antenna has a small size while providing suitable switchable radiations at 2.3-2.51 GHz bluetooth; 3.35-3.75 GHz, WiMAX; and 4.95-5.53 GHz WLAN. The simulated results are obtained using Ansoft High Frequency Structure Simulator

Keywords: Microstrip Slot Antenna, Multiband Systems, Reconfigurable Structure

* * *

A Microstrip Patch Antenna π and T Shape Slot for X-Band Application

Archana Negi, Brajlata Chauhan, Dr. Sandip Vijay.

DIT, Dehradun

archananegi1992@gmail.com

ABSTRACT:

The paper presents the design of a microstrip patch antenna having π and T slot which is connected to each other. The proposed antenna is printed on FR4 substrate having εr = 4.3 and height is 1.6 mm that can operate on band 8.357 GHz, 10.97 GHz, and 13.154 GHz. The structure was simulated through CST microwave studio finite element package. Different parameters like return loss, Radiation pattern in 3D are presented. The aim of the work is to design a microstrip patch antenna having π and T slot that meets the requirement of weather monitoring, air traffic control, vehicle speed detection for law enforcement and X-band application.

Keywords: CST, microstrip patch antenna, π and T slot, Xband application.

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Next Generation Network Technology Trend For Wireless broadband

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ABSTRACT:

The high rise demand for wireless-broadband services has experienced tremendous growth over the last decades. This growth is expected to continue relentlessly with addition of more traffic load as signalling storms. This consumes a significant amount of network resources, compromising network throughput and efficiency, and even in some case it may collapse the whole network for a particular period. Now-a-days, even new necessities are coming out and impending new challenges like lower burden of operation and management pertaining to device-to-device communications and new social network dynamics. Under this scenario huge investment required to change/upgrade the existing wireless communication networks. Taking into account the new priority of requisites, it is pertinent to expect that some network demands can be realized by new network technology based on the current research activities which are continuously enhanced in line with user trends and technology developments and it is also anticipated that such new architecture could be the foundation of networks of the future. Therefore this paper highlights the requirement and expectations of next generation network technology.

Keywords: Device-to-device, signaling storms, social network dynamics, throughput.

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ICOM-18 Convener

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"Path Planning Of A Parallel Manipulator Using A* Algorithm"

in the conference organized by Conference Info in association with Academic Science at Mahratta Chamber Of Commerce Industries & Agriculture, Senapati Bapat Road, Pune, Maharashtra, India on 14th October 2018

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at 2nd International Conference on Operations Management held at IBS Hyderabad on November 30 & December 1, 2018

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Periocular Region Based Biometric Identification Using SIFT and SURF Key Point Descriptors

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***Abstract*— In the proposed paper the discriminative capability of the periocular region of the face area is exploited in designing a robust biometric system. A periocular region-based biometric system is emerging as a better alternative for the unconstrained and uncontrolled environments. In the projected work the two key point descriptors Speeded Up Robust Features (SURF) and Scale Invariant Feature Transform (SIFT) are employed for deriving the distinctive characteristics from the periocular and complete face portions. City Block Distance method is used to compare the two feature vectors obtained from the SURF and SIFT methods. FERET and FRGC databases are used to estimate the merits of both face and periocular biometric methods. By utilizing only 25% of entire face, periocular area-based biometric systems provided almost the similar performance equivalent to the face biometric systems.**

Keywords- Periocular Region, Key point Based Approaches, Feature Extraction, Classifiers, City Block Distance

I. INTRODUCTION

The performance of the established biometric methods [1] has almost reached the saturation level and their performance is effected when these system are operated under non–ideal conditions or in an unconstraint environments. In this study, it is proposed the periocular region based face recognition [2] which works better under unconstrained environments. The region surrounding the eye portion of the face is termed as the periocular region. Periocular region based systems work very well in the unconstraint environments ie when the subject is on move with poor illumination conditions or the subject is a non cooperative. Periocular region showed high ability of discrimination with superior robustness and it can achieve high recognition rates. Moreover, recognition rates can be improved when the periocular area modality is fused with the Iris/Face methodologies[2]. One of the most fascinating of all objects is human face: highly variable, expressive and powerful. It is highly specified part of the body at the same time and the individual identity of most convincing proof. Faces have acceptability, collectability, permanence, uniqueness and higher universality. They are used for forensic, security, and commercial applications because of their analogy to human perception, public acceptance and non-intrusive and passive. These applications include communication of multimedia, database management of content based image, multimedia communication, a design of Human Computer Interface (HCI) (the activity of classifying a vehicular driver), mugshot identification (example, driver licenses issuing), automated video surveillance (e.g. the checkpoint of airport security and super bowl face scans) [4]. A single or multiple human faces or subjects these applications involve recognizing, tracking and locating.

Park *et al.* [3] first presented the discriminating competence of the periocular portion. LBP and GOH are the Local appearance-based approaches used for extracting features from the periocular area and Euclidean distance is utilized for the classification. Altogether, the study of Park et al. [3] establishes the fact that the periocular recognition under occlusion provides superior results to the face recognition. In addition, many researchers have preferred studying the sub-regions of face (nose, eyes and ear) to full face region because face recognition performed with the sub-regions of face yields higher recognition rates (92%) than the other regions of the face, (Savvides *et al.* [5] and Sato *et al.* [4], Teo *et al.* [6]). In addition to yielding the higher recognition rate, the periocular biometric system also provides a high data quality and improves the performance of the recognition systems when the periocular modalities are fused with the iris modalities, (Miller *et al.* [7] and G.Santos *et al.* [8]). Further, the periocular biometrics are used in the domains of soft biometric recognition systems and for the gender classification,[10] (Lyle *et al.*[7] and Merkow *et al.*[2]). With the aging process the features of the face changes which affects the recognition rates where as periocular portion will not affect with age. [11, 14, and 15].

Face image pre-processing, feature extraction and classification are three stages mainly consist of face recognition. In [6], for face recognition several systems were developed and based on the methods of feature extraction [12] these are classified in to three categories they are hybrid, feature-based and holistic face recognition. For the recognition the methodologies of feature-based utilize face components or regions like mouth, nose and eye.

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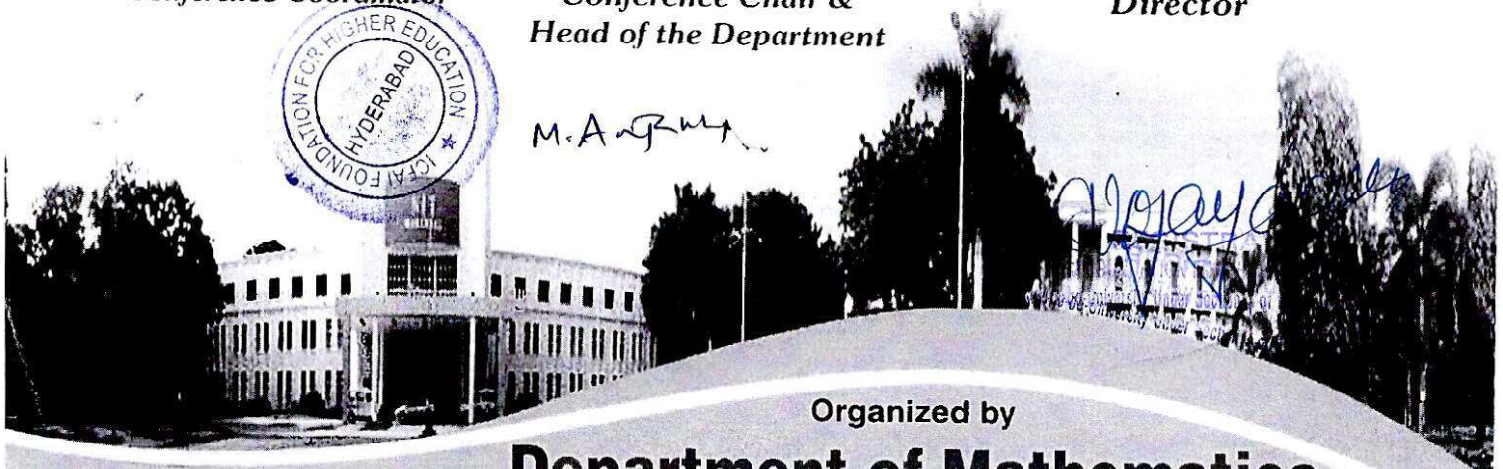

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The Detailed Study Of Thermal Instability Analysis In An Inclined Porous Medium

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Abstract. The present study analyze the thermosolutal convection analysis in an inclined porous bed. It is also extended to investigate the influence of heat source. This work is analyzed by using linear stability analysis to examine the Hadley flow in an inclined porous body. The thermal stability of small-amplitude distributions is analyzed with corresponded to longitudinal rolls by using normal modes analysis. By applying the Runge Kutta method the eigenvalue problem is solved. The problem is studied for different flow parameters.

INTRODUCTION

Many of the authors are studied the thermosolutal convection in a horizontal porous layer, but, from the several years very few of them deel with thermosolutal convection in an inclined porous bed. The present work on thermosolutal convection accrued by an internal heat source. It has many applications. The real life problems are oil recovery, the hydrology of aquifers, maintained the underground energy, issues of environmental, etc. The most, real time applicable areas are like the food processing, oil extracting and transport of pollutants (Bendrichi and Shemilt [1], Chen and Angui [2]). The process of thermosolutal transport has a major areas in environmental issues (Gill [3]). The thermosolutal convection in porous body has been available in the literature, Ingham and Pop [4] and Vafai [5].

From the survey of literature, the inclined porous layer is analyzed by Combarnous and Bories [6], the latter, it's studied by Weber [7]. Further, these problems are continued by Caltagirone and Bories [8], Rees and Bassom [9]. Thermal effect in a saturated porous layer with uniform heat flow and mass flow is studied by Matta et al. [10]. Few of resent articles are recently studied by Matta et al. ([11] - [14]). The fluid flow in an inclined porous layer is carried out by Barletta and Storesletten [15] and further a fixed heat flux along the walls of the inclined porous body is evaluated by Rees and Barletta[16], and also, the Darcy flow in an inclined porous body is analyzed by Rees and Barletta [17]. Nield [18] is given a note on the inclined porous body to provided the answers of the natural thermal convection, and thereafter, Nield et al. [19] studied the viscous dissipation effect of thermal instability in an inclined porous layer. A collection of research publications on the inclined porous bed is appeared in the book of Nield and Bejan [20].

The analysis of this study on the thermosolutal convection on the inclined porous bed with the effect of uniform heat source. The externally applied heat source and thermal gradient leads to a possibly thermal instability in the inclined porous bed. The corresponded system of equations defined the eigenvalue problem, and it is solved numerically by using the Chebyshev-Tau method.

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AIP Conf. Proc. 2246, 020079-1–020079-7; https://doi.org/10.1063/5.0014453
Published by AIP Publishing. 978-0-7354-2005-2/$30.00

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Pacifiurr: An Android Chatbot Application for Human Interaction

Ramya Kondapi, Rahul Kumar Katta, Sirisha Potluri

Abstract*— The objective of this paper is to build an Android Application based on Virtual voice and chat Assistant. The current study focuses on development of voice and text/chat bot specifically. It is specially being built for people who feel depressed and insists them to talk open mindedly which in turn pacifies them. As the name of the application suggests, Pacifiurr: An application to pacify people and make them as happy as a cat would be with his or her mother (the reason why a cat purrs). We will be using Android Studio for the application design and Machine Learning as a part of Artificial Intelligence for Natural Language Processing (NLP), an easiest way to use Machine Learning libraries. At the back-end we will be using a database to store the communication history between the user and the bot. This application will only work on devices with Android operating system version-5.0 and above.

Keywords: Artificial Intelligence, Virtual Assistant, Software Agent, Machine Learning, Natural Language Processing, Android Studio, Chatbot.

1. INTRODUCTION

Chatbot is a computer program which is designed to transcribe conversation with humans. It works on Artificial Intelligence. Chatbots are wontedly used in dialog systems (dialog systems or a conversational agent is a computer system which focuses on discourse with humans for purposes like customer service, providing basic information etc.). The term Chatbot is derived from Chatterbot, originally contrived by Michael Mauldin in 1994. A Virtual Assistant is a Software Agent that can perform tasks or services for an individual. Sometimes the term Chatbot is used as an alias to Virtual Assistants which are generally or specifically those accessed by online chat. Virtual Assistants does work through text, voice, and/or uploading images. Chatbots can be accessed through virtual assistants like Google assistant, Cortana, Siri etc., through messaging apps like Facebook messenger etc., or through individual organizations' apps and websites. Chatbots are categorized into several categories such as conversational commerce which is an e-commerce via chat, analytics, communication, customer support, design, developer tools, education, entertainment, finance, food, games, health, Human Resources (HR), marketing, news, personal, productivity, shopping, social, sports, travel and utilities.

What we are working on will be specifically designed for interaction with the people who are depressed. It urges them to talk with their minds open. For instance, most people who are in depression tend to isolate themselves, they have trouble trusting people around them, they skip meals, and exaggerate situations they have no reason to worry about. The Pacifiurr we are working on helps them to get over all these challenging situations, Pacifiurr pacifies by drawing attention away from their worries. Pacifiurr also helps in their difficult situations by advising them appropriate ways to overcome difficulties.

2. RELATED WORK

MobileCoach, a mobile chat application related to human-bot interaction using text messages based on the concept of the user sending text messages to the bot which charges SMS cost to the person communicating with the bot [1]. Additionally, the application is limited to text interaction with a predefined answer selection to the user; the user will be presented with a set of predicted response from which he is reckoned to choose one as a response to the bot [1]. A mobile application employed with voice detector, ordinarily matched in cancer patients, with the use of prosodic and statistical traits extorted by voice signal for evoking depression [2]. An online free service using a chatbot to motivate an individual in distress, experiencing hard times, serving with a theory of personalized chat that keeps a person involved in a conversation with the chatbot to negotiate ill-effects of depression [3]. Woebot, an Artificial Intelligence therapy chatbot application which works on the principle of imminent text method; suggests appropriate responses based on the conversation between a man and the bot [4]. MOST: Moderated online social therapy, a web application rendering assistance to those who are need of self-esteem, overcoming social anxiety, interacting with people, and recovering early psychosis [5]. A chatbot for mental health counseling, intercommunication with the chatbot using emojis and GIFs while exploring for online help tips [6].

3.PROPOSED WORK

The concepts of papers published earlier recite on the notion of predictive text, imminent GIFs, and emojis, text messages with predefined answer selection, and voice detector matched in cancer patients. The objective of this paper is to formulate a theory related to a chatbot interaction with text and speech output, the responses will be predicted based on a survey conducted by providing a questionnaire to the people who had suffered depression or other mental illness in the past. They are directed to answer a few questions regarding their journey of defeating health condition.

Revised Version Manuscript Received on January 25,2019.
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Android Based Instant Messaging Application Using Firebase

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Sai Spandhana Reddy Emmadi, Sirisha Potluri

Abstract: ***Communication through internet is becoming vital these days. An online communication allows the users to communicate with other people in a fast and convenient way. Considering this, the online communication application must be able share the texts or images or any other files in a faster way with minimum delay or with no delay. Firebase is one of the platforms which provides a real-time database and cloud services which allows the developer to make these applications with ease. Instant messaging can be considered as a platform tomaintain communication. Android provides better platform to develop various applications for instant messaging compared to other platforms such as iOS. The main objective of this paper is to present a software application for the launching of a real time communication between operators/users. The system developed on android will enable the users to communicate with another users through text messages with the help of internet. The system requires both the device to be connected via internet. This application is based on Android with the backend provided by google Firebase.***

Keywords: ***communication; firebase; android; Instant messaging; real-time databases; group messaging.***

I. INTRODUCTION

In the real world the communication plays a very vital role. People have been communicating with each other through various applications or mediums. In the beginning people communicated with each other using letters or other sources, as these mediums could take much time to deliver the content. Cell phones are another medium of communication but the drawback is for any limited or small message which need to be passed to another user then phone call is not an ideal way. The developers then looked to implement a text-based communication which would allow an in instant communication service. In 1984, the concept of SMS was developed in the Franco German GSM cooperation by Friedhelm Hillebrand and Bernard Ghillebaert. The limitation of SMS was the limited size i.e., 128 bytes [1] [2], after the rise of smartphones from a decade many messaging applications have been developed. Some are Bluetooth based and some were internet based such as WhatsApp [3], WeChat [4] and others.

Android is an operating system for mobiles which was developed by google. This operating system allows the applications to be used on mobiles. As it was developed by google, android users can develop mobile applications and

can be sold through android application stores such as play store.

Firebase is a NoSQL database which make use of sockets which allows the users to store and retrieve the data from the database [5]. An Android version should be greater than 2.3, android studio 1.5 or higher version and android studio

project are the prerequisites to connect the firebase to an android application. Firebase provides a various kind of services such as:

Firebase Authentication [6]: Firebase Authentication is useful to both developers and the users. Developing and maintaining sign-in set-up may be a bit difficult and time taking. Firebase provides an easy API [6] for sign in. It also provides the data backup using real time databases.

Firebase cloud: For storing the data such as video, text, pictures building the infrastructure would be difficult and expensive for a new developer so the firebase provides the platform of cloud storage [7].

Real time database: It is a cloud hosted NoSQL database. Apart from the authentication, cloud service and real time databases firebase also provides a service for crash reporting

Crash Reporting: when some unexpected crashes occur in any applications it may be difficult to conclude why the application crashed. Firebase provides crash reporting service to deal with these crashes.

This paper is concerned of a software application for the establishment of a real time communication services between operators/users. Chat application many-to-many type of communication system where the users will able to exchange the messages among themselves [8]. User can create the chatroom according to the requirement or can also join to the existing chatroom

1.1 Related Work

Most of the internet public messaging, image or file sharing applications are using logic through which the content that has shared publicly will be collected under one reference or name. Instagram or Facebook which has an instant image or video sharing feature uses this kind of mechanism.

The algorithm for this logic is to check whether the text posted by the user contains a special character hash symbol (number sign or pound sign) at the beginning of it. The hash symbol is considered as a key and checks whether the name is already existing or not. If yes then the content posted by the user is shared and shows up to other users when relevant search requests originates. If the name is new then the room is created in the database and the remaining mechanism is same as mentioned.

II. GOALS

The basic goal is to create a system which can create chatroom according to the users and store the related data at a single place.

To implement the real time

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Quantized Local Trio Patterns for Multimedia Image Retrieval System

P. Rohini and C. Shoba Bindu

Abstract In this paper, we propose a novel feature descriptor named quantized local trio pattern (QLTP) for multimedia image retrieval application. The QLTP extracts quantized edge information from the pixels in a specified neighborhood. QLTP integrates the quantization and trio patterns for image retrieval. Performance of the QLTP is evaluated by conducting experiments on Corel-10,000 databases. Experimental results exhibit an improvement in terms of avg. retrieval precision (ARP) and avg. retrieval rate (ARR) as compared to the other related methods.

Keywords Retrieval · Local binary patterns · Avg. retrieval precision · Avg. retrieval rate · Database

1 Introduction

Rapid advancements in the Internet and some allied technologies have made the way for the generation of number of images every moment by medical, academic, scientific, industrial, and many more applications. Huge databases make the user's job tedious to browse and manage. Content-based image retrieval describes the image according to the explored parameters. It extracts the features from visual part of the image such as texture, shape, and color. Contributions made for the improvement in the efficacy of retrieval systems are given in [1–4]. Texture is one of the primary features used in CBIR. Researchers proposed many retrieval methods by using the texture as the primary element [5–7]. Local binary pattern (LBP) [8] became the foundation for a few retrieval algorithms. Takala [9] introduced Block-based LBP.

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H. S. Saini et al. (eds.), *Innovations in Electronics and Communication Engineering*, Lecture Notes in Networks and Systems 65,
https://doi.org/10.1007/978-981-13-3765-9_12

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A High Frequency CMRR improvement technique for Differential Amplifiers in 45nm CMOS

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Abstract—**In this article, a technique has been proposed to extend the common-mode rejection ratio (CMRR) bandwidth of a CMOS differential amplifier. This technique is based on a pole-zero cancellation technique to cancel the dominate pole in the CMRR Transfer function. The differential amplifier tail node swing has been derived under component mismatch conditions, and formulated design methodology for better CMRR. The Circuit has been implemented in 45nm CMOS technology, and simulation results shows CMRR of 114dB at low frequency and 3-dB bandwidth of 30KHz has been achieved, which is approximately 3 times better than conventional technique.**

Keywords—differential amplifier, Common mode rejection ratio, Bandwidth, tail node, pole-zero doublet, Impedance.

I. INTRODUCTION

The main function of a differential amplifier is to amplify the differential component presented at the input, whilst rejecting common mode component as much as possible. The extent to which it is able to do this rejection successfully is quantified by the Common Mode Rejection Ratio (CMRR), an important parameter in the application of differential amplifiers common mode noise reduction is an important issue, such as in bio-medical instrumentation [1]. The desired CMRR requirement depends upon the application, required sensitivity, and level of the common mode noise compared to the desired differential signal. For example, some biomedical devices such as ECG monitors work with differential signals of only a few μV, and common mode noise that can be bigger by several orders of magnitude, hence the CMRR of the front end instrumentation amplifier has to be in the order of 120dB. The most commonly encountered common-mode noise is 50Hz (in the UK) mains supply noise [3]. Another consideration is the noise from the increasingly common use of switched mode power supplies (SMPS). An additional problem is that with SMPS operating at increasing frequencies, the need for a high-frequency CMRR is becoming more important. At the other end of the spectrum, there have been numerous attempts to improve the low-frequency CMRR[2-5] by using high impedance tail current source for example Wilson current mirror,higher level of cascading, or using an opamp based gain boosting loop. [9] improves CMRR by adding additional feedback and [10] improves by processing signal in current domain rather voltage domain. Unfortunately, all of the techniques above increase the low-frequency CMRR at the cost of the high-frequency CMRR. This paper is organized as follows. Section-II describes the CMRR of a traditional differential pair, section-III describes the tail node swing (node-x in fig:1), section-IV describes the existing method, and finally, section-V explains the proposed method and implementation details.

II. TRADITIONAL DIFFERENTIAL PAIR.

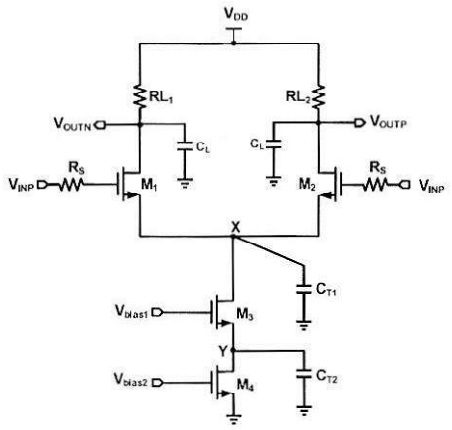

Fig. 1. Conventional Closed loop LNA

Differential pair input excitations are VINP and VINN. We can define the differential(Vc) and common mode(Vd) voltages as follows.

$$V_c = \frac{V_{inp}+V_{inn}}{2} \qquad (1)$$

$$V_d = V_{inp} - V_{inn}$$

Differential pair output voltage can be expressed as

$$V_o = A_d V_d + A_c V_c \qquad (2)$$

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A Low Power Miller Compensation Technique for Two Stage Op-amp in 65nm CMOS Technology

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***Abstract*—A critical review of the Miller compensation technique for a two-stage operational amplifier (op-amp) is presented in this paper. The trade-offs involved in the compensation capacitor value and the small signal parameters of the op-amp are also considered in this paper; that is, the second stage requires a higher bias current, while driving a large capacitive load for a given phase-margin. A technique is presented with a view to increase the g_m of the second stage without increasing the power dissipation, hence improving the phase margin while maintaining the unity gain bandwidth (UGB) of the op-amp. A prototype has been designed in 65nm CMOS technology and post-layout simulations exhibit good performance characteristics of 45MHz UGB with 250fF compensation capacitor, for a supply voltage of 1.2V, and a current consumption of 132µA. The new technique shows a superior performance to those obtained with an established compensation technique that achieves a 10MHz UGB while dissipating the same power. The total circuit size is 0.00234mm2 silicon area.**

***Keywords*—Stability, Phase-Margin, compensation, UGB, Power.**

I. INTRODUCTION

High Performance analog circuits design is becoming more challenging with the persistent trend towards scaled CMOS technologies. The main challenges in operational amplifier design are the needs for a high gain, wide bandwidth, and extremely low power consumption. Conventional CMOS technologies require a relatively high supply voltage to achieve high gain, wide bandwidth and extremely low input referred noise. With modern technologies, the channel length is 45nm or less, which makes it difficult to improve the design performance of op-amps due to the intrinsic limitations of the transistor performance [1], and therefore the gain of the op-amp can be very limited.

The gain in a typical single stage op-amp in 65nm technology is less than 25dB but most biomedical applications require closed loop gain below 25dB that is induced by the systematic offset, which will be dominated by the gain of the op-amp. To achieve a gain error of 0.01%, the closed loop gain should be above 60dB [2]. The conventional cascode op-amp gain can exceed 80dB but, due to the use of stacks of transistors between the power supply and ground, these are not suitable for low voltage applications. This design limitation of the cascode structure can be overcome by cascading several amplifier stages to form a multi-stage amplifier that can achieve high gain. The problem is, however, multi-stage amplifiers introduce high impedance nodes that make frequency compensationchallenging, hence a large capacitor value is required to push the dominate pole frequency to a lower value. Additionally, a high bias current is required to operate the amplifier to ensure that the non-dominant pole frequency is pushed to a higher frequency. Several Miller compensation techniques are proposed in the literature [3], yet the frequently used techniques are Ahuja [4], Ribner [5] and Nested Miller [6], [7] and [8]. The added auxiliary stages which are used extensively in Miller compensation techniques leads to higher power dissipation. This paper considers a low power Miller compensation approach for a two-stage amplifier.

This paper is divided into four further sections. Section II discusses the existing compensation approaches and highlighting the design constraints and limitations associated with these techniques. Section III presents the proposed technique qualitatively, and section IV discusses the implementation details of the two-stage op-amp with the proposed compensation technique and its relative merits over the existing techniques. Lastly, section V concludes the paper.

II. REVIEW OF MILLER COMPENSATION

Fig. 1 shows a conventional two-stage Miller compensated op-amp, where the first stage differential pair comprises M_1–M_4 with the current source load M_{b3}. The second stage is formed by M_5–M_{b4} which behaves as a single ended common source stage. To ensure the op-amp stability, the poles corresponding to node B and the output node must be separated in frequency. The dominant pole compensation technique uses a large capacitor value at the corresponding node to set the dominant pole. However, this reduces the amplifier bandwidth and takes up a large silicon area. The Miller compensation technique is an attractive solution because of the well-known pole-splitting feature. In this technique the compensation network (CN) is connected to the second stage in order to achieve pole-splitting. There are four widely used Miller schemes classified by the substitution of CN as shown in Fig. 1. The simple Miller

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IEEE - 49239

Detection and Prevention Mechanisms for DDoS Attack in Cloud Computing Environment

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***Abstract*—For optimal use of cloud resources and to reduce the latency of cloud users, the cloud computing model extends the services such as networking facilities, computational capabilities and storage facilities based on demand. Due to the dynamic behavior, distributed paradigm and heterogeneity present among the processing elements, devices and service oriented pay per use policies; the cloud computing environment is having its availability, security and privacy issues. Among these various issues one of the important issues in cloud computing paradigm is DDoS attack. This paper put in plain words the DDoS attack, its detection as well as prevention mechanisms in cloud computing environment. The inclusive study also explains about the effects of DDoS attack on cloud platform and the related defense mechanisms required to be considered.**

Keywords*—Cloud Computing, DDoS, Cloud Security, QoS, Fog Computing

I. INTRODUCTION

There are many challenges that exist in cloud computing such as privacy, security and availability due to its dynamic resource provisioning based on the on demand requests from cloud users. There are many mechanisms available for handling these security and privacy issues in cloud computing. But these approaches cannot be directly applied to fog computing due to a mixture of features that treat it different form cloud [1]. Cloud computing is derived from many paradigms like distributed computing, utility computing, service oriented computing and grid computing. For privacy protection there are many approaches available which are being used in cloud computing environment like attribute based encryption, key policy ABE, cipher text ABE, encryption based on hierarchy, searchable technique using encryption and re-encryption based on proxy etc. [2][3].

II. CLOUD SECURITY AND PRIVACY

To improve safety measures and to control traffic, a continuous monitoring and controlling system is required. This type of infrastructure requires mobile sensing, crowd sensing, location awareness and transportation management. To reduce the latency for the cloud users as well as to maintain the quality of service, a privacy preserving scheme based on fog computing environment can be used. Such type of approach can achieve higher efficiency in terms of security, privacy, computation and networking capabilities [4].

In cloud computing environment, data privacy and protection is also very much important. The risk involved in data protection, data availability, data security and data privacy may be raised due to the concept of virtualization [5].

There are many authentication techniques such as biometric based, password based, token based, transaction based, image based, special text based etc. are being used in cloud computing environments to achieve data security. These mechanisms guarantee high level of data protection and data security [6].

There also exist service and security risks due to the concept of virtualization technology. Many virtual machines are being created based on the cloud user's requirement and demand. The problem with scale up of virtual machine is that they may be corrupted, accessed, lifted, stolen or manipulated by any means of contact in the cloud network which tops up security and privacy issues [7].

Now-a-days due to high speed delivery of services to the cloud users over a network, cloud computing is being used in many organizations. Also due to the ongoing enormous operations huge and huge amounts of data need to be stored in cloud environment. When this data is getting stored with cloud service provider, the cloud user has their own concerns related to the data privacy and security. So proper and suitable security technologies need to be enabled in cloud network to maintain highest possible data security and data privacy [8].

Cloud computing ensures large amount of data storage and requested data is provided based on the requirement and demand from the cloud users. There are many fundamental issues, problems and challenges related to this data security. A well-defined infrastructure enabled with strong encryption mechanism can be treated as a solution to handle these data security issues and challenges in cloud computing environment [9].

Especially in health care system, a security and privacy preserving data access model is mandatory since the data being present in this sector is highly sensitive. This can be achieved by using an access control model which dynamically calculates the degree of trustiness using a set of predefined ruleset. Using this mechanism, data access can be easily controlled [10].

Several methods or techniques are proposed in literature to efficiently predict and handle these DDoS attacks. Former and

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LBP Based Biometric Identification using the Periocular Region

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***Abstract*— Biometric systems have become a vital part of our present day automated systems. Every individual has its unique biometric features in terms of Face, Iris and periocular regions. Identification/Recognition of a person by using these biometric features is significantly studied over the last decade to build robust systems. The periocular region has become the powerful alternative for unconstrained biometrics with better robustness and high discrimination ability. In the proposed paper local descriptor Local Binary Patterns (LBP), is used for the feature extraction of discriminative features from the regions of full face, periocular and city block distance is used as a classifier. FRGC and FERET databases are utilized for the experimentation to compare the performance of both periocular and face biometric modalities and it showed that the periocular region has a similar level of performance of the face region using only 25% data of the complete face.**

***Keywords*—Biometric modalities; Periocular Biometrics; Local Feature Extraction techniques; Local Descriptors; Local Binary Patterns (LBP); Rank-1 Accuracy; Equal Error Rate ; Classifiers.**

I. INTRODUCTION

With the traditional biometric systems [1], such as Face and Iris systems reaching the state of maturity with almost having high performances of 100% accuracy. These systems work very well under controlled and ideal circumstances like high-resolution images taken from the short distance, well-illuminated conditions and a cooperative subject.

The performance of these systems will degrade when they operate in non-ideal conditions, i.e., when the images are captured from longer distances, when the subject is on the move or from the non-cooperative subject. Now the research is concentrated on the design of robust biometric systems under non-ideal condition with better accuracies. The periocular region has become the best alternative for unconstrained biometrics with better robustness and high discrimination ability.

The periocular region is the sub-portion of the face in the vicinity of an eye with eyebrows, eyelids and eye folds as shown in Figure 1.

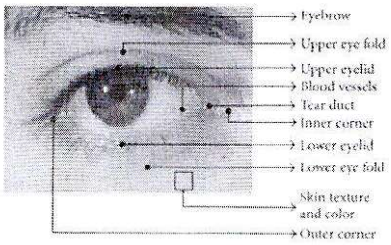

Fig 1: Periocular Region

Periocular Region [2] is the most discriminating portion of the face, gaining significance as a useful biometric modality under the non-ideal conditions, supplement to the traditional face and iris biometric systems. Periocular Region based recognition is still a comparatively new area which is cost effective [9, 10] and doesn't require any extra storage space. The periocular region is captured along with the face and Iris during the biometric acquisition process. For obtaining the better recognition accuracies, the periocular region can be used as in fusion with face/Iris modalities. In the design of age invariant face recognition systems [16, 17] the periocular region is less affected by the ageing process than compared to the face. Periocular Biometrics uses small periocular region [8] templates which use only 25% of the full face image when compared with the large face models makes them faster in the recognition process.

Sato *et al.* [3] presented the first partial face recognition using the subregions of the face which showed that the eye region achieved better recognition rates compared to others areas suggesting us the periocular region could be a major area of the face with better discriminative features. Savvides *et al.* [4] performed partial face recognition on the Facial Recognition Grand Challenge (FRGC) data set and the results showed the eye region achieved better recognition rates compared to others. Teo *et al.* [5] compared the performance of full face

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1. Introduction

Gas Metal Arc Welding (GMAW) process is well-established process, having wide range of industrial applications due to its welding efficiency and at the same time producing quality welds. However, the new trend of industries require increase in production rate at low costs including atomization of the process. In order to satisfy the requirements, many researchers identified that welding speed is a vital parameter to increase the production rate for the existing processes. Ghazvinloo et al. [10] studied the effect of arc voltage, welding current and welding speed on fatigue life, impact energy and bead penetration of AA6061 joints produced by robotic MIG welding. The welding speed has the reverse effect on mechanical properties when compare to other welding parameters. Abbasi et al. [11] studied the effect of MIG welding parameters on the weld bead shape characteristics. Chandel et al. [12] investigated the relationship between the cooling time with heat input, fusion area, HAZ area, fusion boundary length and HAZ boundary length for submerged arc welds. Results suggest that the cooling time was not only influenced by heat input but also other parameters such as current, voltage, travel speed, electrode diameter, polarity and base plate. Shen et al. [13] studied the effect of single wire and double wire submerged arc welding heat input (HI) on the weld bead geometry of ASTM A709 Grade 50 steel weldment to understand and relate the cooling times to various weld bead characteristics and how heat inputs affect dilution and the weld melting efficiencies. Kocher et al. [14] analysed the various effects with IS 2062 E250 A steel using MIG welding process. The results show the effect of welding speed on penetration, bead height and width, penetration and reinforcement area, wetting angle and dilution.

Nouri et al. [15] studied the effect of welding speed and wire feed rate on the weld bead geometry and dilution. The results indicate that welding speed has a direct and inverse effect on dilution and weld bead geometry respectively. Gill and Singh [16] studied the effect of welding speed and heat input rate on stress concentration factor of butt-welded joint of IS 2062 E 250 A steel. It has been noted that the stress concentration factor decreases as the welding speed increases and vice versa with the heat input rate. Subravel et al. [17] studied the effect of welding speed on tensile and micro structural characteristics of GTA welded AZ31B magnesium alloy. The formation of grains has the major influence on tensile properties of the alloy. Liu et al. [18] investigated the effect of welding speed on microstructure and mechanical properties of friction stir welded 6061-T6 aluminium alloy. Chuaiphan et al. [8] analysed the effect of welding speed on microstructure, mechanical properties and corrosion behaviour of GTA welded AISI 201 stainless steel sheets. The higher welding speed exhibited smaller weld bead size, higher hardness and higher corrosion properties. The grain coarsening decreases as the welding speed increases. The dendrite length and spacing between them influenced the hardness and corrosion properties. The hardness value of weld metal increases with increase in welding speed.

Shanping et al. [19] investigated the effects of CO_2 shielding gas addition and welding speed on GTA weld shape. It has been noted that higher welding speed decreases the heat input and temperature gradient on the pool surface, which weakens the Maragoni convection on the liquid surface. Lee et al. [20] studied the effect of welding heat and travel speed on the impact property and microstructure of FC (flux cored) welds. It has been noted that welding speed has influenced on HAZ and heat input towards cooling rate. Feng et al. [21] studied the effect of welding velocity on the impact behaviour of droplets in gas metal arc welding. It has been observed that impact location of the droplet depends strongly on the welding velocity. In addition, there is a decrease in molten metal, penetration and width as the welding speed increases. Wang et.al. [22] studied metal droplet transfer in flux core arc welding (FCAW). It has been observed that two or more transfer modes coexisted all the times. Ericsson et al. [23] studied the influence of welding speed on fatigue of friction stir welds, and compared with MIG and TIG welds. It has been reported that welding speed has no influence on FS welds. The hardness for MIG welds decreases at the beginning of HAZ followed by a small increase and after that, another decrease in the area closest to the joint line has been observed.

Burgardt et al. [24] reported that depending on the trace elements in the base materials, identical changes in welding variables has an opposite effect on weld shape (D/W ratio). Results indicate that the weld geometry of the base metal welds weakly dependent on travel speed and as the power input increases, the D/W ratio increases. Chen and Wu [25] developed a mathematical model to understand the humping phenomenon in high-speed gas metal arc welding to increase the welding efficiency. The predicted results are in agreement with the measured result. Ibrahim et al. [26] investigated the effect of gas metal arc welding

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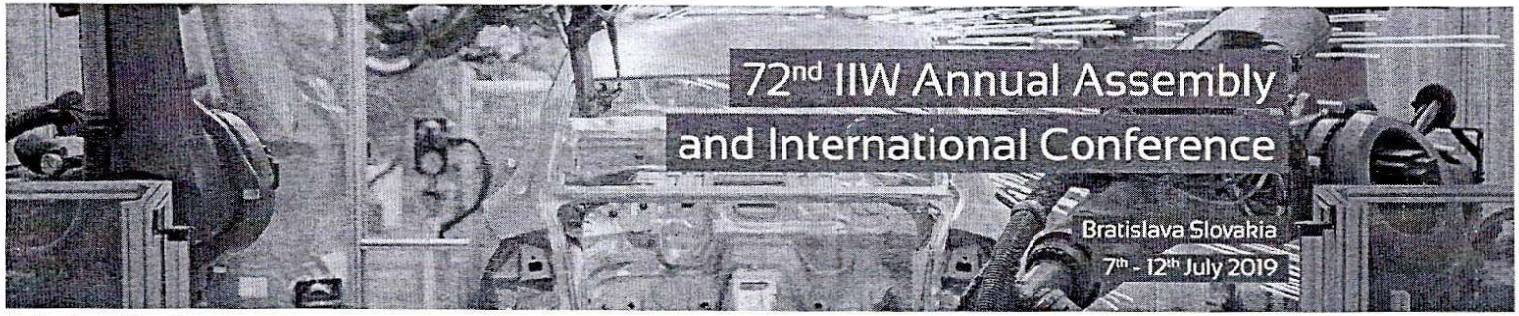

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Primary authors A-Z

About this publication

Title: 72nd IIW Annual Assembly and International Conference: Proceedings of International Conference

Publisher: GUARANT International

Place of Publication: Prague

1st edition

Month and Year of Publication: July 2019

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ISBN 978-80-907442-1-9

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This is to certify that Dr/Mr/Ms. Ch. Venu Gopal of ICFAI University, Hyderabad has PARTICIPATED and given an oral presentation of paper titled Performance of Vapour Compression Refrigeration System and prediction with Fuzzy Modelling on Various Loads in the conference organized under TEQIP - II by the Department of Mechanical Engineering, Vasavi College of Engineering, Hyderabad during 1st - 2nd May 2015.

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Proceedings of the 5th National Conference on Advances in Mechanical Engineering (AIM 2015), Vasavi College of Engineering (Autonomous), Hyderabad, TS. May 1-2, 2015. pp.133-140.

Performance of Vapour Compression Refrigeration System and Prediction with Fuzzy Modelling at Various Loads

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ABSTRACT

The objective of this paper is to predict the coefficient of performance (COP) of vapour compression refrigeration system (VCRS) using fuzzy modelling. This model is working under Mamdani fuzzy interface system (MFIS) with multi input single out put (MISO) control system. In this system, R134A is used as a refrigerant at different loads in evaporator. The various input parameters like mass of water, evaporator temperature and pulldown time are investigated, at various loads 2,4,6,8,10,12,14 kg of water used in the evaporator. The system works under steady state conditions. The effect of input parameters on COP has been studied experimentally and same has compared with the developed fuzzy model. With these results, for lowest pressure ratio in compressor and minimum temperature at evaporator outlet, 10 kg of water gives best economic mode to operate the system. Finally fuzzy model can be used for the prediction of the COP.The predicted values from the fuzzy model are compared with experimental values for validation of the work and χ2- test has also been applied for accuracy of predictions.

Keywords— *VCR, MISO, MFIS, Performance, Prediction, COP and χ2- test*

INTRODUCTION

Vapour compression compression refrigeration is a multidimensional problem such as to minimization of input power consumption and increasing refrigeration effect. For theoretical performance analysis of the vapour compression refrigeration system is too complex due to the equations of the performance of system with many equations are required [1]. Therefore, as the thermodynamic analysis requires many variables, a fuzzy-logic controller is used. Classical control methods can be implemented in well-defined systems to achieve good performance-predictions for the systems. To control a system, an accurate experimental model of its behavior has to be obtained. Systems with non-linear behavioral structures cannot be easily modeled. Fuzzy-logic control has adaptive characteristics, which can achieve robust responses to uncertainties, parameter variations, and load disturbances. Fuzzy logic, or fuzzy-set theory, was the first presented by Zadeh [2]. Since the introduction of fuzzy logic, many researchers have studied modeling of complex systems, and fuzzy-logic controls have been used to control ill-defined, non-linear, or imprecise systems [2–5]. During the past decade, fuzzy logic has found a variety of applications in various fields ranging from industrial-process control [6] to medical diagnosis [7], and to securities in trading [8]. Most notably, a fuzzy-logic system has been applied to control non-linear, time-varying, ill-defined systems to control systems whose dynamics are exactly known, such as servomotor position control [9,10] and robot-arm control [11], and to manage complex decision-making or diagnosis systems [8,9]. Quail and Adnan [12] have described fuzzy-logic applications in dozens of household appliances. Adnan Sozen [13] investigated Performance prediction of a vapour-compression heat-pump. The aim of this paper is the performance of the heat pump was predicted using a fuzzy-logic controller under various working-conditions and mixing ratios of R12/R22 refrigerant mixtures Input data for the fuzzy logic are mixing ratio, evaporator-inlet temperature and condenser pressure. In the comparison of performance, results obtained via analytic equations and by means of the fuzzy-logic controller, the coefficient of performance (COP), and rational efficiency (RE) for all working situations differ by less than 1.5% and 1%, respectively. The statistical coefficient of multiple determinations (R^2-value) equals to 0.9988 for both the COP and the RE. With these results, we believe that fuzzy logic can be used for the accurate pre-diction of the COP and the RE of the heat pump. Rajinder Kumar Sidhu [14] Simulation of Temperature of R744/ R290 Refrigerant at Evaporator outlet in Auto cascade Refrigeration System. The focus of this article was mainly on prediction of the refrigerant mixture temperature at evaporator outlet using fuzzy model. A new type of fuzzy system has a Madmani interface engine is used. The model predictions are compared with a set of reliable experimental data available in the literature for the validation of fuzzy model and it is found that proposed fuzzy model gives the

ISBN: 978-93-82570-59-2

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Planar Monopole UWB
s

Anurag Singh

tesearch Scholar of UPTU Lucknow

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Simulation and Testing of Induction Motor Faults in MATLAB for Online Condition Monitoring

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ABSTRACT:

Induction motors are the most widely used electrical drive system and typically consumes 60 to 70 present of an industrialized nation total generating capacity. Online condition monitoring of induction motor is major research area for many of researches and scientists. Out of all the available condition monitoring techniques, current monitoring technique (Motor Current Signature Analysis) is applied to detect induction motor faults because of less cost, it can easily detect the common machine fault such as turn to turn short circuit, cracked/broken rotor bars, bearing deterioration etc; and it does not require additional sensors. The MCSA uses the current spectrum of the machine for locating characteristic fault frequencies. The spectrum is obtained using a Fast Fourier Transformation (FFT) that is performed on the signal under analysis. This paper proposes MATLAB based graphical user interface (GUI) for online condition monitoring of induction motor faults. The fault frequencies that occur in the motor current spectra are unique for different motor faults. However; this method may not achieve good results with varying load torque.

Keywords: Motor Current Signature Analysis (MCSA), Graphical user interface (GUI), Induction motor Faults, Fast Fourier Transformation (FFT), Squirrel cage induction motor (SQIM).

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Modal Analysis of Power System and study of oscillatory instability Case study for IEEE-39 Bus 10 Generator machines New England Power System

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ABSTRACT:

Power systems and study through modal analysis has yielded important results and critical information in the area of stability both for steady state and transient state condition. This paper explores application of such a modal analysis in bringing out information on system eigen values, participation factors of generating machines and controls, small signal changes in various inputs and its effects on outputs through a simulation carried out on IEEE 39 Bus 10 Machine New England Power System model.

* * *

Improved Direct Torque Control of Induction Motor Using Fuzzy Sliding Mode Controller

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ABSTRACT:

Direct torque control (DTC) is a vector control technique for the speed control of induction motor drives under all operating conditions. This technique is more robust to parameter variation than field-oriented control. The presence of hysteresis comparators in DTC will degrade the drive performance.

Aimed at the problems of larger torque ripple and non-constant inverter switch frequency in the direct torque control for asynchronous motor, this project puts forward a new idea. In same words, the idea is that the traditional PI controller is replaced by speed controller of sliding mode variable structure (SMVS). What's more, according to the mathematical models of induction motor in synchronous rotation coordinates and control theory of sliding mode variable structure, a new variable structure sliding mode controller based on torque and flux errors is proposed. Using the reference voltage vectors which are the outputs of the controller, the switching control signals of the inverter are generated by space vector PWM(SVPWM) technology. The simulation research verifies that the proposed control scheme reduces torque and flux ripple significantly, ensures the inverter switching frequency to be fixed, and it also has strong robustness to motor parameter and disturbance.

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ABSTRACT:

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Numerical Computation for Contact stress analysis of Spur Gear

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Abstract. The motive of this work is to determine contact stress of spur gear by application of static analyis. Using Finite element method a numerical study have been carried out to examine the effects of the material on contact stress behavioural characteristics of a gear. The gears used for the analysis are spur gears and the contact stress analysis is performed between pair of mating gear teeth. The benefit of comparing is to calculate the bending stress analysis using Lewis equation and contact stress with principle of Hertz equation. The results found are satisfactory in comparison with the Hertz equation. Furthermore, the analysis is extended for different materials experimented with various modules.

PROBLEM DEFINITION

Gears are the mechanical device capable of power transmission between the shafts and gains wide range of applications in the various fields. Contact Length is existed of the two mating gears when they are rotating in the opposite directions. The failure exists when the contact stress exceeds in the higher value which leads to Pitting Resistance and also some consequences participate in the surface and geometry of the Gear which will not be applicable in the future. To overcome this author examined the case with multiple ideologies followed by increasing the module of different materials, Application of AGMA Method and Glass Beading is the one more way which will improve surface quality factor of the gear. It is also evaluated for the Composite materials.

INTRODUCTION

Gear is the mechanical device which is cylindrical or disc in shape having equal radius of the tooth around the surface. It is responsible for the transmission of torque and the motion between the two shafts without the slippage in the positive manner. It acquires the wide range of application in the various fields of engineering. Requirement of Gears for the transmission of the motion in the Jute and Textile machineries, Large and Heavy Duty of Gear boxes comprising lot of gears in Cement and Sugar, conveyors, wind mill and cranes accomplishing lot of rotary motion from the source of power like motors and precision equipment like watches, clock, meters and microscopes. They can be classified on the basis of their configuration and axes of intersection followed by Spur gear, Helical Gear, Bevel and Worm Gear. Spur Gears are the mechanical device which are responsible for the implementing the transmission of power between the parallel shafts in which the teeth are mounted in the straight direction. Spur Gears are used at once for large speed reduction. Collision of the teeth produces the impact for the generation of noise. It ensures a mechanical efficiency 98-99%. Many authors investigated the static analysis of Spur Gear Teeth through the experimental and Finite Element approach at various assumptions which are beneficial for the future generations.

S.VijayRangan and N.Ganeshan(1994) have made parametric study on "Static Contact Stress Analysis of Spur Gear Tooth by Finite Element Method including Frictional effect" by making the assumption of Lagrangian Multiple Technique and Finite Element method. The contact existing at neighbouring pair of node and frictional coefficient ranging from 0 to 0.3 for the determination of frictional effect.They inferred that variation of contact stress along contact surface in the direction normal to the mating surfaces. P.Velex and S.Cahouet(2000) examined the "Investigation on the Influence of Tooth friction in Spur and Helical Gear Dynamics" by three-dimensional lumped

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Proceedings of International Conference on Recent Trends in Mechanical and Materials Engineering
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Edited by Kumaran A, Karthik V, Muthukumaran S
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Abstract

Abstract

Conveyor belt is a dedicated machine which is used in transporting the goods in assembly line area. This machine is driven by using a single mechanism for an operation. Here the focus is on the Geneva wheel which is used for this respective operation. Geneva Wheel mechanism here rotates and the index the roller in the conveyor belt one by one step. As we know there is the major drawback of a Geneva mechanism that jerk a lot while the operation is in process due to which it loses its acceleration. Here a symmetrical coupler curve of 4 bar mechanism which run on a Dwell curve is added to avoid the jerk as low as it can. The forces are analysed on the simulated mechanism with meshing method and the result to be presented in a graphical order, which represent the Von Mises stress and displacement.

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Experimental study on Influence of Filler Rods in Gas Tungsten Arc Welding

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Abstract: Advancement in manufacturing process is in progress since very old age as the human needs go on increasing. Welding is a process of joining two metal pieces by the application of heat. Welding is the least expensive process and widely used now a days in fabrication. Welding is an essential part of everyday life. From cars to high rise office buildings, airplanes to rockets, pipelines to highways, none of it would be possible without welding. It is essential for young engineers to have a very well knowledge of welding as this science has endless future with endless human needs that needs to be quenched. There are various types of welding like, Gas welding, Arc welding, resistance welding, solid state welding and few more. In this report Tungsten Inert Gas welding has been covered in detail more specifically about the filler rods used in GTAW process. There needs the skills to produce a required weld joints with precision as if lacks in quality entire structure may fails. The projects objective is to study the influence of filler rods used in TIG welding process as it considerably effects the welded structure. Various testing like hardness, bending and Nondestructive testing (NDT) have been performed for different filler rods used and influences caused by filler rods have been studied and conclusions are noted.

Keywords:-Gas welding, GTAW/TIG welding, non-destructive testing, welding process, Hardness testing, Filler rods.

INTRODUCTION

The project entitled Influence of filler rods in Tungsten Inert gas welding is to understand and analyze which filler rods should be selected to best suit the welding process exclusively for joining Mild Steel plates. In our course of project we will be using two kinds of filler rods Mild steel of diameter 2.5 mm and Stainless steel of diameter 2 mm. Two kinds of tests will be performed, destructive and nondestructive testing. All the necessary mechanical parameters like stress, strain, hardness etc. will be calculated and best possible conclusion will be documented at the closing of this document. Himamsaheb et al designed and fabricated gokart with the different welding techniques

Sameer Ahmed et al done the research on Experimental Analysis of Effect of Different Filler Rods on Mild Steel by Shielded Metal Arc Welding, he used Parent metal as Mild steel and welding using three filler rods Austenite stainless steel, Ferrite stainless steel and Mild steel for 60 degrees groove butt joint and analysis has been done using Hardness and Tensile test.

PROPOSED MODEL

Finally we have done the welding of plates and it would be further carried for testing those are non-destructive as well as destructive testing to understand and analyze its capability and suitability in real world applications. Liquid penetrate testing Inspection is then performed under appropriate lighting to detect indications from any flaws which may be present. After doing the testing we have made the observations from both the destructive and nondestructive testing. And we refer first specimen as mild specimen welded with MS as filler rod and second specimen as specimen for the mild steel specimen welded with SS as filler rod.

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International Conference on Inventive Material Science Applications
AIP Conf. Proc. 2166, 020007-1–020007-6; https://doi.org/10.1063/1.5131594
Published by AIP Publishing. 978-0-7354-1911-7/$30.00

Failure Scenarios of Power System Protection

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2021 5th International Conference on System Reliability and Safety (ICSRS) | 978-1-6654-0049-7/21/$31.00 ©2021 IEEE | DOI: 10.1109/ICSRS53853.2021.9660710

***Abstract*—The power system protection plays a decisive role in defending the power system from damages that might be incurred due to faults by fault identification, isolation and clearance. In this work, the power system protection has been analyzed for a transmission line equipped with a phasor measurement unit (PMU)-based auto-recloser. A Petri net (PN) model is used to exemplify the qualitative performance measures of the protection system model through behavioural properties such as conservativeness, reachability, properness, safeness, and boundedness. Thereafter, the PN model developed has been extended for an ideal transmission line protection system to derive failure scenarios in protection system that result due to three of its important components: relay, circuit breaker and auto-recloser device. The failure analysis is necessary for yielding appropriate solutions to failures, improving system design, introducing a new device to aid the system functionality, and aiding the recovery process, which eventually leads to a more reliable system. Therefore the sole aim of this paper is to provide accurate modeling for the failures to alleviate the process of power system protection.**

***Index Terms*—Protection system, Petri nets**

I. Introduction

The power system protection plays an integral role in safeguarding essential equipment in the vast interconnected and interdependent infrastructure of power generation, transmission, and distribution [1]. Any glitch in defending the power system can lead to unparalleled losses [2]. Thus, the power system protection can be termed as a safety-critical on-demand system that is single-handedly responsible for responding correctly to a fault and ensuring continuous power supply to end-users. The protection system consists of numerous components which play a crucial role, however the relay-CB combination can be unarguably considered to be the backbone of the fault-clearing process [1]. In this paper, we are mainly concerned about relay and CB failures in the transmission network, and we have modeled a few such failure scenarios that affect the protection system through Petri nets (PNs).

In recent years, power system complexity and size has increased manyfold to meet the surging demand, and this requires the transmission network to be reliable and dependable [2]. During temporary faults of transmission line (TL), auto-reclosers ensure minimum service discontinuity. However, in the case of a permanent fault, an attempt to reclose the CB threatens power system stability and might lead to network equipment damage. With the help of synchronized phasor measurements provided by phasor measurement units (PMU), temporary and permanent faults can be classified, and PMU-based auto-recloser techniques can be employed to command the CBs appropriately during faults [4]–[6]. In this work, we consider the protection system for TL that employs a PMU-based auto-recloser. In addition to relay and CB failures, PMU-based auto-recloser device failures have also been analyzed.

Previously, researchers have analyzed dynamics of the power system protection using various modeling tools like Markov models and Petri nets (PNs) [7]. PN has gained popularity over Markov models as a flexible graphical modeling tool that can be extended easily for small changes and model even minute nuances of system behavior [8]. The advantages of PN modeling have been well utilized and illustrated in a variety of fields by researchers [10]. In context of power system protection, authors have used stochastic PNs for modeling the protection system to evaluate the probabilistic performance measures in [7]. Taking advantages of PN, in this work we model relay, CB and PMU-based auto recloser failures in TL protection scheme using this versatile modeling tool.

To study the efficacy of the power system protection scheme in recovering from a fault an accurate and suitable model of the protection scheme is first requirement. We must admit that we have not found any work that would model and analyze protection system failure scenarios which include dynamic behavior and complex relations between its components. Therefore, we decided to model and study the system from safety perspective keeping importance of system reliability intact.

The main contributions of this work are divided into two parts. First, we model and analyze a protection system equipped with PMU-based auto-recloser using PNs. We show that the developed PN model represents the equivalent physical world protection system by verifying all the behavioral properties such as conservativeness, reachability, properness, safeness, and boundedness. In the second part of this paper, we model and analyze the following failure scenarios using

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Influence of Working Pressure and Oxygen Concentration on the Structural and morphological properties of ZnO films

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National Institute of Technology, Rourkela.

FST, IFHE University, Hyderabad.

Yonsei University, Seoul, Republic of Korea

Gachon University, Gyeonggi-do, Republic of Korea.

ABSTRACT:

Zinc oxide (ZnO) thin films were deposited using reactive RF magnetron sputtering of a pure metallic zinc target onto n-type silicon substrates in presence of a mixture of argon and oxygen gas. The evolution of the surface morphology and rms roughness were studied as a function of working pressure and oxygen gas concentration. X-ray diffraction studies have shown the appearance of highly crystalline c-axis (002) oriented films for lower sputtering pressure. Formation of characteristic Zn-O bonds was observed at 485 cm^{-1} in FTIR spectra. The film deposited at lower working pressure has uniform and homogeneous morphology. Investigation on the variation of Ar/O_2 flow results in smoother surface at lower argon concentration. The optimized pressure after investigation of various characterizations is found to be 4×10^{-3} mbar. Furthermore, $Ar:O_2$ gas flow ratio of 2:3 has shown highly crystalline c-axis oriented thin film.

Keywords: Crystalline, Gas ratio, thin film, Sputtering, Zinc oxide

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Periocular Region Based Biometric Identification Using SIFT and SURF Key Point Descriptors

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Abstract— **In the proposed paper the discriminative capability of the periocular region of the face area is exploited in designing a robust biometric system. A periocular region-based biometric system is emerging as a better alternative for the unconstrained and uncontrolled environments. In the projected work the two key point descriptors Speeded Up Robust Features (SURF) and Scale Invariant Feature Transform (SIFT) are employed for deriving the distinctive characteristics from the periocular and complete face portions. City Block Distance method is used to compare the two feature vectors obtained from the SURF and SIFT methods. FERET and FRGC databases are used to estimate the merits of both face and periocular biometric methods. By utilizing only 25% of entire face, periocular area-based biometric systems provided almost the similar performance equivalent to the face biometric systems.**

Keywords- Periocular Region, Key point Based Approaches, Feature Extraction, Classifiers, City Block Distance

I. INTRODUCTION

The performance of the established biometric methods [1] has almost reached the saturation level and their performance is effected when these system are operated under non–ideal conditions or in an unconstraint environments. In this study, it is proposed the periocular region based face recognition [2] which works better under unconstrained environments.The region surrounding the eye portion of the face is termed as the periocular region. Periocular region based systems work very well in the unconstraint environments ie when the subject is on move with poor illumination conditions or the subject is a non cooperative. Periocular region showed high ability of discrimination with superior robustness and it can achieve high recognition rates. Moreover, recognition rates can be improved when the periocular area modality is fused with the Iris/Face methodologies[2]. One of the most fascinating of all objects is human face: highly variable, expressive and powerful. It is highly specified part of the body at the same time and the individual identity of most convincing proof. Faces have acceptability, collectability, permanence, uniqueness and higher universality. They are used for forensic, security, and commercial applications because of their analogy to human perception, public acceptance and non-intrusive and passive. These applications include communication of multimedia, database management of content based image, multimedia communication, a design of Human Computer Interface (HCI) (the activity of classifying a vehicular driver), mugshot identification (example, driver licenses issuing), automated video surveillance (e.g. the checkpoint of airport security and super bowl face scans) [4]. A single or multiple human faces or subjects these applications involve recognizing, tracking and locating.

Park *et al.* [3] first presented the discriminating competence of the periocular portion. LBP and GOH are the Local appearance-based approaches used for extracting features from the periocular area and Euclidean distance is utilized for the classification. Altogether, the study of Park et al. [3] establishes the fact that the periocular recognition under occlusion provides superior results to the face recognition. In addition, many researchers have preferred studying the sub-regions of face (nose, eyes and ear) to full face region because face recognition performed with the sub-regions of face yields higher recognition rates (92%) than the other regions of the face, (Savvides *et al.* [5] and Sato *et al.* [4], Teo *et al.* [6]). In addition to yielding the higher recognition rate, the periocular biometric system also provides a high data quality and improves the performance of the recognition systems when the periocular modalities are fused with the iris modalities, (Miller *et al.* [7] and G.Santos *et al.* [8]). Further, the periocular biometrics are used in the domains of soft biometric recognition systems and for the gender classification,[10] (Lyle *et al.*[7] and Merkow *et al.*[2]). With the aging process the features of the face changes which affects the recognition rates where as periocular portion will not affect with age. [11, 14, and 15].

Face image pre-processing, feature extraction and classification are three stages mainly consist of face recognition. In [6], for face recognition several systems were developed and based on the methods of feature extraction [12] these are classified in to three categories they are hybrid, feature-based and holistic face recognition. For the recognition the methodologies of feature-based utilize face components or regions like mouth, nose and eye.

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A Novel Multi-Angular LTP and MLDA Based Face Recognition Using Modified Feed Forward Neural Network

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***Abstract*— Faces represent a complex multidimensional meaningful visual representation which is considered as a credential for an individual's identification and verification. A Feed-Forward Neural Network based face recognition is proposed in order to elevate the effectiveness of the face recognition systems. The convolution neural network provides successively larger features in a hierarchical set of layers. Preprocessing is performed to filter the images prior to feature extraction. The feature extraction is performed via Linear Discriminative Analysis (LDA) and Local Tetra Pattern (LTP) which captures both frequency and location information. Further, feature reduction is performed via (LDA) for image enhancement which enables better image classification. Then, the classification process is performed via M-FNN technique. It estimates the primary component of every class and perceives the classifier based on data projection on subspaces traversed by the principal components. Finally, the performance of the proposed technique is analyzed via parameters such as Accuracy, Sensitivity, Specificity, Precision, and Recall. It is apparent from the results of the performed experiments that the proposed technique offers better results compared to the existing techniques.**

Keywords—Face Reorganization, Linear Discriminative Analysis, Local Tetra Pattern, Modified Feed Forward Neural Network.

I. INTRODUCTION

Face recognition [1] has emerged as a significant area of research over the past few years due to its widespread application in various fields. The functional and habitual characteristics of an individual are generally utilized for recognition purposes. It gets utilized in biometric system. When considering a human face, the physiological traits remain the same throughout the entire lifetime of a person. It holds true for an individual's fingerprint, palm print, iris, DNA et al. There might arise slight variations based on the environment, circumstances, of a person. This might result in the uniqueness of sound, signature, walk, finger movements and so. These systems that are biometric in nature are classified into two namely verification system and identification system [1]. Face recognition is a popular research field in computer recognition that has numerous application oriented benefits. These include access control, forensic identification, and human computer interface. Some researchers have shown that the face images are likely to be located in a low dimensional nonlinear manifold, may not obey the normal distribution [2]. Constructing a computational model for face recognition proves to be a challenging task. Since faces are quite complicated, multi-dimensional and expressive visual stimuli [3]. Even though, face recognition is an advanced visual problem, there exists a predefined structure that gets imposed by the task. These structures can be taken advantage of via image processing. Convolution Neural Networks (CNNs) [4] has become quite popular in the field of computer vision framework. It widely increases the cutting edge in numerous applications. The availability of numerous datasets has made the research varied and widespread. Therefore process such as scene classification and image segmentation has become easier to perform. Different numbers of faces are considered as input with fixed-dimension feature representation for the process of recognition. Whole network is composed of couple of modules. Feature embedding module represents a Probabilistic Neural Network (PNN) maps the face image to a feature vector. The aggregation becomes invariant due to the attention mechanism of image order. Feature descriptor plays a key role in impacting the performance of lots of computer vision and pattern recognition frameworks. Plenty of feature descriptors were utilized for performance enhancement. Numerous studies have been proposed for performance evaluations. Also, the performance of Facial recognition is influenced by numerous variables such as expression, lighting, pose and occlusion that includes glasses, mustaches, beards, headgear, et al [5].

A. Problem identification

Usually facial recognition systems are exposed to few issues like change in illumination, occlusion, and pose variations. Specially aging based face recognition, it mainly come across the issues while verification of official documents, passport and police records. Aging has huge impact on face that affects the texture and shape of the face, such as skin color and wrinkles. Aging affects are in different ways based on different age intervals. Most of changes in the face due to aging, for a teenager, happen before eighteens is a change of shape of the face. In addition, the effect of aging after eighteen is along with more texture changes and less shape changes.

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Local Extreme Co-occurrence Edge Binary Pattern for Bio-medical Image Retrieval

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***Abstract*—A new approach to bio-medical image retrieval, local extreme co-occurrence edge binary pattern (LECoEBP) pattern proposed. Local extreme edge binary patterns (LEEBP) give the texture information and gray level co-occurrence matrix finds the co-occurrence of binary patterns. LEEBP extracts the four edges for each pixel and GLCM applied on each edge to find the joint occurrence of edge binary patterns. In LEEBP, each edge has directional relative information of all possible directions of a pixel. The directional relative information calculated based on the sign code magnitudes of local differences from center pixel to its directional pixels. The combination of LEEBP and GLCM showed significant results compared with the current algorithms on benchmark databases Emphysema-CT and OASIS-MRI.**

***Index Terms*—local extreme edge binary patterns, GLCM, image retrieval, Emphysema-CT database, OASIS-MRI database.**

I. Introduction

With the advanced technology in medical domain images are taken a great part in patient diagnosis and disease identification. These images are considered an important source of disease diagnosis, medical research, and education. The medical images are different considerably from other commonly used images. The visual sense of each medical image exposes anatomical and functional information of different body parts and pathologies. Every image modality is raising the challenges for storage and retrieval. Currently, most of the images are retrieved by a text-based search. At early stages of image retrieval combination text and content-based was used for biomedical image retrieval[1]. Over a decade numerous medical CBIR patterns have been proposed. The extensive literature survey on image retrieval given through published papers [2]-[5]. Qullec and Traina et al.[6]-[7] proposed a medical image retrieval system for mammographic images and brain images using optimized wavelet transform. A signature is made for each image and these signatures differentiate the distribution of wavelet coefficients in each subband of the decomposition. Lauge et al.[8] proposed a quantitative analysis of pulmonary emphysema in computed tomography (CT) images using local binary patterns (LBP). He et al.[9] also used LBP to analyze the facial analysis in biomedical videos. LBP extracts the vertical and horizontal motion information and appearance features in the top frames from each facial region in the videos. Applying the texture properties solve many problems in the image retrieval because it can capture the fine details of an image. Peng et al.[10] proposed a method called Regular valuation method to detect compulsive changes in the chest CT images. From these images, texture features are extracted using extended rotation invariant LBP. Unay et al.[11] proposed ROI retrieval for brain MRI images based on the local structure of the image. LBP and Kanade-Lucas-Tomasi (KLT) used to extract feature points. Subrahmanyam et al.[12] gave a new approach to extract the edge information of each and every pixel in the image. It has been proved its significance on any color, texture and medical databases. Haralick et al.[13] introduced Gray level co-occurrence matrix to extract the geometric features of an image. It becomes more popular in extracting the texture features of an image in counting the mutual occurrence of different pixel intensities of an image. Jang et al.[14] used this GLCM to match the edges of texture patterns for image retrieval.

The Spherical symmetric 3D local ternary patterns [15] used to retrieve biomedical image based on the texture feature. Another texture based MRI and CT image retrieval Gabor Local ternary Co-occurrence patterns (GLTCoP) [16] which encode co-occurrence of similar ternary edges. It is calculated for every pixel (Center pixel) based on the local differences in 8 directions. It showed significant improvement in comparison with LBP and LDP. Later it has been extended to local mesh patterns (LMeP) [17] and local mesh peak-valley edge pattern (LMePVEP) [18] for a considerable improvement in terms of average precision and average retrieval rate. Rehman et al.[19] gave a new method for image retrieval in filtering out the irrelevant images using SVM classifier. In [20] a combination of the center-symmetric local binary pattern (CSLBP) and Gray level co-occurrence matrix (GLCM) for better results on face and medical image databases. The GLCM is used to find the number of mutual occurrences of binary patterns. The same approach has been followed by Manisha.v et al.[21] for color and texture based image retrieval. The mutual occurrence of local extrema patterns which are used to extract the texture features of an image. Dubey et al.[22] proposed [illegible] the transformed values of local [illegible] on the bit-plane binary contents of its [illegible]. Recently, they also proposed a local diagonal extrema pattern (LDEP)

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This is to certify that ....DIGVIJAY...V..NAIR,...Asst: Professor.....of .....IFHE, Hyderabad.....has participated in "International Conference on Modern Research & Computations in Electrical Technology" (ICMRCET – 2019) organized by Department of Electrical & Electronics Engineering, CMR College of Engineering & Technology, Hyderabad, during 09th – 10th July, 2019 and presented a paper titled ...Design Of Robust Wide Area Damping Controller.....

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Design of Robust Wide Area Damping Controller in Power System

Digvijay V Nair[1] and M.S.R.Murty[2]

Abstract—This paper proposes design of robust wide area damping controller (WDC) improving damping in power system. WDC design involves H_∞&H_2 control, model reduction, and closed loop pole-placements for desired minimum damping. A well designed controller meeting multiple objectives from pole-placements inside a conic sector in complex s-plane, robust to changing load conditions, minimization of control efforts is attained. A Polytopic representation of system for changing operating point with load conditions called polytopic linear differential inclusion (PLDI) is considered in the design. LMI framework is used in obtaining controller parameters. Controller designed is dynamic and is obtained by reducing the order of the original system to smaller value. A bench mark two area power system is considered for testing the design and establishing its effectiveness in wide area control and damping. Results show the proposed wide area damping controller is effective in meeting its stated objectives and robust to changing system condition as well to modeling uncertainties in design.

I. Introduction

Small signal stability analysis *(SSSA)* in power system has been of immense interest and importance for field engineers to researchers working on fast damping of power oscillations.. *SSSA* gives assessment of damping in sys-tem and existence of electro-mechanical oscillations *(EMO),* if any. The *EMO* has adverse effect on power system and if left unchecked could lead to system black-outs [1], [2]. Controllers for damping of such EMO are intended to act fast resulting in fast damping of *EMO*. These *EMO* are generated on account of changes in system conditions mostly load variations. These oscillations are classified under (i) Intra-area (1- 2Hz) involving generators from same area and (ii) Inter-area oscillations (0.2 - 0.8Hz) involving generators from different area swinging against each other. With advent of phasor measurement units *(PMU)*, measurements and transmission of remote signals to and from controller in real time as become possible. Wide area control *(WAC)* based on wide area measurements *(WAMS)* has immense potential in power system for damping of *EMO*. *WAC* has once again revived the interest among researchers and engineers in pushing-up further the small signal stability boundary. Tuning of controller under wide area signals markedly improve small signal stability. Wide area signals has higher observability and controllability of modes of interest for a given controller location and hence effective in damping of oscillations [6]. With the advent of phasor measurement units*(PMU)* transmission of remote signals to and from controller in Real time has become possible. In [10] use of PMU based real time oscillations damping system is presented. [30] and [31] use wide area control in designing of robust damping controllers. In recent time LMI i.e. linear matrix inequality based controller design in power system has gained importance. *LMI* allows optimum design of controller under multiple constraints like H-infinity, H-2, mixed sensitivity, thereby allowing robust control action. In [21] damping of oscillations with mixed sensitivity approach to H-infinity control is used in FACTS controller, in [20] *LMI* is used in state feedback based controller design feeding to PSS. In [22], [23] *LMI* is used in coordinated decentralized control approach in large power systems with FACTS devices. In this paper it is proposed to build robust damping control system comprising of dynamic output controller feeding supplementary control signal to FACTS device like SVC. Infinity norm based control method along with pole-placement restrictions in linear matrix inequality (LMI) framework is used. In addition to this a special feature of LMI on quadratic stability for polytopic system models is used to satisfy controller performance in face of changes in operating point of system. This results into a robust dynamic controller in damping of power oscillations.

II. Design of Multiple-Objective Dynamic Output Feedback Controller: A Robust Wide Area Damping Controller (K(s))

The central design framework for the robust damping controller *(RDC)* is presented in this section. The RDC is robust to changes in operating point, to disturbances acting at inputs and outputs of system and robust to model uncertainties set in at the time of design. The design of *RDC* is far significant to classical design of controller involving setting time constants and gains of individual blocks like lag, lag-lead and wash-out filters. The proposed RDC (K(s)) is a dynamic output feedback controller with state matrices given by (K_a, K_b, K_c, K_d) as controller parameters. Controller is designed using techniques from LMIs. LMI allows multiple objectives satisfied by single controller as part of optimization problem [16] to [18]. The stated objectives become set of constraints along-with minimization of variable (norms) forms optimization problem. Solution of which leads to controller realization. The developments in solving LMI based on interior point algorithms has resulted in spurt of methods in controller design for damping of oscillations in power system [21], [24], [25] . In this paper a general regulator problem as shown in Fig.1 is considered for the design. Where open loop plant is given by P (s), controller transfer function by K(s), various performance signals like

*This work was not supported by any organization

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This is to certify that the paper entitled **"A Study on Weld Defects Classification in Gas Metal Arc Welding Process using Machine Learning Techniques"**, authored by **Syed Quadir Moinuddin, Syed Shaul Hameed, Ramesh Kumar, Shanta Kumari and Dr. Ashok Kumar Dewangan** was presented in the **1st International Conference on Energy, Materials Sciences and Mechanical Engineering (EMSME - 2020)** organized by **Department of Mechanical Engineering, National Institute of Technology Delhi, Delhi, India** held during **October 30th - November 01st, 2020**.

The paper has been recommended for consideration for publication to the **Materials Today: Proceedings(Elsevier).**

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ISSN No: 2214-7853

Materials Today: Proceedings 43 (2021) 623–628

Contents lists available at ScienceDirect

Materials Today: Proceedings

journal homepage: www.elsevier.com/locate/matpr

A study on weld defects classification in gas metal arc welding process using machine learning techniques

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ARTICLE INFO

Article history:
Received 15 September 2020
Received in revised form 30 November 2020
Accepted 6 December 2020
Available online 27 January 2021

Keywords:
GMAW process
In-process monitoring
Weld defect classification
Machine learning
Decision tree
Support Vector Machine (SVM)

ABSTRACT

Gas metal arc welding process (GMAW) is one of arc welding processes commonly used in industries due to its wide range of applications and economic advantages. In GMAW process, the arc interacts with environment leading to weld defects that are realized in post weld non-destructive techniques (NDT). This leads to necessity of in-process monitoring and control of the process to ensure quality by defect free welds. The present work is a preliminary study intended to develop an in-process monitoring system that can identify and classify the defects in GMAW process. In this study, experiments are conducted on tube-to tube butt joints in flat position by varying the process variables such as current, voltage, travel speed and contact-tube-to-workpiece-distance (CTWD). It involves good weld as reference for three types of defects such as porosity, burn through and lack of penetration were considered. The instantaneous current and voltage signals were recorded using acquisition system that is later used in statistical features extraction. Based on statistical features such two classification techniques includes decision tree and support vector machine (SVM) were deployed to classify the defects with reference to good weld and their efficiencies are reported.
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Selection and peer-review under responsibility of the scientific committee of the 1st International Conference on Energy, Material Sciences and Mechanical Engineering.

1. Introduction

GMAW process is a common arc welding process known for its deposition rate that has a widespread applications in medical, shipbuilding, automotive, additive manufacturing and boiler industries. In GMAW process a continuous electric arc is maintain between the consumable electrode and workpiece wherein the continuous fed electrode is melted and deposited on the work piece. The major concern of the process is stability of the process causing defects that are evaluated using post process techniques (i.e. NDT) resulting in either repair or scrap the part. However in repair or rework, there is difficulty in identify the exact defect location that leads more time consumption and cost. This leads to necessity of online monitoring of the process wherein the process stability and weld quality can be monitored and controlled. The online monitoring techniques uses different type of sensors to collect data where in optimization techniques and algorithms are implied to monitor and analyze the quality of the weld [1–5]. Tarng et al. [5] modelled optimized and classified the weld quality in gas tungsten arc welding process (GTAW). The weld quality is classified using simulated annealing and fuzzy cluster techniques. Bacioiu et al. [6] designed a system for assessing the tungsten inert gas (TIG) welding quality with the potential of application in real-time. Mathew et al. [7] predicted residual stresses using two different machine learning techniques includes neural fuzzy and neural networks. Results were compared, neuro-fuzzy systems are better than neural network Mayr et al. [8] proposed a machine learning architecture and evaluated the quality of laser welding process. Gunther et al. [9] proposed an integrated machine intelligence architecture to control significant difficulties in laser welding process. Du et al. [10,11] studied the void formation and tool failure in

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https://doi.org/10.1016/j.matpr.2020.12.159
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Selection and peer-review under responsibility of the scientific committee of the 1st International Conference on Energy, Material Sciences and Mechanical Engineering.

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Design and analysis of high reliable fault tolerance subsystem for micro computer systems

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2021 IEEE 11th IEEE Symposium on Computer Applications & Industrial Electronics (ISCAIE) | 978-1-6654-0338-2/21/$31.00 ©2021 IEEE | DOI: 10.1109/ISCAIE51753.2021.9431830

***Abstract*— Generally in every communication medium, error correction codes were employed for correcting the obtained errors that are caused in the data due to transmission. The essence of these codes is to add redundant bits using mathematical algorithms at the transmission end and decode the received data to retrieve the original data. This paper presents the design of a Multi bit Error Detection and Correction (MEDC) system which is utilized in the microprocessors along with memory that performs error detection as well as error correction of data which was written and was read from memory using Bose, Ray- Chaudhuri, Hocquenghem (BCH) codes. The proposed MEDC system is synthesized and also simulated through Vivado design suit 2018.3 and was implemented using Kintex-7 FPGA board. Compared with the obtained results with well-known error detection codes, the proposed method is utilized for improving the performance, increase the rate of the error detection and correction in the transmitted data.**

Keywords*— *error detection, error correction, memory, microprocessor, BCH.

I. INTRODUCTION

Now a day, the demand for high speed communication is growing faster. The transmitting of data from sender to its respective receiver is termed as the main theme of any communication system. Due to transmission of data, there might be errors injected into the data knowingly or unknowingly. For example, if a digital signal is to be transmitted from the sender to the receiver, there might be a chance that some errors may be introduced into the original data signal because of interference of noise. That means a logic 1 might be read as logic 0 or vice versa.

The Process of detecting errors in the network while transmitting the data signals from the sender to its respective receiver is termed as the error detection. In general, people use redundancy codes to detect the errors. At the time of transmission redundancy bits are added to the signal or data that is to be transmitted, such types of codes are known as error detecting codes. The procedure of adding a parity bit into the data or signal at the transmitter end and to recover data or signal at the receiver end is termed as error correction code. In communication, a receiver is a system which has error correcting code that automatically fixes some errors and allows reconstruction of the original transmitted signal or data.

II. RELATED WORK

A new design of syndrome block was proposed in [1] that is used in BCH decoder. From the corresponding odd number of syndromes, the design calculates an even number of syndromes which in turn reduces the number of computations and increases the speed of calculations. In [2], the authors compared high speed error corrections and detection codes using cryptographic techniques with the traditional mapping techniques for error corrections and detection and found that the proposed design's delay time is reduced gradually. A system was implemented in [3] that has a capability of detecting along with correcting the flexible message length and block length. This design also implemented BCH encoder and decoder with variable lengths. Faster BCH decoder code (31,16,7) was proposed by [4] which was based on parallel data processing and matrix algorithm of syndromes computation. The design of error detection as well as correction that is used between the memory and microprocessor was proposed by [5], which does detection ,correction of errors in the data read from, and written into the memory. BCH decoding and encoding techniques were presented by [6] using summation operations modulo 2. This technique improves the overall efficiency of BCH encoder and decoder by correcting the error of the triplication. New method was proposed by [7] on syndrome norm for permuted decoding BCH. This procedure allows for correcting the burst errors as well as random errors (whereas the available traditional methods will only find the present random errors), The proposed design in [8] used the properties(mathematical) of BCH codes to eliminate the erroneous code words by Blind reconstruction method of BCH codes.

III. BCH CODES

BCH codes stands for Base, Ray-Chaudhuri, Hocquengham was invented back in 1960 but even today they are base for multiple advanced error correction codes. These codes were effective, powerful classes of cyclic codes with random pattern containing multiple no of error correction capability. These codes are constructed over a finite field (Galois field) using polynomials. In BCH codes, during the design of code, there is full control against number of symbols that can be correctable using code. This feature of BCH codes adds as an advantage of designing the BCH codes of binary which are capable of error detection for multiple no of bits and correction. The amount of redundancy is very low in BCH codes. Practically hardware implementation of BCH codes are easy and not so critical. We use a syndrome matrix to decode the required data or signal [9] – [14].

In BCH codes,

Block length(n) = 2^m-1

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Deep Learning for Sentiment Analysis Based on Customer Reviews

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Abstract *- Online reviews became popular as people are taking decisions with the help of them. In this context, the purpose of this project is to develop a deep learning based framework that can be used to classify customer reviews into positive or negative. This process is known as sentiment analysis. It is based on the supervised learning mechanisms where a classifier is built with knowledge of training data and then it is used to classify testing data. A prototype application is built to demonstrate proof of the concept. The success of deep learning highly relies on the availability of large-scale training data. A novel deep learning framework for review sentiment classification which employs prevalently available ratings as weak supervision signals. An algorithm by name Deep Learning based Sentiment Analysis (DL-SA) is proposed and implemented to achieve this. A deep learning framework is proposed and implemented. A prototype application is built to demonstrate proof of the concept. The empirical study revealed that the proposed system is better than the state of the art.*

Index Terms *- Deep learning, customer reviews, machine learning, sentiment classification*

I. INTRODUCTION

Since Web 2.0 and e- commerce booming, yet more people begin shopping online and post comments on merchant / review websites regarding their buying experiences. Such opined details are important resources for both future decision-making customers and retailers to improve their products/goods and services. Moreover, as the amount of reviews is rapidly growing, people face a serious problem of overloading the information. A variety of opinion mining strategies were suggested to mitigate the problem, e.g. opinion overview, comparative studies, and opinion polling. A vital component of such opinion mining approaches is a natural sentence classifier for feelings. Common methods of classification of emotions typically fall into two classifications: (1) Methods based on lexicons, and (2) methods of machine learning. Generally, consider the approach of first constructing a sentiment lexicon of opinion terms (such as e.g. "nice", "bad"), and then developing category rules based on the words of opinion and previous syntactic information that occur. Notwithstanding productivity, these types of approaches require considerable effort in the creation of lexicons and the design of laws. In addition, lexicon-based methods can't manage implicit opinions well, i.e. objective observations like "I bought the mattress a week ago, and today a valley appeared." Deep learning has appeared in recent years as a powerful means of solving the challenges of classifying emotions. The deep neural network algorithm implicitly learns to interpret the data at a high level and thus prevents laborious tasks like feature engineering. Second benefit is that the exponentially stronger expressive power of deep models than the shallow models. Yet deep learning success depends strongly on the existence of the data regarding large-scale training. It is still very laborious to build large-scale named training data sets for the detection of sentence level sentiment. The provided contributions of this paper are illustrated below:

1. An algorithm named Deep Learning for Emotion Recognition (DLER) is proposed and implemented.
2. An application which is a prototype is built to illustrate the proof of a concept.
3. The algorithm is evaluated and the results are compared with the state of the art.

The organization of this paper is illustrated as follows. Section II provides literature survey of the review. Section III provides the in detail proposed application. Section IV illustrates the implementation of the application. Section V contains results and section VI contains conclusion of the paper and future work.

II. RELATED WORK

This section provides review of relevant literature. The effectiveness of algorithms regarding machine learning actually depends on the representation of data, and we theorize that it's because different interpretations will interact more or less with and cover behind the data the various understanding factors of variance. While domain specific knowledge may be used to aid design depictions, having to learn with generalized priors could also be used, and the search for AI motivates the creation of more efficient algorithms of representation learning that incorporate these priors [1].Conceptual results indicate that deep architectures may be needed to learn the complex functions that can depict high-level abstractions (such as e.g., vision, language, and other AI level tasks). Deep architectures were generally made up of numerous levels of nonlinear activities, for example in neural networks with several hidden layers or in complex propositional formula that reuse many sub formulas. Looking for parameter space of the deep architectures is a challenging task, yet learning algorithms like Deep Belief Networks has currently been introduced to address this issue with significant results, exceeding the state of the art in some areas [2]. Rather than leveraging carefully

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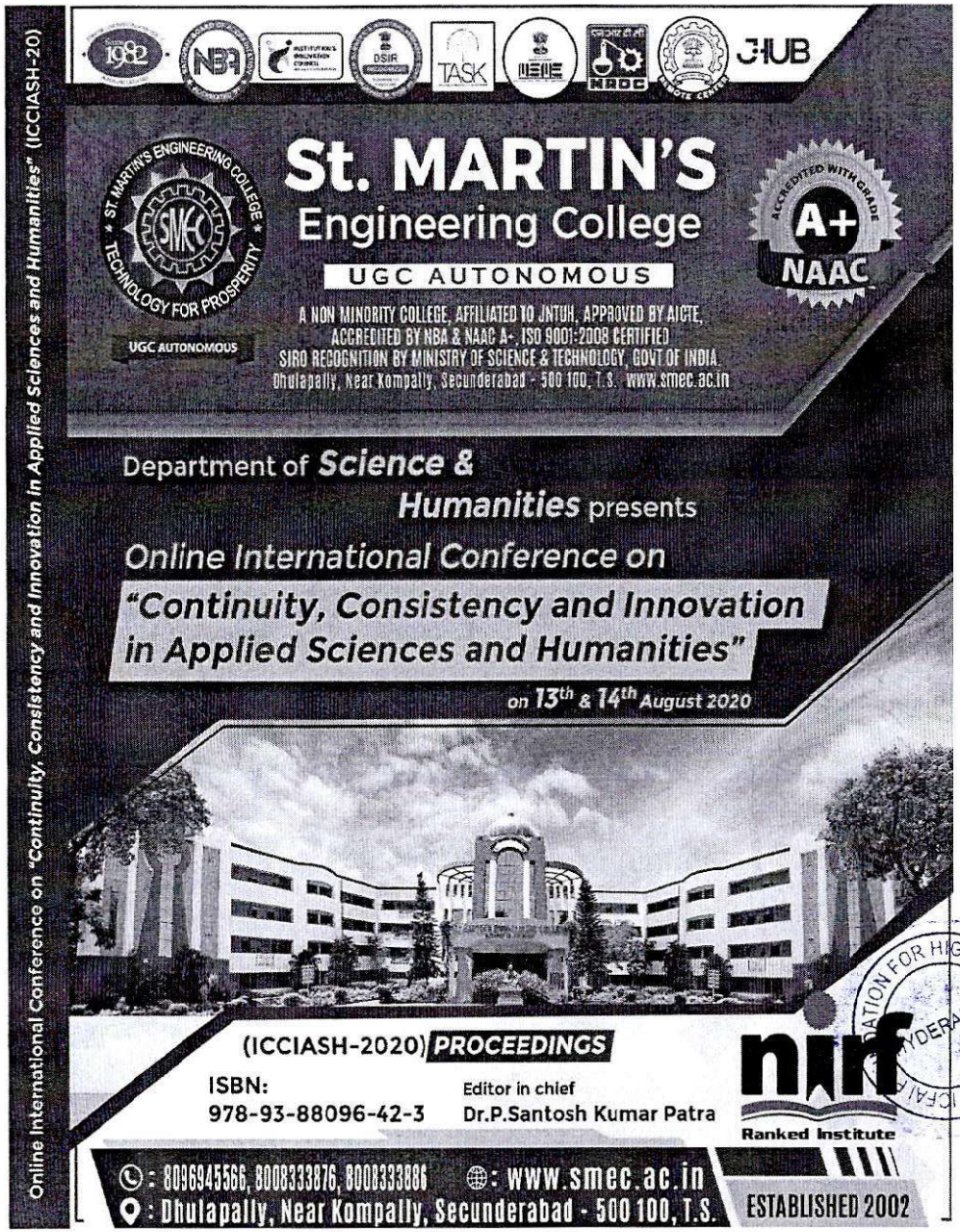

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Paper ID: ICCIASH-2020/243

The Impact of Learning Styles Based Writing Instruction on the Perceptual Learning styles of Learners: an Investigative Study

Dr. M. Swathi
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Abstract:

Every learner is unique in various ways, including their learning preferences. Learning styles are an individual's preferred ways of learning. There are various categories under which a learner can be categorized depending on his/her preference of learning. The unique features of each leaning styles helps learners to acquire and assimilate information easily. Understanding the learning styles of learners in a classroom helps teachers to improve the quality of teaching and learning processes. The current study aims to discern the relationship between each of the perceptual learning styles of Reid (1987) to L2 writing skills in ESL context. Forty middle school students are subjects of this study. Perceptual learning styles of these were assessed along with their achievement rates in writing skills (pre-test). A learning styles based writing instruction programme was implemented followed by a post- test. A comparative analysis was made between the pre and post writing scripts of different learning styles to observe if there is any significant improvement. It was understood that there was an overall significant increase in the learners writing skills from pre test to post – test, it was also found that visual learners had a significant increase in the writing proficiency when compared to other perceptual learning styles.

Key words: *Learning styles, Homework intervention, mixed ability classroom.*

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14 GSps Four- Bit Noninterleaved Data Converter Pair in 90nm CMOS with Built-In Self-Test

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M. Gopinathreddy K. Suresh Kumar

FST, IFHE University, Hyderabad

ABSTRACT:

This paper present the design and testing of a 14GSps, four bit data converter pair in 90nm CMOS suitable for implementing advanced serial links. The data converter pair consists of a non-interleaved flash analog-to-digital converter (ADC) and non-interleaved current steering digital to analog converter (DAC). Both the converter designs adopt the wave pipelining technique to increase the signal settling time. Through detailed analysis, we show that cascading three active feedback preamplifiers to implement the cores of the comparators in the ADC balances the power budget and designing difficulty when we push the sampling rate to the process limit. Current mode logic gates are used to elevate the power bouncing issue. To address the difficulty and high cost of testing the extremely high speed converters, the design embeds the simple design for testability circuits cooperating with the on-chip resources to provide two cost effective test modes. The first test mode cascades the ADC and DAC so that they can be tested at the rated speed without the need of a very high speed logic analyzer. The second test mode enables the eye diagram tests by shuffling the digital outputs of ADC as the inputs of DAC instead of adopting conventional feedback shift register.

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65th Congress of the

Indian Society for Theoretical and Applied Mechanics

(ISTAM-2020)

(An International Conference)

9-11 December, 2020

Certificate

This is to certify that Anjanna Matta, ICFAI Foundation for Higher Education, Hyderabad *has participated & presented a paper entitled* Thermal instability analysis on Maxwell fluid flow through a horizontal porous bed with the effect of heat source and mass flow *in the 65th Congress of ISTAM during December 9-11, 2020 at GITAM Deemed to be University, Hyderabad.*

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International Online Conference on Nano Materials (ICN 2021)
09th - 11th April 2021 Kottayam, Kerala, India

Organized by

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S/he also presented a paper entitled **INSERTION IN MISING: AN OPTIMALITY THEORETIC PERSPECTIVE**

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Link Cost Optimization for Traffic Controlling in Heterogeneous Network

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Abstract: **Due to the nature of various types of end-to-end mobile devices in heterogeneous network, congestion was one of the main problems in heterogeneous networks. This paper proposes a congestion aware routing approach based on the evaluation of weight value as a link cost index. The link cost evaluation considers the evaluation of buffer delay, data rate, MAC overhead and link quality. This approach uses a multipath routing approach which discovers multiple disjoint routes from a source to destination having heterogeneity between each other. Among the discovered routes, the route with minimum cost index is selected, which is based on the node weight of all the in-network nodes from the source node to the destination node. By simulation results, the proposed approach has proved that it attains high packet delivery ratio, low routing overhead and also low end-to-end delay.**

Keywords: **Heterogeneous network, congestion, packet delivery ratio, routing overhead, End-to-End delay.**

I.INTRODUCTION

Heterogeneous network are formulated by a set of nodes, which are dynamic in nature and formulated by a group of nodes, communicating over a common wireless medium. Such networks are characterized by dynamic networks, have variable link capacity with constraint security and resources. Routing in Heterogeneous networks is analyzed from a long time. In recent years, various routing protocol for such network have been proposed [1-4].In such approaches the method is developed under the assumption of nodes with homogeneous property. The homogenous property is defined by a common value been shared among all nodes in the network.

However heterogeneous network suffers with network dynamicity, such as, with the variation in node density, the performance is highly effected. In the applications of such network in real time application, the nodes are basically observed to have heterogeneity property. In various real time applications [5-7], the nodes characteristic are variable with respect to their position, and utilization. For example, in the battlefield area, where the solider carries a portable unit, large units are carries by heavy mobile units, such as vehicle, tanks. In such scenario the portable devices are have resources in terms of power, processing capacity, transmission rate etc. Wherein in the same filed, the large units having high power transmission, and resource utilization are also present. Hence, they formulate a heterogeneous network, which is a integration of multiple resources at one area. In such network, the basic problem of communication resources, leads to heavy traffic congestion, which highly impact the network performance. The reliability of such network for communication gets minimized. Hence to achieve a reliable communication in such networks.

This paper proposes a congestion aware routing approach by considering the parameters of allocated data rate, MAC overhead and delay, by defining a link quality metric in heterogeneous network. On considering these parameters, a weight for a given link is evaluated. Using the weight factor then routes are derived. The route with lowest minimum cost is considered for communication. To present the stated approach this paper is outlined in 6 sections. Wherein section 2 outlines the conventional approaches of the related works. Section 3 present the conventional approach of congestion aware routing. The proposed approach of link weight based routing is defined in section 4. Section 5 presents the obtained simulation observations for the proposed work. The concluding remarks are presented in section 6.

II. RELATED WORK

Congestion in Heterogeneous networks leads to transmission Issues, developing delay and packet loss in heterogeneous environment. The issue of congestion leads to resource wastage in such network. By the introduction of routing protocols which are dynamic with respect to congestion, can greatly improve the network performance. The increase in data overhead and, due to issues with multiple devices having variant characteristic, the performance is degraded. This is predominant in the case of mobile users in heterogeneous network. The mobility concern was referred in past and various approaches were developed to overcome it. In [1] smart personal information system (smart PIN), was proposed. This network uses a performance over cost to exchange information's among users to exchange the data adaptively, using the network characteristic and users requirements. In [2] towards a resource monitoring approach, a battery lifetime optimization using route selection approaches. In this approach, a vertical handoff decision was proposed to optimize the offered load

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978-1-4799-6908-1/15/$31.00 ©2015 IEEE

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ScienceDirect

Materials Today: Proceedings 5 (2018) 12641–12648

materialstoday: PROCEEDINGS

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ICMMM - 2017

Effect of wire electrode materials on die-corner accuracy for Wire Electrical Discharge Machining (WEDM) of Inconel 718

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Abstract

In present investigation to analyzed the effects of tool electrode on machinability of Inconel 718 using wire electrical discharge machining. An L_{16} orthogonal array has been used for experimentation by considering machine controllable factors (i.e. pulse on time, wire speed, flushing pressure and discharge current). The influence of the process parameters on the responses, such as, surface Roughness and corner error were studied. From the results, it has been observed that tool material has the significant nature on determining performance variables. It has been also observed that zinc coated brass wire have better performance on surface roughness and corner error than the uncoated brass wire.

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Keywords: WEDM; Inconel 718; MRR; Surface roughness; corner error; zinc coated brass wire; uncoated brass wire.

1. Introduction

Wire electrical discharge machining (WEDM) is a thermo-electrical process in which Material Removal rate (MRR) with the help by a series of sparks between the working zone (workpiece and wire electrode). The eroded materials have flushed out with the flushing pressure by the dielectric fluid. WEDM is more unique machining process because, it can obtained Fine accuracy and intricate shape of super hard materials. Without the WEDM process the fabrication of precision workpieces gives high production cost for surface grinding and polish.

In the WEDM process, surface roughness and corner accuracy are the main concern with intricate cutting. It is very difficult for setting the optimal controllable parameters to get to optimal solutions. Many researchers have been attempts to solve this problem. Selvakumar et al. [1] have attempted an experimentation by controlling the machining process parameters (i.e. wire tension, pulse-on time, pulse frequency, peak current and servo voltage) as

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ICMMM - 2017

Optimisation of Machining Parameters using Grey Relation Analysis integrated with Harmony Search for Turning of AISI D2 Steel

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Abstract

The objective of this study is to investigate the effects of different turning parameters like spindle speed (N), feed rate (f) and depth of cut (d) on different output performance parameters measures during dry turning of AISI D2 Steel using PVD coated carbide tool. An experiment has been conducted according to L9 orthogonal array in order to evaluate the turning performance characteristics like material removal rate (MRR) and surface roughness (Ra). An Effort was put to convert the multi responses into equivalent single response i.e. overall grey relation grade by using grey relational analysis. The present study also developed a mathematical model for overall grey relation grade in terms of the machining parameters. Here, improved version of the latest evolutionary algorithm such as harmony search (HS) has been implemented in order to evaluate the optimal machining condition. The results are also compared to genetic algorithm to validate the efficiency of aforesaid approach.

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Keywords: AISI D2 Steel, Grey relation analysis, Harmony Search ;

1. Introduction

Nowadays, in manufacturing industries hard turning technology has made huge growth and advances in order to manufacture many high precision and high hardness components. The application of AISI D2 steel is generally

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SiF 2020 – The 11th International Conference on Structures in Fire
The University of Queensland, Brisbane, Australia, 30th November - 2nd December, 2020

THE ROLE OF END CONDITIONS ON THE BEHAVIOUR OF STEEL-CONCRETE COMPOSITE BEAMS IN FIRE

Priya S Natesh[1], Anil Agarwal[2]

ABSTRACT

There are several knowledge gaps to be addressed in the behaviour of composite beams under fire conditions. Some of the critical ones are: (i) the role of negative reinforcement near beam ends in controlling the beam deformation failure behaviour and (ii) the effect of the axial restraint stiffness on the performance of composite beam in heating and cooling phases of fire.

In the present work, a detailed three-dimensional FE based model of a long-span continuous composite beam was developed by using Abaqus, a commercially available finite element modelling and analysis software. The analysis method was calibrated and validated against the test data. Various structural responses such as beam deflection, rebar axial force, time of beam web buckling were predicted accurately. A parametric study was conducted to understand the effect of additional hogging moment reinforcement in the beam ends, and effect of support conditions for the rebar and beam. The axial restraint condition of the beam has a significant role in the behaviour of beam under fire loading. Stiff connections are not preferable during cooling phase of loading.

Keywords: Composite beam, fire, continuity, end conditions

1 INTRODUCTION

The composite beam optimises the material by making use of concrete slab in the compression zone and structural steel beam in the tension zone of the member. The shear tab connection in the beam provides an adequate bond between the concrete slab and steel beam. The concrete slab can be of flat or trapezoidal in cross-section. Currently, there is a significant need to understand the behaviour of long span composite beams under various critical loading conditions such as earthquake, fire, impact loading. There are a few experimental investigations on the behaviour of composite beams and connections under elevated temperatures [1- 5]. The experimental investigation of the behaviour of any structural members under fire loading and post-fire loading is costly, which demand alternative methods such as simulations using powerful software tools. Numerical model validated with experimental data can be used for such extensive study.

Wainman and Kirby [1] studied the behaviour of the simply supported composite beam of effective span 4.58m under fire loading. The width and depth of the flat slab in the experimental setup were 0.642m and 0.130m, respectively. The authors concluded that at elevated temperature, the flexural failure happened once it reaches its plastic capacity. Zhao & Kruppa [2] focused on the importance of steel protection and slab width in composite beam behaviour by carrying out experimental investigation on 4.9 m long beams. Steel beam IPE300 were connected to flat concrete slabs using 19 mm diameter headed shear studs. They observed that the crushing of concrete leads to the failure of protected composite beams and plasticisation of the steel beam leads to the failure of unprotected beams.

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A REVIEW ON HIGHLAND TOWER TRAGEDY

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Abstract

This report deals with the tragedy of the highland tower of the highland tower collapse in Malaysia in 1993. It causes the death of about 48 peoples which leads to the evacuation of the other 2 blocks due to safety concern. This case study reveals the factors which led the failure of the building, its implications and how it reflects the importanceof ethical and theories of codes of ethics in engineering.

The block one collapsed because of the poorly constructed retaining walls and due to the high force of landslide. The force of land slide was equal to the force of 200 boeing 747. After this incident various committee was formed to investigate the various aspects of the failure of the building. Fullreport including the causes,deaths,losses etc. was published on year 1994. This tragedy has given impact to the law enforcement such as various new polices were drafted to regarding the development of the highland areas.

The conclusion can be made through the case study is that the engineers must be responsible in his/her action based on the ethical theories and codes of ethics in engineering.

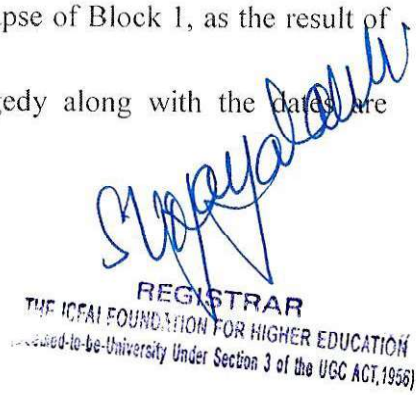
Introduction

History. Highland Towers, as is collectively known, consisted of three blocks of apartments known as Blocks 1, 2 and 3. It was constructed between 1975 and 1978. Directly behind the three blocks was a steep slope. A stream ('the east stream') originating upslope from the Metro lux land flowed across part of the slope.

On Saturday, December 11, 1993, about 15 years later, after 10 days of continuous rainfall, a landslide occurred resulting in the collapse of Block 1. Forty-eight people were recorded dead. Immediately after the collapse of Block 1, the residents of Blocks 2 and 3 were prevented from entering their apartments by MPAJ for fear of the instability of these two buildings. A few days later, they were allowed in but only to collect their personal valuables. At that time, their apartments were looted and subsequently vandalized.

Seventy-three owners and occupiers of the Blocks 2 and 3 apartments brought an action against 10 defendants in negligence, nuisance, strict liability under the rule in Rylands v. Fletcher and breach of statutory duty. The Plaintiffs alleged inter alia that they had been unable to re-occupy Blocks 2 and 3 emanating from the collapse of Block 1, as the result of MPAJ's pre and post-collapse acts and omissions.

In the table below various events happened after the tragedy along with the dates are mentioned.



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CLOUD MODELS TO ADDRESS DATA SHARING REQUIREMENTS IN AEC SECTOR

Satya AR[1] ,Sirisha Potluri[2]

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Abstract:

The sector of the construction industry that provides the services on the architectural design, engineering design and construction services. It is a sector which is very active in the adoption of Information, Communication and Technology. It is one highly data intensive field which involves different people and system. Managing building data is complex and challenging. This paper explains how the problem of data sharing in AEC sector is solved by using Cloud Computing. BIM (Building Information Modeling) is an intelligent 3D model-based process that gives architecture, engineering, and construction (AEC) professionals the insight and tools to more efficiently plan, design, construct, and manage buildings and infrastructure. A cloud prototype model is also discussed along with the few applications of cloud computing in civil sector.

Keywords: Cloud computing, construction, building information model

Introduction to cloud computing:

On internet all the services are present and you can access them by using Cloud computing. This contains interface and infrastructure to provide the data to the cloud users. The other synonym for cloud computing is distributed over the network, that means should have capability to hold the number of applications run at a time. In real time cloud is used to provide on demand self service based on the requests from the cloud users. Virtual machines in the cloud play the major role to store the data and process the data.

SAAS, PAAS, IAAS are the services available in the cloud computing. Buyers can buy the service available in the cloud. In this paper, the mainly focus on providing security to the data storage. The cloud service providers offer many services to the users for access the services remotely through the internet. The three cloud models in cloud computing are SaaS, PaaS, IaaS. Cloud computing becomes more popular in providing security to the data stored in the cloud servers

Cloud computing in AEC sector:

Technologies like Google Drive and DropBox are widely used in civil industries. In AEC (Architecture, Engineering and Construction), storing data efficiently during the entire life of the building is one of the key issue. Several servers were developed for storing building data like Onuma system, revit server, ProjectWise and AssetWise, Graphisoft BIM server and EDMmodelServer. To access the data from these servers organization requires local infrastructure such as WAN or LAN. AEC sector includes several services like procurement management, construction management, drawing management, contract management etc. Each service is using its own style of file formats. While importing or exporting data to these services AEC sector is facing many issues and problems. We require a platform where all these different formats can be mapped to a standardized format.

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A STUDY ON MULTI STORIED BUILDING MANUAL CALCULATION DESIGN IN HYDERABAD

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Abstract

Analysis of multi-storey building frames involves lot of complications and extensive calculations by conventional methods. Substitute frame method for analysis can be handy in approximate and quick analysis. Till date, this method has been applied by designers for vertical loading conditions. The represented plan given to Residential purpose. Generally buildings may be failed by bending moments, shear forces acting on members of the building. By keeping these failures in mind, we designed beams, columns, and slab by considering maximum loads on members. For loads calculation, substitute frame method is used for reducing the complexity of calculations and saving time. This total C+G +5 Residential building designed with only manual calculations based on values here taken from the standard code books (IS 456:2000, SP 16)

Key Words

Manual Calculation, Beams, Columns, Slab

Introduction

The development of the high-rise building has followed the growth of the city closely. The process of urbanisation that started with the age of industrialisation is still in progress in developing countries like India. Industrialisation causes migration of people to urban centres where job opportunities are significant. The land available for buildings to accommodate this migration is becoming scarce, resulting in rapid increase in the cost of land. Thus, developers have looked to the sky to make their profits. The result is multi-storeyed buildings, as they provide a large floor area in a relatively small area of land in.

Methods of Structural Analysis

When the number of unknown reactions or the number of internal forces exceeds the number of equilibrium equations available for the purpose of analysis, the structure is called as a statically indeterminate structure. Most of the structures designed today are statically indeterminate. This indeterminacy may develop as a result of added supports or extra members, or by the general form of the structure. While analysing any indeterminate structure, it is essential to satisfy equilibrium, compatibility, and force-displacement requisites for the structure. When the reactive forces hold the structure at rest, equilibrium is satisfied and compatibility is said to be satisfied when various segments of a structure fit together without intentional breaks or overlaps. Two fundamental methods to analyse the statically indeterminate structures are discussed below.

Force Method

Originally developed by James Clerk Maxwell in 1864, later developed by Otto Mohr and Heinrich Muller-Breslau, the force method was one of the first methods available for analysis of statically indeterminate structures. As compatibility is the basis for this method, it is sometimes also called as compatibility method or the method of consistent displacements. In

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STRUCTURAL ANALYSIS OF A MULTI-STOREYED BUILDING USING ETABS FOR DIFFERENT PLAN CONFIGURATIONS

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Abstract

The Case study in this paper is mainly emphasizes on structural behaviour of multi-storey building for different plan configurations like Rectangular, C, L, I and S-shape. Modelling of 10 storeys R.C.C framed building is done on the ETABS software for analysis. **ETABS** stands for Extended Three Dimensional Analysis of Building Systems. ETABS is commonly used to analyse Skyscrapers, Steel & Concrete structures, Low &High rise buildings, and portal frame structures. Post processing analysis of the structure, Maximum Shear forces, Bending Moments, and maximum storey displacement are computed and then compared for all the analysed cases.

Key Words

Structure Design, ETABS, High Rise Buildings, Plan Irregularity

Introduction

Structural analysis means determination of the general shape and all the specific dimensions of a particular structure so that it will perform the function for which it is created and will safely withstand the influences which will act on it throughout its useful life. ETABS was used to create mathematical model of the Burj Khalifa, designed by Skidmore, Owings and Merrill LLP (SOM). The input, output and numerical solution techniques of ETABS are specifically designed to take advantage of the unique physical and numerical characteristics associated with building type structures. ETBAS provides both static and dynamic analysis for wide range of gravity, thermal and lateral loads. Dynamic analysis may include seismic response spectrum or accelerogram time history.

This analysis mainly deals with the study of a Rectangular, L, C, I and S shaped plan using ETABS. A 40m x 30m 10 storeys structure having 5m x 5m bays is modelled using ETABS. The height of each storey is taken as 3m, making total height 30m. Loads are taken in accordance with the IS-875(Part 1, Part 2), IS-1893(2002) code and combinations are according to IS-875(Part 5). Post analysis of the structure, maximum shear force, bending moments, and maximum storey displacement are computed and then compared for all the analysed cases.

Modelling of RCC Frames

An RCC framed structure is basically an assembly of slabs, beams, columns and foundation inter-connected to each other as a unit. The load transfer mechanism in these structures is from slabs to beams, from beams to columns, and then ultimately from columns to the foundation, which in turn passes the load to the soil. In this structural analysis study, we have adopted five cases by assuming different shapes for the same structure, as explained below:

1. Rectangular Plan
2. L-Shape Plan
3. I-Shape Plan
4. C-Shape Plan

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A STUDY ON MULTI STOREY BUILDING BY CONSIDERING THE SITE ERRORS

P.Eshwar[1], Sarit Chanda[2]

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Abstract

Generally the designers while designing the buildings in the finite element software's they may not be considering the implementation errors which occur in the site, I have taken the ongoing project of "Ramky Infrastructure" i.e., Ramky One Marvel located in Hyderabad. with the help of Etabs & Staad pro software's I have designed the actual structure of Ramky One Marvel and compared the actual structure with the defects added model as per the site like I have the considered the implementation errors like Column is not straight, Honeycombing due to lack of compaction or height of free fall of concrete, Bulging of any structural member after casting, Misplacement of column from its original location. In the post processing part the results are compared for the errors occurred in the implementation of site.

Key Words:

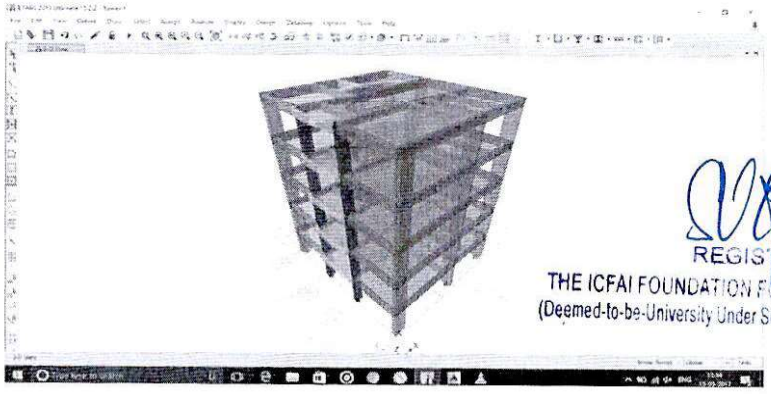
Etabs, Staad Pro, Honeycombing, Bulging, Column is not straight, Misplacement of Column

Introduction

Structural analysis means determination of the general shape and all the specific dimensions of a particular structure so that it will perform the function for which it is created and will safely withstand the influences which will act on it throughout its useful life. ETABS was used to create mathematical model of the Burj Khalifa, designed by Skidmore, Owings and Merrill LLP (SOM). The input, output and numerical solution techniques of ETABS are specifically designed to take advantage of the unique physical and numerical characteristics associated with building type structures. ETBAS provides both static and dynamic analysis for wide range of gravity, thermal and lateral loads. Dynamic analysis may include seismic response spectrum or accelerogram time history.

This analysis mainly deals with the implementation of errors which occur in site, for this analysis we have chosen ongoing project "Ramky One Marvel". For the analysis part two finite element software's are used i.e. "ETABS" & "STAAD PRO". Actual model is designed in the ETABS & STAAD PRO, and made another with defects like Honeycombing, Bulging of Column & Beam, and Misplacement of Column from its original position, Column is not straight.

Modelling of Structure



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ANALYSIS AND DESIGN OF MULTI-STOREY BUILDING BY USING STAAD PRO

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Abstract
The main aim of structural engineer is to design the structures for a safe technology in the computing field; now a day's large number of application software's are available in the civil engineering field. All these software's are developed as the basis of advanced Finite element analysis which include the effect of dynamic load such as wind effect, earth quake effect etc. in the present work, an attempt has been made to study the efficiency of certain civil engineering application software's for this purpose an on-going project has been selected. This project belongs to the Ramky Infrastructure in the Hyderabad city. The name of the project is Ramky One Marvel. This project is basically a residential project C+G+5 structure. This structure is made in the "STAAD PRO" as per the design and analysis is done. After obtaining the results by using the post processing data designed the structural elements like Beams, Columns, Footings are designed by considering the critical load combination as per the IS code.

Key Words
Analysis, Design, STAAD PRO, Multi storey building, shear force, bending moment

Introduction

The design consists of C+G+5 residential. Each floor height is 3m. There are many classical methods to solve design problems, and with time new finite element software's are also developed. Here in this project work based on software named "STAAD. Pro". These typical problems have been solved using basic concept of loading, analysis, condition as per IS code. To perform an accurate analysis a structural engineer must determine such information as structural loads, geometry, support conditions, and materials properties. The results of such an analysis typically include support reactions, stresses and displacements. The process of structural design involves the following stages: Structural planning, Computation of loads, Method of analysis, Member design and Detailing, drawing and preparation of schedules.

Methodology

Modelling
(C+G+5) Residential and Commercial building.
Loads

- Dead Load
- Live load (IS:875 Part 2, 1987)
- Live Load Reduction Factor is also Considered □1.5(Live Load+Dead Load).

Analysis

- Analysis of RCC framed structure.
- Shear Force and Bending Moment calculations.

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International Conference on Emerging Trends in Mechanical Engineering (ICETiME-2016), September 23-24, 2016 at Faculty of Science and Technology, ICFAI Foundation of Higher Education, Hyderabad, Telangana, India.

Reliability Appraisal in Electric Power System Planning using Monte Carlo Simulations

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Abstract— **This paper intends to make reliability appraisal in electric power systems using Monte Carlo simulation methods. There are some deterministic methods extensively developed in the literature, however, Monte Carlo methods have inherent advantages because of which a wide range of appropriate inferences can be determined for making policy actions pertaining to event of failure of electric supply. Usually failure of electricity can be attributed to jobs in generation, transmission and distribution where the level of outrage can vary between being limited and widespread depending on localization of fitted curve. For handling such outrage in event of failure, there does not exist a single all-purpose formula or technique capable to assess reliability in complex power systems. However, a reference reliability level can often be obtained in terms of historical experience of the different jobs at power systems using a best fit model as accurate as possible to describe the nature of such failure experiences.**

Keywords— **Electric, Electricity, Power System, Monte Carlo, Reliability, Simulation**

1. INTRODUCTION

Most of the techniques of reliability appraisal in use are traditionally based on analytical models and resulting analytical evaluation procedures. The application of probabilistic reliability evaluation has started to evolve tremendously. Over the last few decades availability of high-speed digital computers has created the opportunity to analyse such problems using stochastic simulation methods. These days there has been increased interest in use of Monte Carlo simulation in assessment of electric power system reliability. But reliability of electric power system is considered relatively complex. Reliability for a consumer durable product can be defined as percentage of population of the product surviving during the stated warranty period. The similar definition of reliability cannot be generalized as the purpose of reliability is understood to be different for Electric Power Systems. The basic function of a modern Electric Power System is to provide electric power and energy to its consumers at the lowest possible cost and at acceptable levels of reliability. Specifically reliability for electric power system is desired to be associated with lowered failure rate for seeking higher reliability.

Monte Carlo simulation is not a new concept. Monte Carlo simulation was invented by Stanislaw Ulam, a mathematician working on risk management using computers in making the calculations for the US' Manhattan Project during Second World War, as in [1]. His work with Jon von Neuman and Nicholas Metropolis transformed statistical sampling "from a mathematical curiosity to a formal methodology applicable to a wide variety of problems" (e.g. [2]). Metropolis is actually credited with naming the methodology after the casinos of Monte Carlo, and Ulam and Metropolis published their first paper on the method in 1949, as in [3]. The development of Monte Carlo simulation as a quantitative technique has been credited to John von Neumann who used simulation to solve nuclear physics problems that were too complex or expensive to analyse by hand or by physical model. The random nature of the neutrons suggested the use of a roulette wheel in dealing with probabilities. As these simulations required an enormous amount of computation, their uses were initially restricted only to few areas until recently when advances in computation techniques made it useful in many industries.

Owing to the need for powerful computing capability and resources to complete the Monte Carlo simulation, some researchers (e.g. [4]–[6]) have proposed alternatives to Monte Carlo simulation, but they cannot help in assessing quantified risks. Localized high-speed computers with large-capacity storage have made Monte Carlo simulation an available and sometimes preferable option for many power system reliability applications. This paper intends to formalize practical application of Monte Carlo simulation in reliability evaluation of electric power generation, transmission, and distribution systems.

2. REVIEW OF LITERATURE

The primary function of an electric power system is to provide electrical energy to its customers as economically as possible and with an acceptable degree of continuity and quality, as in [7]. Modem society has come to expect that the supply of electrical energy will be continuously available on demand, as in [8]. This is not possible due to random failures of equipment and the system, which are generally outside the control of power system personnel.

Electricity supply generally involves a very complex and highly integrated system. Failures in any part of it can cause interruptions which range from inconvenience for a small

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Development and Characterisation of Soap Nut Seed Oil

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*Abstract:***There is a growing interest in biodiesel (fatty acid methyl ester or FAME) because of the similarity in its properties when compared to those of diesel fuels. Diesel engines operated on biodiesel have lower emissions of carbon monoxide, un-burnt hydrocarbons, particulate matter, and air toxics than when operated on petroleum-based diesel fuel. In the present study production of soap nut seed oil using oil press, soxhletmethods, compared their yield and transesterification has done with different ratios of methanol and soap nut seed oil and observed the behaviour of yield.**

*Keywords:***Bio-diesel, soapnut oil, characterization, transesterification, soxhlet process**

1. INTRODUCTION:

Recently, the developing countries like India and China have experience of significant increase in energy demand. The world's largest oil producer's countries have suffered from much warfare, political and social instability [1]. Diminishing fossil fuel resources coupled with steady increase in energy consumption, has spurred research interest in the alternative and other renewable energy sources.

Fuels derived from renewable biological resources for use in diesel engines are known as biodiesel [2]. Biodiesel is environmentally friendly liquid fuel similar to petrol and diesel in combustion properties. Increasing environmental concern, diminishing petroleum reserves and agriculture based economy of our country are the driving forces to promote biodiesel as an alternate fuel. Biodiesel derived from vegetable oil and animal fats is being used in USA and Europe to reduce air pollution, to reduce dependence on fossil fuel. In USA and Europe, their surplus edible oils like soybean oil, sunflower oil and rapeseed oil are being used as feed stock for the production of biodiesel.

The soap nut tree can be used for multiple applications such as rural building construction and oil and sugar presses, and agricultural implements would help community forestry to produce more seeds as potential sources for the biodiesel feedstock [3]. Among others, the plant grows very well in deep loamy soils and leached soils so cultivation of soap nut in such soil avoids potential soil erosion. Soap nut is a fruit of the soap nut tree generally found in tropical and sub-tropical climate areas in various parts of the world including Asia, America and Europe. Two different species (*Sap Indusmukorossi* and *Sap Industrifoliatus*) are widely available in India, Nepal, Bangladesh, Pakistan and many other countries [4]. The oil from soap nut has been considered as a non-edible oil having a significant potential for biodiesel production from the material which otherwise is a waste material. The main aim of this study is utilisation of industrially used coal burned boiler waste as a catalyst for the production of biodiesel, hence lowering the production cost of biodiesel as well as reducing environmental issues.

Biodiesel (a mixture of mono-alkyl esters of saturated and unsaturated long chain fatty acids) generally has a highercetane number, cold filter plugging point (CFPP), density, and kinematic viscosity (KV) and a poorer oxidation stability compared with those of petroleum diesel (a mixture ofparaffinic, naphthenic, and aromatic hydrocarbons). The cetanenumber is a commonly used indicator for the determination of the ignition quality of a diesel-based fuel. The cetanenumber is a dimensionless descriptor related to the ignition delay time that a fuel experiences upon injection into the combustion chamber of a diesel engine. A higher cetanenumber would have a shorter ignition delay time. Thus, thecetane number has been included in biodiesel specificationswith prescribed minimum values. The cetane number increases with the saturation of the FAMEs and the length of the carbon chain [5].

2. EXPERIMENTAL SETUP

MANUAL EXTRACTION OF OIL:

i. First the seeds are separated from the kernels of soap nuts and wash it with hot water. The seeds are then crushed to small and the kernels and the pulp is separated.
ii. Then it is dried in the presence of sun or use any oven to remove the moisture in the powder and is poured into the oil extracting machine and done for machining.
iii. In the manual oil extraction 50 gm of seed are taken to manual extraction. The seed are crushed first by cold extraction process and the calculated yield
iv. Using heating coil the screw is heated and another 50 gm of seed are added to it then the yield is observed.

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International Conference on Emerging Trends in Mechanical Engineering (ICETiME-2016), September 23-24, 2016 at Faculty of Science and Technology, ICFAI Foundation of Higher Education, Hyderabad, Telangana, India.

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An Effective Jaya Optimization for Flexible Job Shop Scheduling

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Abstract— A flexible job shop scheduling problem (FJSSP), an extension of former job shop scheduling problem (JSSP), is well known as a NP-hard (Non-deterministic polynomial time) problem. The FJSSP contains the difficulties of classical JSSP with an additional complexity of allotment of operations to the machines. A FJSSP has two sub problems. They are (i) routing sub problem i.e. allotting of each operation to a machine from a given set of machines capable of doing it and (ii) sequencing sub problem i.e. arranging of allotted operations on each machine. It is not always possible to get an optimal solution to such problems in a reasonable computation time owing to large computational complexity involved. Therefore, a variety of meta-heuristic approaches have been used to obtain near optimal solutions in a reasonable computation time. Jaya optimization algorithm, which requires no parameters to be tuned in comparison to other meta-heuristic approaches, can be an efficient algorithm. Like many meta-heuristics, Jaya may get trapped at the local optimum and present difficulty in reaching the best solution. In this paper, this limitation is addressed efficiently by embedding Jaya algorithm with a new effective local search technique. Real number encoding system is used and the FJSSP is solved based on integrated approach. Tests are carried out on all the Kacem's instances with minimization of makespan as the objective. Results obtained from modified Jaya algorithm have been compared with other algorithms from literature.

Keywords— Flexible job-shop scheduling; Makespan; Meta-heuristic Approach; Jaya Algorithm.

1. Introduction

Scheduling is a very important decision making aspect in all manufacturing and service sectors to improve the customer satisfaction and organizational effectiveness. Scheduling deals with the allotment of tasks on capable machines in such a way that some performance criteria like lateness, flowtime, tardiness and makespan can be minimized. Effective scheduling has become absolute necessary for survival in the market in the present competitive world. Manufacturing industries must meet the dead line promised to customers to protect the goodwill of the company. The manufacturing firms must schedule the activities in such a way that available machines could be utilized in an efficient manner. FJSSP, an extension of classical JSSP, is a well-known NP-hard problem [1] where operations are processed on a given set of machines available. The FJSSP contains the difficulties of classical JSSP with an additional complexity of allotment of operations to the machines. A FJSSP has two sub problems. They are (i) routing sub problem i.e. allotting of each operation to a machine from a set of machines capable of doing it and (ii) sequencing sub problem i.e. arranging of allotted operations on each machine. The FJSSP can be solved in two different ways. They are (1) Hierarchical approach, in which routing problem and sequencing problem are solved one after the other. The problem is divided into two parts to increase the ease of solving the problem. Brandimarte [2] has applied hierarchical approach for the first time using dispatching rules for routing sub problem and Tabu Search (TS) for sequencing sub problem. Kacem et al. [3-4] have proposed a Genetic Algorithm (GA), incorporated by the approach of localization (AL) approach for solving multi-objective and mono-objective FJSSP in the hierarchical approach. (2) Integrated approach, is one in which routing and sequencing sub problems are solved simultaneously. Generally integrated approaches are harder to solve but produce better solutions than the hierarchical approaches. Chen et al. [5] and Jia et al. [6] used integrated approach using GA, Bagheri et al. [7] used an integrated approach using Artificial Immune Algorithm (AIA), Yuan et al. [8] used an integrated approach using Hybrid Harmony Search (HHS), Singh et al. [9] and Singh & Mahapatra [10] used an integrated approach with different forms of Particle Swarm Optimization (PSO).

2. Literature Review

Two functions have been proposed by Mastrolilli and Gambardella [11] to generate neighborhood solutions so that they can be employed in meta-heuristics to work out the FJSSP. Xia and Wu [12] have proposed a hierarchical approach with PSO and Simulated Annealing (SA) such that PSO solves routing sub problem and SA solves the sequencing sub problem. A Hybrid hierarchical approach of Ant Colony Optimization (HACO) and Tabu Search (TS) have been used by Liouane et al. [13] where the ACO is employed to solve the routing sub problem and TS is used to work out the sequencing sub problem. To solve multi-objective FJSSP, Xing et al. [14] proposed a simulation model which is a general frame work that can be used with many algorithms. A new local search algorithm has been

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Numerical Simulation and Parametric Optimization in Turning of Inconel 718

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Abstract— In the era of globalization, simulation and optimization of parametric combination of a process has been considered as a key issue in manufacturing sector for maintaining both quality and productivity simultaneously. In the turning of Inconel 718, a Fe-Ni based super alloy which has been widely used in the aerospace industry because of its capacity to keep mechanical properties at high temperatures. In this work, turning parameters such as tool material (uncoated and coated), cutting speed, feed rate and depth of cut have been varied in three levels to investigate their effects on the performance characteristics viz., material removal rate, surface roughness and cutting force. DEFORM-3DTM Version 6.1 has been adopted for simulation of these performance characteristics whereas data envelopment analysis (DEA) has been implemented for the prediction of optimal cutting conditions in dry turning of Inconel 718 using two types of tungsten carbide tools (uncoated and CVD coated) to obtain the optimum results.

Keywords— DEFORM-3DTM; Data Envelopment Analysis; Inconel 718; Finite Element Analysis; Super Alloy.

1. Introduction

Nickel-based super alloys are widely used in aerospace industry particularly in making components for jet engines and gas turbines because of their high yield strength, excellent fatigue resistance, and good corrosion endurance in severe conditions. Out of commercially available nickel base super-alloys, Inconel 718 is frequently used in aircraft gas turbines, reciprocating engines, space vehicles, nuclear power plants, chemical and petrochemical industries, and heat exchangers. Hence, it is the essential to analyze the machinability aspects of these components. Literature in this field of study is rich enough highlighting various aspects of machining of conventional metals essential for better understanding of machining process behaviour, parametric influence and their interaction in order to produce high quality finished part in terms of dimensional accuracy, material removal rate as well as good surface finish. Liao and Chen [1] proposed a data envelopment analysis (DEA) approach as an effective methodology for solving the multi-response optimization for practical applications. Liao [2] attempted to achieve the optimization of multi-response problem with censored data by using the combination of neural network and DEA method. Devillez et al. [3] observed the influence of dry machining on surface integrity. The study also focused that dry machining with a coated carbide tool leads to improved surface quality with residual stresses and micro hardness values in the machining affected zone of the same order than those obtained in wet conditions when using the optimized cutting speed value. Yanda et al. [4] used finite element method (FEM) simulation technique to investigate the effect of rake angle on stress, strain and temperature on the edge of carbide cutting tool in orthogonal cutting of ductile cast iron FCD500 grade. The study also concluded that increase in rake angle in positive section causes decrease of the cutting force. Tanase et al. [5] attempted for temperature prediction using the process simulation with DEFORM 3D software package in machining of Ck 45 of DIN 17200. The research also highlights that temperature of machined surface is much lower than chip temperature. Muthu et al. [6] applied finite element method for simulation of turning process of Inconel 718 material for various nose radius values. Bhoyar and Kamble [7] propose a finite element analysis simulation model in order to predict cutting forces, specific cutting energy and temperatures occurring at different points through the chip/tool contact region and the coating/substrate boundary for a range of cutting tool materials and defined cutting conditions. Singh et al. [8] evaluated the effect of process parameter on MRR and different surface roughness characteristics in turning of GFRP with the aid of DEA methodology. The present work focused on both simulation and optimization of process variable while turning of Inconel 718.

2. Experimentation

A. *Tool and Work-piece Material*

A bar of Inconel 718 having diameter 30mm and tensile strength of 1100 MPa has been used as work piece material whereas uncoated tungsten carbide tool of TNMA 332 grade, chemical vapor deposition coated tool of TNMA 332_KC9025 manufactured by Kennametal (TiN: 1μ, Al2O3: 9.5μ, TiCN: 4μ) as tool material. Table 1 shows the composition of Inconel 718. Fig. 1 shows the dimensions of tool.

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Experimental Investigations on CNC Drilling of CFRP (Epoxy) Composites: Machining Performance Optimization

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Abstract— **Present work highlights on optimization of cutting parameters in regards of drilling of Carbon Fibre Reinforced Polymer (CFRP) composites by considering multiple process performance yields. The main characteristic indices that have been considered here for evaluating drilling performance are thrust force, torque and delamination factor (at entry as well as exit); the corresponding machining parameters are drill rotational speed, feed rate and diameter of the drill bit. The work focuses on determining the optimal machining environment (optimal parameters setting) which could simultaneously satisfy multiple process performance features during drilling CFRP (epoxy) composite plates. As traditional Taguchi method is unable to solve multi-objective optimization problem; to overcome this limitation; Utility Theory integrated with Taguchi method has been implemented. The study also applied nonlinear regression along with Genetic Algorithm (GA) towards pursuing multiple-objective optimization in drilling of CFRP composites. Analysis of the solutions for the multi-objective optimization by aforesaid two approaches has been depicted through a case experimental research.**

Keywords— **Carbon Fibre Reinforced Polymer (CFRP); delamination; Taguchi method; Utility Theory; nonlinear regression; Genetic Algorithm (GA)**

1. Background

Nowadays, CFRP composites are widely used in components of aircrafts, automobile, interior designs, sports goods. Hence, machining and machinability of these composites has become an important area of research.

Composite materials behave differently during machining as compared to conventional metals. CFRP can cause rapid tool wear which tends to change tool geometry resulting poor cutting action and hence defects like delamination, fibre pull out, thermal stress, fibre or matrix de bonding, heating of fibre materials etc.

Drilling is one of the most frequently used operations for machining of CFRP composites. Drilled holes must possess good dimensional accuracy as well as high quality (defect free). The defects like delamination and fibre brake out of composite parts can affect the internal structure of the material; and once formed cannot be repaired again. Therefore, care must be taken while machining these composites. Relevant literature on the area of drilling of CFRP composites could be well retrieved from [1-7].

The objective of the work is to select the setting of optimal process parameters to get the best output performances in drilling of CFRP (epoxy) composite.

2. Experimental Details

In order to study the effects of drill rotational speed, feed and drill diameter, a series of experiments based on L_{16} orthogonal array have been conducted (Table I). The domain of experiments has been selected by considering aforesaid three input parameters each varying at four discrete levels (Table II).

TABLE I

Design of Experiment (L_{16} Orthogonal Array)

Sl. No.	Drill Rotational Speed [RPM]	Feed [mm/min]	Drill Diameter [mm]
01	800	50	5
02	800	100	6
03	800	150	8
04	800	200	10
05	1200	50	6
06	1200	100	5
07	1200	150	10
08	1200	200	8
09	1600	50	8
10	1600	100	10
11	1600	150	5
12	1600	200	6
13	2000	50	10
14	2000	100	8
15	2000	150	6
16	2000	200	5

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Effect of Process Parameters on Mechanical Strength of Al-SS Ultrasonic Spot Welded Joint

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Abstract— Ultrasonic welding is one of the promising solid state welding methods which is widely used in automotive applications. Despite of these applications, other industries also have a strong interest to adopt this process for joining of various advanced alloys. In some of its applications, poor weld strength and sticking of the workpiece to the tool are issues. Thus, to overcome these issues, experiments were conducted with a suitable range of control parameters. The major objectives of this study are to obtain a good joint strength and to reduce the sticking phenomenon. As it is a solid state welding technique, the temperature evolved during the welding process is below than the melting point of workpiece materials. The relevant temperature also measured by thermocouples to show its relationship with the plastic deformation.

Keywords— Ultrasonic welding, Tensile shear strength, T-peel strength, Plastic deformation, Temperature

1. INTRODUCTION

Ultrasonic metal welding (USMW) was invented in 1950s. Since then, this technique has been continuously used in various sectors such as an automobile, electrical and electronics, manufacturing and aerospace industries. USMW is considered to be one of the novel and innovative techniques which involve the solid state joining process. In this process, the metals are held together under the application of moderate amount of pressure with high-frequency shear vibrations. This high-frequency relative motion between the sheets disperses oxides and contaminants present over the surface and thus pure metal to metal contact happens. Meanwhile, due to this relative motion, some temperature is developed between the sheets and that is capable of softening the overlapping zone. Therefore, the plastic deformation occurs in the weld area, and the two materials are joined [1].

Stainless steel is known for its high corrosion resistance and strength. Recently, USMW is tried to join thin sheets of aluminium with other lightweight materials in the structural automotive and aerospace application [2]. This process is also being used to assemble secondary aircraft structures such as helicopter access doors: These doors can sustain loads 5 to 10 times the design load without weld failure in air load tests as described by American welding society [3]. Meantime, there is a necessity to understand the influences of different parameters on strength of weld s those are obtained by USMW system. Various kinds of literature [4] reported about the ability of the USMW process to weld metals like titanium, steel, nickel, copper and their dissimilar combinations with other non-metallic materials. Kodama [5] performed experiments using soft materials like aluminium, copper, brass and gold. The study also investigated the various parameters like specimen roughness, hardness, dimensions, coefficient of friction and anvil geometry on the bond strength. The results showed that the good strength could be obtained when the amplitude of vibration was reduced on the increase of frequency of vibration. Hetrick et al. [6] also demonstrated the ultrasonic welding process as a low heat producing process. For this reason, the issues like part distortion and the degradation of Al alloy property can be eliminated. Barnes and Pashby [7] reported that USMW can be used in automotive and aerospace sectors for the joining of lightweight structural components.

A large number of studies have examined the joint strength by considering one or two of the parameters as constant. However, a good result can be obtained by varying these control parameters to study the joint strength and quality. The majority of the investigations are also not considered the effect of dissimilar thickness combination on the weld strength. Thus, in this study, an attempt has been taken to weld the dissimilar thickness combination of metal such as AA1100 aluminium alloy with SS 304 stainless steel, and investigating the effects of various process parameters like weld pressure, weld time and vibrational amplitude on the tensile shear and T-peel failure loads along with the generation of temperature during joining.

2. EXPERIMENTATION

Welding experiments have been conducted on a lateral drive ultrasonic metal welder (Telsonic® Ultrasonics, Switzerland, model: M4000) (Fig. 1) with a weld tip size of 11 mm× 9 mm on time control mode. The SS 304 specimen is placed on lower side (i.e. on the anvil side), and the aluminium specimen is placed on it (i.e. on the sonotrode side). From various literature studies and experimental trials, three significant process parameters like weld pressure (WP), weld time (WT) and vibrational amplitude (A) have been selected. Their operation ranges are selected in such a way that, the good welding can be obtained in that range. In this current analysis, weld pressure, weld time and vibration amplitude have been divided into three, four and seven levels respectively. These factors with their level values are shown in Table 1. To investigate the influences of all input variables on the responses, full factorial design of

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Multi-Objective Optimization of Cutting Parameters using FIS in Turning Operation to Reduce Surface Roughness and Tool Vibration

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Abstract— Optimization of Multi response is now-a-days mostly used optimization technique which is better than single response optimizing technique because all the output is affected at a time by all the input factors .The objective of this project work is to determine the optimal setting of cutting parameters (speed(N)m/min , depth of cut(d) mm , feed(f)mm/rev) and variation in principal cutting edge angle (Φ) of the tool to have a reduced tool vibration (in terms of peak acceleration) and surface roughness(Ra) . In this work the experiment has been carried out using lathe in dry condition (without using cutting fluid) with commercially available AA6061 grade aluminium as a work material and carbide insert as cutting tool (SCMT 09T308-TN5120). The ranges of process cutting parameters are cutting speed(11.86, 18.65,30.52m/min) ,feed rate(0.044,0.089,0.178 mm/rev), depth of cut(0.5,0.75,1.0mm) and the principal cutting edge angle (74,71,68 degree). This study highlights applications of Fuzzy logic and the use of Taguchi experimental design to optimize the multi response parameters on turning operation. In this experiment Taguchi design of experiments was carried out to collect the data for surface roughness and tool vibration. The results indicate the optimum values of the input factors and the results are established by a confirmatory test.

Keywords— Fuzzy inference, Taguchi method, Tool vibration, Optimization.

1. INTRODUCTION

The challenge of modern machining industries, mainly focuses on the achievements of high quality in terms of work piece dimensional accuracy, surface finish, high production rate, less wear on the cutting tool, economy of machining in terms of cost saving and increase the performance of the product with reduced environmental impact [1]. Surface roughness plays an important role in many areas and is factor of great importance in evaluation of machining accuracy [2]. Turning is the process whereby a single point cutting tool removes unwanted material from the cylindrical workpiece and the tool is fed parallel to the axis of rotation. It can be done manually, in a traditional form of lathe, which frequently requires continuous supervision by the operator, or by using a computer controlled and automated lathe which does not. In turning operation vibration is a frequent problem .Vibration in machine tool is directly affecting the surface finish of the work material in turning process. So vibration of a machine tool is one of the major factors limiting its performance. The vibration occurring in the machine tool is due to the dynamic nature of force acting during the turning operation on the cutting tool [3]. Vibration can be measured in terms of peak acceleration, r.m.s value of velocity, peak to peak displacement.

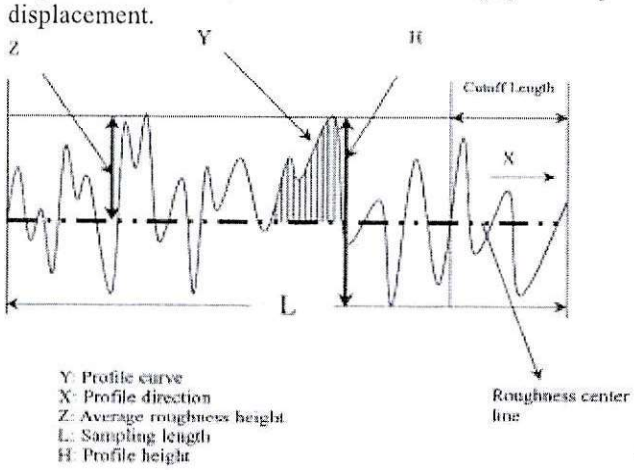

Fig. 1 Surface roughness profile. Reference [4]

$$Ra = \frac{1}{L}\int_0^L |y(x)|\,dx \qquad (1)$$

Where 'Ra' is the arithmetic average deviation from mean line, L is the sampling length and Y the ordinate of the profile curve.

Most of the previous works concentrate on single response optimization, whereas multi-response optimization is a better approach for the engineering point of views. Present study highlights the application of fuzzy logic in Taguchi's optimization philosophy to optimize multi responses (to reduce tool vibration and surface roughness) for influencing cutting parameters and principal cutting edge angle in turning operation.

2. METHODOLOGY

2.1 Fuzzy Inference System (FIS)

Fuzzy inference or fuzzy ruled based system consists of 4 parts a) fuzzification interface, b) a rule base and database, c) a decision making unit and d) defuzzification interface.

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International Conference on Emerging Trends in Mechanical Engineering (ICETiME-2016), September 23-24, 2016 at Faculty of Science and Technology, ICFAI Foundation of Higher Education, Hyderabad, Telangana, India.

Improvements in Tensile Strength of Friction Stir Welded Parts by Parametric Control

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Abstract— Now-a-days, friction stir welding (FSW) process is widely adopted for the manufacturing of lightweight transport structures used in boats, trains and aeroplanes due to its high weld strength and welding speed. The ultimate tensile load (UTL) of welded parts is severely affected by selection of FSW process parameters. Therefore, in the present work, an attempt has been made to increase UTL of the welded thick Aluminium 1060 alloy sheets (butt welding) by controlling the FSW process parameters. In order to reduce the experimental cost and time, face centred central composite design (FCCCD) of response surface methodology (RSM) has been adopted. In regard to tool profile, it is observed that threaded tools produces less weld defects whereas taper tool exhibits less resistance during movement of the tool along the work piece. Higher spindle speed produces welds having higher tensile strength in comparison to weld created with lower tool spindle speed. This is due to better mixing of the material of the two sheets at higher spindle speed.

Keywords— Friction stir welding; Face centred central composite design; Response surface methodology; Ductility; Butt welding

1. Introduction

Aluminium alloy has many attractive properties such as low density, high specific strength and good corrosion resistance. The properties of good machinability, malleability and ductility make it the choice for many industrial applications. With the rise in automobile, aerospace and housing industry, it is predicted that the demand of aluminium alloy will rise in the near future [1, 2]. Aluminium 1060 alloy sheets are readily used in manufacturing of automobile frame and are welded by conventional welding process like TIG and MIG. The conventional
welding processes exhibit defects like porosity, lack of fusion and burn through. Friction stir welding (FSW), a solid state welding process invented by The Welding Institute in early 1990's, is capable of resolving such issues [3]. This welding process can be used to eliminate the defect which occurs due to the melting of the work piece. Gibson et al. [4] have studied the recent trends in process, control and application of FSW process. Research related to FSW on aluminium and its alloy sheets mainly focus on three dimensional heat transfer in the body [5,6], the material flow pattern in the stir zone [7] and effect of parameters on the welding [8]. Since FSW produces high stress on the workpeice, fixtures have been suggested to work at high stress environment [9]. Zhang et al. [10] have proposed a underwater FSW to reduce heat affected zone.

Welds produced by FSW depends on the parameters with which welding has been produced. The shoulder size should be optimal to get best strength and threaded tool produces good strength in weld [11]. Dwivedi [12] has shown that the lower axial force, higher welding speed and higher tool rotation speed produces better weld strength with less defects. Peel et al. [13] have observed that micro structure change resulting from welding speed causes change in hardness at the weld zone. Sakthivel et al. [14] have shown that better mechanical properties can be achieved at lower transverse speed due to higher heat input to the weld zone. The ductility of the weld can be increased by post welding heat treatment [15]. In order to reduce various weld defects, new type of tools have been suggested, particularly related to key hole defect [16]. Nadan et al. [17] have shown that FSW process is quite uncertain and causes some variation in weldment even at same parametric condition. Xu et al. [18] have shown the microstructural difference at different zones of weld nugget. It is observed that ductility at the weld zone is highest at the weld surface and decreases towards the bottom.

The objective of the present study is to assess the effect of the process parameters on the ultimate tensile load (UTL) of the weld. The most significant factors as concluded from extensive literature review as spindle speed, transverse speed, tool profile and tool offset. The parametric effect on UTL is studied and their significance is analysed using analysis of variance (ANOVA)

1. Experimental Procedure

1.1. *Work Piece and Tool Preparation*

Aluminium 1060 alloy sheet of 6 mm thickness was cut into dimension of 100 mm × 90 mm. Wire electrical discharge machining was used to cut the surfaces which will be joined by FSW to get a flat surface with no root gap. Tool was manufactured with H-13 tool steel followed by heat treatment and surface hardening. Three tools were

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Machinability Analysis of Aluminium Alloy 6061 in Electro-Discharge Machining: Effect of Tool Material

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Abstract— The machining behaviour of Aluminium alloy 6061 using Electro-Discharge Machining (EDM) is aimed to be investigated by considering three different tool material viz. Copper, Graphite and Brass. The machinability of Aluminium alloy 6061 in EDM is to be analysed in terms of Material Removal Rate (MRR), surface roughness (R_a), and thickness of the recast layer. By considering the following EDM process parameters viz. gap voltage, peak discharge current, pulse-on time, duty factor and dielectric flashing circulation pressure kept at constant values; three different EDM operations are to be carried out on Aluminium alloy 6061 by using aforesaid three electrodes, respectively. Analysis of Scanning Electron Microscopy (SEM) is to be carried out to retrieve surface irregularities that are expected to be produced on EDMed end product of Aluminium alloy 6061. In addition to this, Energy-dispersive X-ray spectroscopy (EDAX) elemental spectra for as received base metal as well as EDMed Aluminium alloy 6061 is to be examined to understand change in chemical composition of the workpiece during EDM operation.

Keywords— Aluminium alloy 6061; Electro-Discharge Machining (EDM); Material Removal Rate (MRR); surface roughness (R_a); Surface Crack Density (SCD); Recast layer; Scanning Electron Microscopy (SEM); Energy-dispersive X-ray spectroscopy (EDAX)

1. INTRODUCTION

Nowadays, there has been huge requirement for light-weight material in industries like aerospace, automobile etc. These industries require materials which have low cost, possess good strength and toughness, good surface finish, corrosion resistance, good machinability as well as workability. Among various light-weight material available in the marketplace, aluminium and its alloys suit the best in respective application domain.

Aluminium alloys are well known as easy-to-machine through traditional machining processes because of their high thermal conductivity and low hardness [1]; however, Electro- Discharge Machining (EDM) is often used in case of aluminium alloy to produce complex shape and profile of the work piece with high quality and accuracy which seems difficult to achieve by conventional machining operations. Some of the applications of aluminium alloy 6061 are found in producing aircraft and aerospace components, marine fittings, transport vehicles, bicycle frames, camera lenses, driveshaft, electrical fittings and connectors, brake components, valve couplings etc.

In EDM, the material is removed by erosion process from the work piece due to spark discharge localised on a particular area on the work piece. The spark is developed due to voltage difference between two electrodes (tool and work piece), kept at opposite polarity, but they are not in contact. The gap between the electrodes is filled by dielectric fluid which behaves like a conductor due to the high potential difference generated. The spark causes the work piece surface to melt and thereby forming a chip (debris) which is flushed away by dielectric. Dielectric also acts as a coolant.

In die sinking EDM there is no mechanical stress developed on cutting tool during machining and also there is no chatter and vibration produced because there is no contact between tool material and work piece as compared to conventional machining.

The spark produced during EDM process creates a Heat Affected zone (HAZ) beneath the top surface of the work material. This is due to the high temperature gradient generated during operation. During sparking, the surface near the machining zone evaporates instantaneously and some amount of molten material is flushed away by the dielectric flashing pressure. The remaining material upon solidification forms recast layer or white layer. The top surface of the EDMed end product exhibits various surface irregularities and same can also be observed in the recast layer. Extent of recast layer formation is detrimental since it is directly related to the fatigue life of the EDMed end product subjected to service.

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Computational Fluid Dynamics Simulation of Circular Jet Burners to Investigate the Effect of Upstream Annular Cavities

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Abstract— **Studies on the stability of jet diffusion flames have industrial applications as well as academic interest. In various industrial applications such as in cement kilns, flames must be stable and attached to the burner exit tip to achieve better performance and efficiency. Several methods are proposed to achieve stable flames and it is shown that enhancement of jet mixing can improve the overall combustor performance, by increasing combustion efficiency, reducing combustion instability and undesired emissions (Bussman and Jayakaran, 2001). Stability of a jet diffusion flame has received renewed attention in the recent years due to its diverse industrial applications in several burners. Further, at lower flow rate, the flame is attached to the burner tip. On the other hand, diffusion flame has a tendency to lift-off from the burner tip at higher fuel flow rates due to a reduction in the flow residence time. The lifted flame can be unstable, lift-off and even blow-off from the burner rim. Therefore, the important criterion in designing burners is the stability of a diffusion flame, in either attached or lifted condition. Both active and passive controls can be used for this purpose. Internal cavity within a burner is one of the passive control technique used. Previous studies have indicated that there is an optimum cavity diameter (D) and post-cavity length (L_1), which provides maximum flame stability. The cavity length (L_2) to its diameter (L_2/D) ratio is also a critical parameter. When the (L_2/D) ratio is less than unity, increase stability is achieved. The objective of the present study is to understand the phenomenon of flame instability when such cavities are used.CFD simulations can be used to investigate the influence of upstream cylindrical cavity parameters on flame characteristics, such as the flame length, lift-off velocities, and lift-off heights. Cavity parameters, such as the cavity diameter, its length, and the post-cavity length, have been varied to study their effects on the above mentioned characteristics (Vidyasagar et al., 2011). Pure methane jet diffusion flames in sharp edged circular jet burners having 2 mm diameter and different cavity dimensions with a pre-cavity length of 24 mm, have been simulated. External diameter of all the burners is fixed at 20 mm and then cavity diameter, its length and post cavity length are varied systematically to analyse the flame behaviour.**

Keywords — **Stability, jet diffusion flames, lift-off, blow-off, passive control, internal cavity, CFD.**

1. Introduction

Studies on the stability of jet diffusion flames have industrial applications as well as academic interest. In several industrial applications such as in cement kilns, it is important that the jet flames remain stable and attached to the burner exit. Various methodologies proposed to achieve stable flames have illustrated that the enhancement of jet mixing can improve the overall combustor performance, by increasing combustion efficiency, reducing combustion instability and undesired emissions (Bussman and Jayakaran, 2001). Stability of a jet diffusion flame has received renewed attention in the recent years due to its varied industrial applications in several burners.

The flame is attached to the burner tip at lower fuel flow rate, whereas at higher fuel flow rates, the diffusion flame has a tendency to liftoff from the burner tip, due to a reduction in the flow residence time. The lifted flame can be unstable, lift-off and even blow-off from the burner rim. Therefore, the important criterion in designing burners is the stability of a diffusion flame, in either attached or lifted condition. Both active and passive controls can be used for this purpose. Internal cavity within a burner is one of the passive control technique used. Previous studies have indicated that there is an optimum cavity diameter (D) and post-cavity length (L_1), which provides maximum

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The objective of the present study is to understand the phenomenon of flame instability when such cavities are used. CFD simulations can be used to investigate the influence of upstream cylindrical cavity parameters on flame characteristics, such as the flame length, lift-off velocities, and lift-off heights. Cavity parameters, such as the cavity diameter, its length, and the post-cavity length, have been varied to study their effects on the above mentioned characteristics. (Vidyasagar et al.,2011).

Pure methane jet diffusion flames in sharp edged circular jet burners having 2 mm diameter (d) and different cavity dimensions with a pre-cavity length of 24 mm, have been simulated. External diameter of all

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International Conference on Emerging Trends in Mechanical Engineering (ICETiME-2016), September 23-24, 2016 at Faculty of Science and Technology, ICFAI Foundation of Higher Education, Hyderabad, Telangana, India.

Performance Prediction of Capillary Tube for an Air Conditioning System using ANN

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Abstract— **The objective of this research paper is to optimize length of a capillary tube in a split type air conditioning system in order to enhance the Coefficient of Performance (COP).We use mathematically acquired datafor training and testing the, proposed, ANN methodwhich is operated, at different input parameters.Using the mathematical data, for training,an ANN model is created based on Feed Forward Neural Network, used for nonlinear mapping between the input and the output parameters. We are using different activation functions and several rules to assess the percentage error between the desired and the predicted values. The optimization is determined by mathematical calculation, to evaluate COP of a split-type air conditioning system with a 3 different sizes of capillary tubes. Assumed that, the experimental equipment was designed and constructed to verify the COP data obtained from the calculation. In our work we observe that the ANN model can predict the COP quite well with statically correlations such as Coefficient of Variance (COV), absolute fraction of variance (R2), with very low root mean square errors (RMSE). This study shows that, as an alternative to classical modeling techniques, the ANN approach can be adapted to accurately predict the performance and COP of the Air Conditioning System. The results from the theoretical analysis show that the COP was changing in a direction contrary to the length of the capillary tube. When the capillary tube length is smaller, COP values tend to be higher.**

Keywords— **Artificial neural network (ANN), Capillary tube, Vapour Compression Refrigeration, Coefficient of performance (COP), Root Mean Square Errors (RMSE), absolute fraction of variance (R2) and Coefficient of Variance (COV).**

1. INTRODUCTION

The output of refrigeration or air-conditioning systems has been increasing rapidly in recent decades and refrigerationsystems become more important for people's daily lives. For example, room air conditioners used in China increased by about 15% per year in the past 10 years, and nowadays the use of air conditioners consumes a lot of electricity, amounting up to 40% of the total electricity consumption in the summer in some cities like Shanghai. Therefore, it is important to make the design process of refrigeration systems more efficient and the product performance better. Computer simulation is one of the valuable means to accomplish this target.

Air conditioning and refrigeration systems play an important role in industry, infrastructure and households. The industrial sector includes the food industry, textiles, chemicals, printing, transport and others. Infrastructure includes banks, restaurants, schools, hotels and recreational facilities. Therefore, the performance of the equipment is important for the operations associated with those activities.

A simple vapour compression refrigeration system consists of mainly five components namely [6] compressor, condenser, expansion device, evaporator and a filter/drier. The following study is focused towards finding out the effect of the capillary tube on the performance of the refrigeration system.

The length of capillary tube mainly decides the evaporator and condenser pressure. Lesser the length higher is the evaporator pressure and vice versa. [4] The length of capillary tube may betheoretically optimized if the heat transfer conditions over evaporator and condenser and so the evaporation and condensation pressures are steady state. The accurate size of the capillary tube and its configuration can be predicted with the help of the conventional method, calculations, for the refrigeration effect, coefficient of performance (COP) of the system and mass flow rate of the system.

Though, conventional method is still used for designing refrigeration systems to determine the required performance, the actual performance obviously deviate from the required one because there is no accurate model used in the design process. So, it is necessary to simulate the model to get actual real time results.

The computer simulation method has been used for designing refrigeration systems and has shown its advantages over the conventional one. Stability, Rapidness and Accuracy are the least requirements [1] for a simulation. These three requirements may conflict with each other, and then a compromise has to be made to achieve good results.

2. PROBLEM STATEMENT

The blockage in the capillary tube results in lower injection of refrigerant into the evaporator, so there will be a loss in cooling. Typically, this problem can be solved by changing a new capillary tube. However, this also results in refrigerant being released from the system, which makes for higher cost and time wastage with low COP. Furthermore, the size of the replacement capillary tube must be the same and somesizes are difficult to source which makes the problem more complex.

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Performance Prediction of Vapor Compression Refrigeration System using Artificial Neural Network

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Abstract: This paper proposes a new approach for the performance prediction of vapour compression refrigeration system(VCRS) with R-134a is used as working refrigerant at different loads in evaporator.Use of(ANN) Artificial Neural Network model has been used for prediction of the system(COP) Coefficient of performance.This paper also describes the experimental test setup for collecting the required experimental test dataThe experimental values are taken at steady state conditions while varying the input parameters like mass of water, evaporator temperature and pull-down time.The ANN used in the performance was made in MATLAB (version 7.8) environment using neural network tool box. The back propagation algorithm with three different variants and logistic sigmoid transfer function were used in the network. The outputs predicted from the ANN model agrees with experimental values with coefficient of correlation (R > 0.988) and maximum percentage of error less than 5%. The results show that the ANN model can be applied successfully and can provide high accuracy and reliability for predicting the performance of the vapour compression refrigeration system.

Keywords: Artificial Neural Networks, VCR,Performance Prediction, COP Root Mean Square Errors (RMSE), absolute fraction of variance (R2) and Coefficient of Variance (COV

I. INTRODUCTION

Vapour compression compression refrigeration is a multidimensional problem such as to minimization of input power consumption and increasing refrigeration effect. For theoretical performance analysis of the vapour compression refrigeration system is too complex due to the equations of the performance of system with many equations are required. P. Thangavel [1] reported on Part load performance analysis of vapour compression refrigeration system with hydrocarbon refrigerants.in this work had presented various input parameters like compressor input power, discharge temperature, heat rejected in the condenser, refrigeration effect and coefficient of performance are analyzed at various loads 2,4,6,8,10,12,14 kg of water used in the evaporator As compared to other loads, 10 kg of water gives economic mode to operate the system.

In this study, an experimental vapor compressor refrigeration setup on which experiments on the vapour-compression refrigeration system R134A as a refrigerant. The conducted experiments and corresponding calculated coefficient of performance (COP) Then the data obtained from the test results was used for modeling the system performance by Artificial Neural Network (ANN).Calculated the power consumption, RE and COP of the vapour-compression refrigeration system using numerical methods, as explained in Section 3, while Section 4 describes the modeling of the system ANN, Section 5 observes the results and discussion and finally 6 gives the conclusions.

II. Artificial Neural Networks

Artificial neural networks (ANN) have an algorithm that can learn and decide by its own throughout the process and are inspired by human brain neuron structure. They have data processing units called cells. These networks have their own weights and involve connections between the cells. ANNs are Computational models, which simulate the function of biological network, composed of neurons. The system has three layers of neurons; input layer, a hidden layer and an output layer. The neurons or units of the network are connected by the weights. Input layer consist of all the input factors, information from the input layer is then processed through one hidden layer, following output vector is computed in the final (output) layer. Fig. 2 gives a schematic description of an ANN structure, as well as the network configuration used in this study [2].

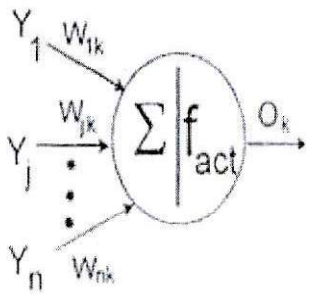

Fig.1. Structure of an artificial neural network cell

Back propagation (BP), which is one of the most famous training algorithms for multilayer perceptions, is a gradient descent technique minimizes the error for particular training pattern. Although BP training algorithm has some

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Anatomy and Lifecycle of a Bitcoin Transaction

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ARTICLE INFO

Article history:
Received 10 January 19
Received in revised form 29 January 19
Accepted 18 February 19

Keywords:
Bitcoin
Blockchain
Transaction
Scripts

ABSTRACT

Blockchain is a trusted, distributed, peer to peer, open, public, techno-cryptographic ledger to manage and transfer the value of digital assets, to provide immutability, anonymity and security. Bitcoin is a decentralized virtual, digital and programmable currency. Wallet is an interface to user in bitcoin network where we can store send and receive funds. This paper follows a novel approach in elaborating the underlying technical concepts of a transaction which comprises of locking and unlocking scripts, verification. Additionally, it also presents the details of block header that incorporates the concepts of difficulty, Merkle tree and proof of work. The paper highlights the mechanism of resolving ambiguity when there is more than one chain is available.

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Peer review under responsibility of International Conference on Sustainable Computing in Science, Technology and Management.

1. Introduction

Blockchain is an aggregation of stupendous concepts like distributed nature, immutability and decentralization in which each block keeps the track of transaction-sequence that are invoked between multiple peers of the network. All the blocks are chained together through a cryptographic hashing mechanism to form the blockchain. Bitcoin internally implements the blockchain technology in a profound manner.

Bitcoin is an ingenious payment network that facilitates the peers to transfer crypto(digital) currency in a swift and secure manner without the intervention of a third/centralized party. Anonymity is the salient trait of the Bitcoin. Bitcoin was first harbingered by Satoshi Nakamoto in 2009, as an open-source payments platform.

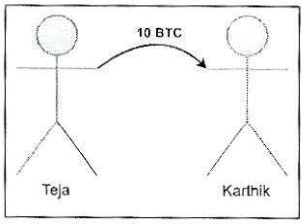

Fig. 1. Teja sending 10 BTC to Karthik

2. Lifecycle of a transaction

This paper depicts the life-cycle of the transaction as per Fig. 2. with the analogy of Teja sending 10 bitcoins (BTC) to Karthik as per Fig. 1. The transaction is signed by the sender wallet and added to transaction pool after successful verification. The miner picks a group of transactions, validates and bundles them together to form a block by continuously hashing and finally arrives at a desired hash. After mining, he broadcasts the block in the network. The block waits for certain number of confirmations (currently 6 conformations) by the network. Now the miner gets rewarded (currently 12.5 BTC) for creating the new block. The transactions of the newly mined block are validated by scripts and finally the balance reflects in Karthik's account. This is an overview of how a transaction works in the bitcoin. The paper elaborates and explains each step in a transaction process in a scholarly manner.

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Application of Utility Function Approach Aggregated with Imperialist Competitive Algorithm for Optimization of Turning Parameters of AISI D2 Steel

Recent Advances in Mechanical Infrastructure pp 49-57 | Cite as

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Conference paper
First Online: 19 October 2019

Part of the Lecture Notes in Intelligent Transportation and Infrastructure book series (LNITI)

Abstract

In the fast-growing infrastructure, machining plays a vital role in industrial evolution. However, obtaining optimal machining parameters is still a challenging assignment for manufacturers because an inappropriate selection of machining parameters specifically spindle speed (N), feed rate (f), and depth of cut (d) adversely affects the overall machining performance. Therefore, this work attempts to provide optimal parameters setting for machining AISI D2 steel in dry condition with PVD-coated carbide tool. The evaluation of the optimal parameters setting has also been done by means of utility function approach aggregated with the imperialist competitive algorithm.

Keywords

AISI D2 Imperialist Competitive Algorithm (ICA) Turning Optimization

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THE INFLUENCE OF COPING ON LONG-SPAN CONTINUOS BEAM UNDER FIRE LOADING

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Abstract

The requirement of large column-free spaces demands long-span beams. Very few studies have been conducted on the behaviour of long-span composite beams subjected to fire loading. In this paper, the behaviour of a long span beam of 13m span and double angle connection with 2 hours of fire protection is subjected to 3 hours of fire loading is studied numerically. The influence of coping on the ends of the beam was studied in detail. The presence of coping affects the location of buckling and the amount of lateral force acting on the column. If the beam is provided with coping at the bottom end, the steel beam web near angle connection undergoes local bucking near the connection, and it causes buckling of the angles in the connection and thereby induces high tensile force demand in the associated welded connection. This force demand on the welded connection is highly localised and may even cause the fracture of the connection. If the beams are without any coping, the welded connection will only be subjected to a negligible tensile force under fire loading. If the beams are coped at the bottom, the runout failure can be prevented by providing additional rebars at the support.

Keywords: long span, composite beam, fire loading, coping, rebar

1 INTRODUCTION

There is an increase in the need for significant space demands for long-span beams and slabs, especially in steel structures. Most of the research work happened in composite steel-concrete beams with short span composite beams under fire loading spanning up to 5-7m. Wainman & Kirby, 1987 studied the behaviour of the simply-supported composite beam of effective span 4.58m under fire loading. Zhao & Kruppa, 1995 performed an experimental investigation on the composite beam with a span around 5m under fire loading. They investigated the effect of varying the concrete slab width and influence of protection for steel beam. Huang et al., 1999 developed the 3D composite beam using the VULCAN computer program to understand the influence of shear stud connectors in the simply-supported steel-concrete composite beam. Ranzi and Zona (2007) formulated an analytical model of the steel-concrete composite beam to predict partial shear interaction, including the shear deformability of the steel component under elevated temperature. Anil et al.,2011(a, b), 2014(a, b), studied the impact of shear tab connection in the stability of 10 storey office building subjected to a corner compartment fire. Kodur et al., 2013 conducted a numerical investigation on the behaviour of steel-concrete bridge girders under fire loading. Selden et al., 2014, 2015 conducted a full-scale experimental investigation on the behaviour of steel-concrete composite beam system under fire loading. 3.80 m long beams with lightweight flat slabs of 89mm depth and 914mm width connected to the supporting column through shear tab connections. Jiang et al., 2015 extended Opensees- an open resource object-oriented software to predict the behaviour of composite beams under fire loading. Fischer et al., 2015, 2016, 2017 studied the behaviour of different types of beam to column connections such as shear tab connection, single angle connection, double angle connection under fire loading. Choe et al. 2018 performed an experimental investigation on the long span continuous steel-concrete composite beam with various beam-column connections. There is very little research work on the behaviour of long-span composite beams under fire loading. The design of a robust connection for a long span beam is yet to achieve, as the recent research in NIST observed long-span composite beam collapse

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Enabling Smart Education System Using Blockchain Technology

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Blockchain Technology: Applications and Challenges pp 169-177 | Cite as

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Abstract

Blockchain Technology is gaining lot of attention in recent days due to its distinct characteristics like decentralization, reliability, security and data integrity. Many companies are researching the possibility of adapting Blockchain Technology in their respective domains to utilize the potential of blockchain to the fullest. In spite of its rapid growth very little is known about the state of the art of blockchain in educational sector. The book keeping process of degrees and certificates can be one such potential area where blockchain can play a major role. This chapter presents the detailed analysis of Blockchain Technology and its application in education. Its emphases on (i) Blockchain Technology and its diversified application (ii) Digital Signatures and (iii) Blockchain based educational solutions. This chapter also highlights the challenges of blockchain in education based on an intensive research.

Keywords

Blockchain applications Blockchain in education Decentralization Digital signatures Certificates Book keeping

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References

1. Sharples, M., Domingue, J.: The blockchain and kudos: a distributed system for educational record, reputation and reward, pp. 490–496. Springer International Publishing, Cham (2016)
Google Scholar (http://scholar.google.com/scholar_lookup?title=The%20blockchain%20and%20kudos%3A%20a%20distributed%20system%20for%20educational%20record%2C%20reputation%20and%20reward&author=M.%20Sharples&author=J.%20Domingue&publication_year=2016)

2. Sharples, M., et al.: Innovating pedagogy 2016: Open University innovation report 5 (2016)
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ICTMIM

Authors: **Mohammed Ather Patel, Shaik Himam Saheb**

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Enhancement of Passivated Emitter Rear Solar Cell Efficiency by Using ZrO_2 as Passivation Layer

Dr. Rajesh Kumar Jha
Department of Electronics and communication Engineering,
IcfaiTech (Faculty of Science and Technology), ICFAI Foundation for Higher Education, Hyderabad,501203

Abstract:

In this work, we have used ZrO_2 as a rear side passivation layer for monocrystalline solar cells. First of all the conventional Aluminum back surface field, (Al-BSF) solar cell has been fabricated and then by using plasma-enhanced atomic layer deposition technique, ZrO_2 has been deposited to make it passivated emitter rear solar cell(PERC). The efficiency of PERC type solar cell is enhanced by 0.86% from the conventional solar cell i.e. without the introduction of the rear side passivation layer. Surface passivation properties of ZrO_2 has been explored by measuring minority carrier lifetime and surface charge density at ZrO_2/Si interface. The substrate temperature, annealing temperature, annealing time have a serious impact on surface passivation properties. The thickness and other process parameters of ZrO_2 were optimised before using it for the rear side passivation layer. The open-circuit voltage is 0.68 V in comparison to 0.59 for Al-BSF solar cells.

Keywords: PERC, Al-BSF, ZrO_2, passivation, efficiency

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Effect of La doping on the ferroelectric properties of Bi4Ta3O12

Dr. Rajesh Kumar Jha
Department of Electronics and communication Engineering,
IcfaiTech (Faculty of Science and technology), ICFAI Foundation for Higher Education,
Hyderabad,501203

Abstract:

In this article, we have investigated the effect of 'La' doping in the conventional ferroelectric $Bi_4Ta_3O_{12}$. We have fabricated Metal/Ferroelectric/Metal (MFM) and Metal/Ferroelectric/Silicon (MFS) structures by using $Bi_4Ta_3O_{12}$ and La-doped $Bi_4Ta_3O_{12}$ as a ferroelectric layer. The deposition parameters and thickness of ferroelectric film have been optimized before the fabrication of the actual device. The x-ray diffraction technique is used to find the phase structure and crystallinity of the ferroelectric layer. Field emission scanning electron microscopy with energy dispersive spectroscopy technique is used to study the surface morphology and concentration of different elements in ferroelectric layer. The electrical and ferroelectric characterization has been carried out to obtain, CV, IV remnant polarization(Pr), endurance and data retention time of the fabricated MFM device structure. The La doped $Bi_4Ta_3O_{12}$ has provided better results like Pr($5uC/cm^2$), endurance(10^6 read/write) and data retention time of 10 hours.

Keywords: $Bi_4Ta_3O_{12}$, Ferroelectric, Remnant polarization(Pr), Endurance, Data retention time

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Design of 16 bit MIPS Microprocessor using Verilog hardware descriptive language.

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Dr. Rajesh Kumar Jha
Department of Electronics and Communication Engineering,
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Hyderabad,501203

Abstract

This paper presents the design and analysis of a high-performance five-stage pipelined 16-bit microprocessor without Interlocked Pipeline Stages (MIPS) which is based on Reduced Instruction Set Computer (RISC) architecture. MIPS applications are mainly found in Embedded systems, Microprocessors and Microcontrollers. The main objective is to create the design and analyse MIPS based processors using Verilog code. It also emphasizes on the key points of designing field i.e., bearing fewer transistors count and proportionally have greater performance infact creating more chip area to fabricate more peripherals on a System-On-Chip. MIPS also finds its great support in providing small scale applications. In single-cycle implementations all operations take the same amount of time whereas in pipelined
implementation the processor overlaps and decides the execution time in each operation. To achieve MIPS modelling, Verilog serves as a compact language to build actual hardware modelling.

Keywords: Instruction Set, Processor Speed, Arithmetic Logic Unit (ALU), Register and Program Counter.

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Petri Net-Based Risk and Reliability Analysis of Power System Protection

Dr. Soumitha Ghosh
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Abstract:

The power system protection plays a decisive role in defending the power system from damages that might be incurred due to faults by fault identification, isolation and clearance. We aim to perform a reliability analysis of power system protection. We are particularly focussing upon a transmission line equipped with a phasor measurement unit (PMU)-based auto-recloser. The Petri net (PN) model would be used to exemplify the qualitative performance measures of the protection system model through behavioural properties such as conservativeness, reachability, properness, safeness, and boundedness. After developing the PN based reliability models of the system, we would perform the risk and reliability analysis of the protection system under study.

Keywords: Power system protection, Petri nets, Reliability analysis

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Monitoring of hazardous Gas leakage using IoT technique

Dr. Rajesh Kumar Jha
Department of Electronics and communication Engineering,
IcfaiTech (Faculty of Science and technology), ICFAI Foundation for Higher Education,
Hyderabad,501203

Abstract:

In this work, we have proposed a model which can detect leakage of all the gases and their leakage source. The source of gas leakage detection has been done using IoT techniques and related sensors. The microcontroller-based gas leakage detection unit is made with the help of various hardware like Arduino UNO, Sim 800 GSM Module, MQ-5 sensor, Buzzer, e.tc.

The two main modules i.e. the detection and transmission module and also the receiver module are used. The hazardous gases were sensed and the related information was displayed on the LCD. If these gases exceed the conventional level, an alarm is raised and an email is also sent to the authorized person through the web. The advantage of this automatic gas leakage detection technique is that it offers quick reaction time and accurate detection. Thus this method helps to stay informed about gas leakages by providing dangerous positions of the gas leakage via a web page.

Keywords: IoT, hazardous Gas, hazardous Gas, Alarm, LCD display

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Design Analysis of Voltage Controlled Oscillator in 22nm FinFET Technology

240

Dr. P Akhendra Kumar
Department of Electronics and Communication Engineering,
IcfaiTech (Faculty of Science and Technology), ICFAI Foundation for Higher Education,
Hyderabad,501203

Abstract: In this paper, FinFET based Voltage controlled oscillator is analyzed and compared using cadence virtuoso in 22nm technology node. FinFET's are promising substitutes for CMOS Digital circuits to avoid short channel effects. For comparison purposes, centre frequency and frequency-voltage (f-V) characteristics are considered. These figures of merits are analyzed under different process variations to determine the worse case performance of VCO.

Keywords: *Voltage Controlled Oscillator (VCO), Fin field Effect Transistor (FinFET), Process Variation.*

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A Bayesian Framework for Decision-Making in Power Systems

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Abstract:

During cascading faults in power systems, the entire system crashes within a span of a few seconds. To check widespread losses and devastation due to faults, apt actions and accurate decision-making by the operators are crucial in this situation of emergency. A tool that can inform us about the power system component status when a fault occurs will aid the process of blocking the cascading fault or events triggered as a result of a fault. A Bayesian network is capable of providing us with the required mathematical groundwork that can be used for taking conclusive actions. We aim to develop a Bayesian framework by utilizing its ability to update the system component probability based on the status of the system. By updating the status of power system components based on power system working conditions we will be able to make better decisions, thus avoiding vast spread loss of the system economically and geographically.

Keywords: Power systems, Bayesian networks, cascading faults, decision-making

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Capturing Uncertainties in Phasor Measurement Unit Reliability Using Fuzzy Theory

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Abstract:

Uncertainty is inevitable in real-life systems. To address these uncertainties fuzzy theory has been developed. The fuzzy theory is capable of mimicking human logic, and thus addresses any ambiguity in the data thereby providing the best possible solution for a given situation. Current research is aimed at analysing the uncertainties in the phasor measurement units (PMUs) and the effect of these uncertainties on the power system functioning using fuzzy logic. The uncertainty in PMU is present in the form of ambiguous reliability parameters that are required for performing reliability studies of the device.

Keywords: Uncertainty, fuzzy logic, phasor measurement unit

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Design optimization of CMOS Low Noise Amplifier (LNA) using Grey Wolf Optimization in 90nm Technology

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Abstract:
This paper presents a Grey Wolf based methodology for CMOS Low Noise Amplifier with common-source inductive degeneration to obtain optimal design parameters by minimizing the noise figure in 90nm technology. The optimal design parameters such as gain, noise figure and channel width of transistor from Grey Wolf optimization algorithm are validated by comparing them with numerical simulations using Agilent's Advanced Design Systems (ADS) software.

Keywords: Noise Figure; Gain; S-parameters; GWO; Low Noise Amplifier

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On-chip air-core Fractal Micro Transformers in 180nmTechnology

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Abstract:

On-chip Components plays a vital role in many RF communications systems. This paper provides an in-depth analysis of such a component called on-chip transformers. Fractal transformers have the unique property of space filling for any given designated area. This enables them to have an advantage over traditional spiral transformers because they can fit more features into the same space. As a result, they have higher quality factors and higher values of inductance. In addition, they can stretch in length up to infinity with each iteration of the curve. The paper aims to compare the performances of three fractal curve transformers namely, Hilbert Fractal Transformer, Sierpinski Fractal Transformer and Moore Fractal Transformer in terms of the critical performance parameters to characterize on-chip transformers, such as the Q-factor, coupling factor (k), resonance frequency (f_{SR}). The fractal transformers discussed and implemented in this paper are planar and coreless. The primary and secondary coils consist of only one metal layer with no crossovers. The Quality factor of the Hilbert transformer was found to be the highest from the simulation results since it is less effected by the parasitics compared with the existing transformers in the literature.

Keywords: *on-chip transformer, Q-factor, self-resonance frequency (f_{SR}), Fractal geometry, RFIC, LNA, 5Gcommunication*

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Investigation of Negative Capacitance and Memory Parameters in HfO2 Based Ferroelectric Materials

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Abstract

In this proposed work, first, the modelling, simulation and fabrication of ferroelectric random access memory will be undertaken. The negative capacitance and various other ferroelectric memory parameters (such as remnant polarization, coercive voltage, memory window, leakage current density, data retention time, endurance and breakdown voltage) will be investigated in HfO_2-based high-k dielectric material. The TCAD simulations allow us to observe the characteristics of negative capacitance devices, which exhibit subthreshold swing less than 60 mV/decade and other interesting properties such as negative output resistance and drain induced barrier rising (DIBL).

Keywords: HfO_2, Ferroelectric, Pulsed Laser Deposition, Ferroelectric Field Effect Transistor, Negative Capacitance, Data Retention Time.

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Investigation of Negative Capacitance and Memory Parameters in 2D Van Der Waals heterostructure based Ferroelectric Materials

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Abstract

Recent advances in 2D materials have opened a new era for its promising applications in the field of electronics. Unique properties of 2D materials with no limitation of finite size and stable characteristics at low dimension, precisely even at atomic layer thickness have enables the fabrication of high performance and high-density structures. The charge and heat transport are confined within a plane of 2D materials which make it possible to fabricate scaled structures according to Moore's law. Transition metal dichalcogenides (TMDs), Hexagonal Boron Nitride (h-BN), MXenes, Xenes and organic materials are the wide category of discovered 2D materials.

Keywords: 2D Material, Ferroelectric, logic in memory, Memory computing

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Real-Time Implementation of Speech Quality Improvement Techniques for Digital Hearing Aid

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Abstract:

Speech understanding in adverse noisy environments is a major problem even for a normal hearing person and this problem escalates for a hearing-impaired listener. Statistics reported by the Ministry of affairs, India says that there are 5.8 % of the total population suffering from hearing disability. The disability rate is higher in females in the category of hearing. This proposal contributes to the development, evaluation and implementation of speech enhancement (TSE) algorithms for hearing-impaired people. New techniques for TSE are introduced to reduce the noise content for binaural hearing aids. The algorithm development in the MATLAB environment is the first step in the process. Two different TSE algorithms will be developed in this proposal, which includes a novel sideband reduction technique using Frequency slice wavelet transform based speech enhancement technique and also a novel deep neural network-based Direction of Arrival (DOA) estimation for localization. The performance of these methods will then evaluate using both subjective and objective measures. The evaluation results show that there is a clear speech quality and intelligibility improvement of the proposed methods over the conventional TSE techniques and thus clear improvement in understanding telephonic speech by the hearing-impaired people. Finally, the utilization of these techniques in a product will include its digital signal processor (DSP) implementation as well on a smartphone as an application that performs real-time Speech Quality enhancement.

Keywords: *Hearing Aid(HA), Digital signal processor (DSP), Smartphone, Direction of Arrival(DOA)*

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Precision Farming Using Wireless Sensor Networks

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Abstract:

The crop management system using Wireless Sensor Network (WSN) is a kind of autonomous solution to enhance agricultural technology. Precision agriculture could raise the crops yield, labour cost-saving and environmental protection against overuse of pesticide or fertilizers. Therefore, in the proposed, we use a wireless sensor system that will communicate with each other with lower power consumption. This is served with the help of WASPMOTE Board. The architecture than to be implemented in the sensor nodes will construct a wireless networking data collection at crop field likely to replace the conventional manually data collection system.

The sensor motes have several external sensors namely leaf wetness, soil moisture, soil pH, atmospheric pressure sensors attached to them. Based on the value of the soil moisture sensor the mote triggers the water sprinkler. Once the field is sprinkled with adequate water, the water sprinkler is switched off. Hereby water can be conserved. Also, the value of the soil pH sensor is sent to the base station and in turn, the base station intimates the farmer about the soil pH via SMS using GSM modem. Obtaining the soil pH value in his mobile the farmer selects the necessary fertilizer and crop for his next season. Hereby the amount of fertilizer used can be reduced.

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Driver Fatigue Detection System

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Abstract:

Fatigue is a major cause of road accidents and has significant implications for road safety. Several deadly accidents can be prevented if the drowsy drivers are warned in time. A variety of drowsiness detection methods exist that monitor the drivers' drowsiness state while driving and alarm the drivers if they are not concentrating on driving. The relevant features can be extracted from facial expressions such as yawning, eye closure, and head movements for inferring the level of drowsiness. The biological condition of the drivers' body, as well as vehicle behaviour, is analyzed for driver drowsiness detection. This paper presents a comprehensive analysis of the existing methods of driver drowsiness detection and presents a detailed analysis of widely used classification techniques in this regard. First, in this paper, we classify the existing techniques into three categories: behavioural, vehicular, and physiological parameters-based techniques. Second, top supervised learning techniques used for drowsiness detection are reviewed. Third, the pros and cons and comparative study of the diverse method are discussed. In addition, the research frameworks are elaborated in diagrams for better understanding. In the end, overall research findings based on the extensive survey are concluded which will help young researchers for finding potential future work in the relevant field.

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Spectrum Management and Pricing in Heterogeneous Wireless Networks

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Abstract:

As the technology progressed from 1G to 4G and deployment and research on 5G and 6G there's a rapid growth of communication devices and applications which brings a huge demand for bandwidth. As the bandwidth is limited concerning applications, the Heterogeneous network is the solution for utilizing multiple wireless architectures to exchange information over a wireless medium. In this network, a user shifts to multiple networks. If the user shifts from one network to another for proper resource utilization the issues like spectrum management, pricing and fairness will be observed. To deal with these challenges a heterogeneous wireless architecture, schemes to manage the spectrum and price are being proposed.

Keywords: Heterogeneous Network, bandwidth, pricing, spectrum utilization.

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Use of Artificial Intelligence in Wireless Communication

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Abstract:

The next-generation wireless networks are developing into very complex systems because of the much-diversified service requirements, heterogeneity in applications, large number of devices, and networks. The use of Artificial intelligence technologies beyond 5G and 6G simplifies the network operators need to make the best use of the available resources, for example, power, spectrum, as well as infrastructures. AI in wireless communication calls for new network architecture and system models as well as standardized interfaces /protocols/data formats to facilitate the large-scale deployment of self-aware, self-adaptive, and predictive networking. This paper discusses the challenges and opportunities for AI-based resource management to widely deploying AI in future wireless communication networks.

Keywords: 5G, 6G, artificial intelligence (AI), resource management, next-generation wireless.

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Smart Email Systems

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Abstract:

Email systems are now becoming intelligent. Composing emails to friends, colleagues have become easy with the introduction of new features in the email system like composing sentences and suggesting alternatives on its own by the system. This is done by using a form of AI known as natural language processing, which aims to understand and use languages in human-like ways. The next big change that emails systems are likely to witness is generating email based on predictive modelling. Here emails will be customised for each contact, concerning the person's recent activities/achievements all by the system. The advantage over such an email system will be the high chance of it being read by the recipients. This will directly help widen the reach to prospective clients and add to business prospects. This will improve deliverability and optimize email outreach. The work here proposes to study and build smart email systems.

Keywords: Smart email system, natural language processing, predictive modelling, artificial intelligence.

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Microgrid as a Solution to the Power System with High Penetration of Renewables

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Abstract:

There is a need to move towards clean energy resources, amidst rising amounts of carbon gas emission in the atmosphere by fossil fuel-based power generation. The UN climate change conference, COP 26 at Glasgow has renewed the pledge for greenhouse gas emission reduced to net zero by 2050. The move towards cleaner energy resources needs to move away from centrally controlled generation to distributed generation (DG) using renewable resources. But high penetration of renewables will have an adverse impact on the conventional grid structure and its operations. The microgrid concept is a solution proposed to control the impact of DG on grid operation and make conventional grid suitable for large scale penetration of renewables in form of DG. Microgrids are small entities in a power system network capable of coordinating and managing DG in a decentralized way reducing dependence on centralized coordination and management. The motivation behind using microgrid is to divide the enormous conventional grid into smaller and more operable grids. The controller capabilities of a microgrid are one of the most crucial elements in determining the introduction of this new concept to the utility and for its acceptance. The main objective of control systems in microgrids is to continuously supply power to the loads despite the changes in the system. A microgrid may be operating in grid-connected mode or islanded mode. One or more DG units may connect to/disconnect from the grid, or there might even be significant changes in the amount of power demanded by the loads. Under all these circumstances, the microgrid control shall ensure that power is supplied to the loads with acceptable voltage and frequency characteristics. In the proposed work to be carried out here the requirements of control systems in managing load and optimization of controller parameters would be studied and newer ways for efficiently handling load requirements with the concept of microgrid will be developed.

Keywords: Distributed generation, Microgrid control, Microgrid management system, renewables.

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An Investigative Study on the Possible Terahertz Sources for the Future Based on Semiconductor Device Technology

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Abstract:

Recent interest in wireless local area networks has enthused considerable research activity at frequencies above 60 GHz. Indeed the idea of exploring the potential bandwidth and propagation properties for carriers in the range 100 GHz to 1 THz has led to recently increased investment in terahertz technology research. Before the boom in communications and an increased emphasis on remote sensing, the major interest in terahertz technology lays almost exclusively with radio astronomy. There are now worldwide initiatives across the terahertz frequency range (broadly defined in the frequency range 60 GHz to 10 THz). This activity has prompted a shift in emphasis from the detection of terahertz signals (primarily the domain of radio astronomy) to the generation of signals for local oscillators. Simultaneously, this reflects the fact that the biggest challenge facing the development of terahertz technology is the requirement for a solid-state RF source with useful output power and efficiency typically greater than 100 pW and higher than 3% respectively, whilst maintaining an acceptable noise performance. This is an essential prerequisite for the development of compact low power transponders, in contrast to the established far-infrared lasers and travelling wave tubes used in existing terahertz systems. Another problem faced by the terahertz designer is the difficulty of achieving acceptable performance at room temperature or above when most available systems require cryogenic support. Despite these difficulties Semiconductor-Insulator-Semiconductor receivers have been built at frequencies up to 600 GHz and oscillators based on semiconductor devices operating in the frequency range of 100 to 300 GHz are now widely reported. This project work would address the prospects for terahertz technology in the context of satisfying the requirements for future communication systems and will consider circuits and devices suitable for operation in this frequency regime. It will examine the state-of-the-art in semiconductor device technology for terahertz applications and the prospect of monolithic integrated circuit technology for frequencies above 100 GHz.

Keywords: *Terahertz; semiconductor; transmitter; receiver.*

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Complementary Split Ring Resonator loaded Circular Substrate Integrated Waveguide cavity-based Multiple Bandpass Filter.

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Abstract:

Compact size and high-performance microwave filters are mostly required in modern wireless communication systems. The design and development of microwave filters having multiple passbands with reduced size and improved selectivity within a single cavity remains a challenge. Multiple band filters whose features are adopted from the concept of microstrip line show relatively low-quality factors, whereas waveguide filters are bulky and are rejected from high-density integrations. Substrate integrated waveguide (SIW) has the advantage of high-quality factor (Q), low insertion loss, better structural compactness, low cost and easy integration, thus it combines the finest and balancing features of both planar transmission lines and nonplanar waveguides. This project aims in presenting a novel structure of compact multiple bandpass filter based on circular cavity substrate integrated waveguide. Complementary split-ring resonators (CSRR) will be loaded into the cavity to reduce the frequency of resonance by lowering down the centre frequency of the passband below the waveguide cut-off frequency. Here, the entire stopband of the waveguide will be utilized to generate single or multiple passbands by defining particular dimensions to the CSRRs loaded into the cavity. A circular SIW cavity structure will be designed with a cut-off frequency of 12 GHz so that the stopband extending nearly up to 11 GHz could be used to generate passbands within it. Introducing asymmetric geometry in the pairs of CSRRs will lead to a generation of multiple passbands below the cut-off frequency. The resonating frequencies of the passband can be independently controlled just by varying the dimensions of the loaded CSRRs. The designed filter structure will be initially modelled and simulated in Ansoft HFSS and later the proposed structure will be fabricated and the frequency response would be measured to validate the multiple bandpass filter.

Keywords: *Substrate integrated waveguide (SIW); complementary split-ring resonators (CSRR); multiple band filters.*

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Development of Perturbation Techniques to Independently Control the Excited Modes and Thereafter the Passband Center Frequencies of Multiple Bandpass Filter Based on Substrate Integrated Waveguide

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Abstract:

Modern microwave communication systems readily welcome high-performance multiple bandpass filters with autonomous control over passbands. Various research groups worked out to propose compact multi-band filters with high selectivity, improved out-of-band response and independent passband tuning ability. Substrate integrated waveguide (SIW) possess the properties of high-quality factor, low insertion loss, structural compactness and planar integration ease to provide a base for high performance miniaturized filters. SIW loaded with complementary split-ring resonators (CSRRs) are used to propose compact bandpass filters but compromises with out-of-band rejection level. Whereas a mushroom structure with a metallic patch and via, being a composite right/left-handed resonating structure is advantageous for designing compact bandpass filters with high-quality factor, improved selectivity and out-of-band response. This project proposal describes a method of independent control over the excited modes of mushroom resonator loaded to SIW. This development will introduce the feature of an autonomous tuning of passbands into such mushroom loaded filters which are already enriched in quality factor, selectivity and out-of-band response. A mushroom resonator composed of two parallel plates shorted by a metallic through a dielectric substrate would be loaded into the cavity of a SIW after etching out a portion of the upper conductor of the SIW. Circular and linear perturbation slots could tactically be introduced into the mushroom resonators to separately perturb the excited modes of these resonators inside the SIW cavity. This perturbation procedure using such slots will be employed to independently control the resonance frequencies of the modes and hence the center frequencies of multiple passbands.

Keywords: *Substrate integrated waveguide (SIW); mushroom resonator; resonating modes; perturbation slots.*

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Particle Swarm Optimization Based Maintenance Scheduling of Phasor Measurement Units

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Abstract:

To ensure reliable power to the consumers it is the foremost challenge to have an overview of the geographically wide-spread and extensively interconnected infrastructure of power generation, transmission and distribution. The phasor measurement units are such devices that capture the unique information (current phasor and voltage phasor) at each point where they are connected. Thus fulfilling the requirement of providing situational awareness of power systems to the system operators. These devices however like all other instruments in the power system are required to undergo maintenance (planned or forced). We aim to provide maintenance scheduling of PMUs connected in a power system network through Particle Swarm Optimization (PSO). The PSO will be utilized to find the best solution keeping the situational awareness of the system intact.

Keywords: Phasor measurement units, maintenance scheduling, particle swarm optimization.

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Development of Low-Cost Diabetic Eye Care Aid for Healthy India

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Abstract:

In India at present, there are around 45 million diabetics and every individual is a probable one for blindness due to Diabetic Retinopathy (DR). Early detection of Diabetic Retinopathy (DR) is essential to start treatment for diabetes for avoiding blindness. It is possible to detect the early symptoms of polydipsia and polyuria. So that to create awareness about diabetic retinopathy in the community. The proposed deep neural network will be able to recognize diabetic retinopathy and its stage for the Indian community accurately. The proposed diabetic eye care aid is also providing the percentage of vision impairment. The final implementation will carry a low-cost Raspberry Pi model along with the Intel Neural Compute Stick, which is very much useful for developing countries likes India and especially for the rural community. Although the proposed work is targeted for diabetic eye care aid, it can also be very much helpful for eyesight detection. This project proposes to develop an Automatic Screening System for Diabetic Retinopathy indigenously to prevent so many people from becoming blind due to diabetes in India.

Keywords: *Diabetic Retinopathy (DR), Raspberry Pi, eye care aid.*

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Magnetic Resonance Imaging for Segmentation of White Matter, Gray Matter and Fibre Tractography in Neurosurgery: A Systematic Analysis, Issues and Solutions

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Abstract

Diffusion magnetic resonance imaging (dMRI) tractography is an advanced imaging technique that enables in vivo mapping of the brain's white matter connections at a macro scale. Segmentation of brain tissue from diffusion MRI (dMRI) is an important task, required for quantification of brain microstructure and for improving tractography. Current dMRI segmentation is mostly based on anatomical MRI (e.g., T1- and T2-weighted) segmentation that is registered to the dMRI space. However, such inter-modality registration is challenging due to more image distortions and lower image resolution in dMRI as compared with anatomical MRI. Over the last two decades, the study of brain connectivity using dMRI tractography has played a prominent role in the neuroimaging research landscape. In this paper, we provide a high-level overview of how tractography is used to enable quantitative analysis of the brain's structural connectivity in health and disease. We first provide a review of the methodology involved in three main processing steps that are common across most approaches for quantitative analysis of tractography, including methods for tractography correction, segmentation and quantification. For each step, we aim to describe methodological choices, their popularity, and potential pros and cons. We then review studies that have used quantitative tractography approaches to study the brain's white matter, grey matter, focusing on applications in neurodevelopment, ageing, neurological disorders, mental disorders, and neurosurgery. We conclude that, while there have been considerable advancements in methodological technologies and scope of applications, there nevertheless remains no consensus about the "best" methodology in quantitative analysis of tractography, and researchers should remain cautious when interpreting results in research and clinical applications

Keywords: dMRI, Fibre Tractography, Gray Matter, Segmentation, White Matter

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A Deep Learning-based approach for an Automated Brain Tumor Segmentation in MR images

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(Deemed to be University under Section 3 of the UGC Act, 1956), Hyderabad

Abstract

Brain tumor classification is done by biopsy, which is not normally performed due to conclusive brain surgery without invasive interventions, improving technologies and machine learning can help radiologists detect tumors. MRIs are commonly used imaging techniques for the study of these tumors, but the vast volume of knowledge given by MRI prevents manual break-up over an acceptable time span, reducing the use of accurate quantitative calculations in clinical practice. This paper introduces an approach to program division based on Convolution Neural Networks (CNN). The proposed work uses a 300 MR image dataset from Kaggle with 70% Training and 30% Testing. In addition to having a positive impact on overfitting, Kernel 3x3 enables the construction of a deeper architecture, providing a lower number of weights in the network. The application of force standardization was also discussed here as a pre-preparation step, which has proven extremely viable in MRI images for brain tumor division, despite its lack of regularity in CNN division strategy and data extension. Detection of accurate tumor cells where high region density is contaminated. The extraction and identification of tumor from brain MRI scans are conducted using the MATLAB tool. The accuracy was 92.50 % with good generalization capabilities and good speed of execution, and for medical diagnostic radiologists, the new developed CNN architecture will be an essential decision-making tool.

Keywords: Brain tumor segmentation, Convolutional neural network, Deep learning, MR imaging.

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Air Quality Prediction Hyderabad Using Linear Regression

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Abstract

Air Quality is usually referred to as the extent to which air in a particular region is polluted and not polluted. It is used as an indicator to inform people living in that area to take necessary precautions. Air is one of the few natural resources which is consumed in very large amounts by every living organism, so the extent of its contamination will have adverse effects. In humans, breathing disorders and lung diseases are caused due to air pollution. In urban and semi-urban areas this is a major issue after the industrial revolution. Hyderabad is a city with lots of industrial areas and it is also a home for more than 1 core people, so regular estimation of air quality is necessary. Air quality in Hyderabad drastically varies from location to location, but the overall quality of air remains within the normal range. So, in this paper air quality data for the year 2018 from 5 different industrial areas of Hyderabad are taken into consideration. Linear regression is used in this research paper for predicting Air Quality.

KEYWORDS: Linear regression, Air Quality Index, Air Quality, Air Pollution

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Implementing A Deep Learning Model For Traffic Flow Prediction

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Abstract

In our contemporary society, more and more complex tasks are being solved using Convolutional Neural Networks (CNN). Because CNN's are known for their high recognition rate and rapid execution. In this paper, we propose an implementation of a traffic flow prediction model using a deep learning-based Convolution Neural Network. Several well-known architectures available to predict traffic flow accurately are also analysed and presented in this paper. Here, the neural network is trained using the "Keras" library and heavily parallel architecture for CUDA. The entire procedure for traffic flow prediction is executed in real-time on a mobile GPU. The experimental results proved the high efficiency of the developed model.

Keywords: Deep Learning, CNN, traffic flow prediction, Keras, mobile GPU, CUDA.

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SQL Vs Blockchain

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Abstract

Bitcoin, the first and most popular cryptocurrency. Blockchain technology, the technology behind the success of Bitcoin is a distributed, decentralized and secure system that stores every bitcoin transaction over the network. Both commercial and academic domains have embraced the technology for its distinct features. It is identified as the Internet of Value(IoV) where the valuable assets can be transmitted as information in a secured way. Blockchain stores everyday transactions and has more operational data which is an OLTP system. Applying data analytical queries over a blockchain is not effective. To overcome this issue, in this paper, an approach for storing the blockchain data over SQL databases for easy and quick access is presented. A detailed analysis of the blockchain database and how SQL can be adopted in improving the performance of the querying process is also discussed.

Keywords: Blockchain, Internet of Values(IoV), OLTP, SQL queries

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Web 3.0: A Systematic Study of the Decentralized Internet from a Crypto Perspective

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Abstract

Technologies come and go regularly but few cause a widespread effect, be it positive or negative. Web 3.0 is one such innovation that aims to decentralise every aspect of the Internet, eliminating the need for corporations that run the world. The evolution of the Web from being "read-only" to "executable" has brought a lot of changes in the way humans interact/communicate with machines. Every computer on the network is considered a node and as per the requirements, even a single computer can be called a server. Web 3.0 will change the way we work and collaborate, ensuring global connectedness. With Web 3.0 being open, trustless and permissionless, limitless things can be achieved because of lesser restrictions unlike Web 2.0. The metaverse bridges the gap between the physical and virtual worlds, making it more fun and interactive for the users. Other applications like DeFi, DAO, smart contracts are widely being used and are gaining popularity each passing day. Apart from being popular, they are giving effective results, making them a few of the largest components of the blockchain technology that we know today. The extreme amounts of computational power being expended on a blockchain are deemed to be unsustainable but measures are being taken to reduce the effect caused by blockchain on the climate.

Keywords: Web 3.0, trust-less, permission-less, blockchain, computation.

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Implementing A Deep Learning Model For Traffic Flow Prediction

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Abstract

In our contemporary society, more and more complex tasks are being solved using Convolutional Neural Networks (CNN). Because CNN's are known for their high recognition rate and rapid execution. In this paper, we propose an implementation of a traffic flow prediction model using a deep learning-based Convolution Neural Network. Several well-known architectures available to predict traffic flow accurately are also analysed and presented in this paper. Here, the neural network is trained using the "Keras" library and heavily parallel architecture for CUDA. The entire procedure for traffic flow prediction is executed in real-time on a mobile GPU. The experimental results proved the high efficiency of the developed model.

Keywords: Deep Learning, CNN, traffic flow prediction, Keras, mobile GPU, CUDA.

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Fusion of MRI and CT Brain Images by Independent Component Analysis

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Abstract

Image fusion is the task of enhancing the image by combining two images into a single image, the resultant image contains important features. The resultant image contains more information when compared to the two images. Independent Component Analysis (ICA) is a computational method for separating a multivariate signal into additive subcomponents supposing the mutual statistical independence of the non-Gaussian source signals. Through this method, we can achieve a better view of functional and structural parts in MRI and CT images. Different fusion methods of ICA are described that includes maximum absolute, regional-based, weighted base, mean based, adaptive fusion. The fusion algorithm is used to calculate the Peak Signal Noise Ratio (PSNR) and Root Mean Square of the fused image.

Key Words: Independent Component Analysis, Peak Signal Noise Ratio, Root Mean Square

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Forecasting Flight Delays with Error Reckon using Machine Learning Classifiers

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Abstract

Flight delay is a major problem in the aviation sector. During the last two decades, the growth of the aviation sector has caused air traffic congestion, which has caused flight delays. Flight delays result not only in the loss of fortune also negatively impact the environment. Flight delays also cause significant losses for airlines operating commercial flights. Therefore, they do everything possible in the prevention or avoidance of delays and cancellations of flights by taking some measures. In this paper, using machine learning models such as Logistic Regression, Decision Tree Regression, Bayesian Ridge, Random Forest Regression and Gradient Boosting Regression we predict whether the arrival of a particular flight will be delayed or not.

Key word: Logistic Regression, Decision Tree Regression, Bayesian Ridge, Random Forest Regression, Gradient Boosting Regression.

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Cooperative Navigation for Multi-Robots in Unknown Environments Using Hybrid Jaya-DE Algorithm

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Abstract

Since its inception robotics has emerged as a major scientific discipline, extensive research has led to several developments in the past decades to improve its efficiency. The robot navigates from its predefined starting positions to the designed goal positions to perform the desired tasks as assigned by the end-user. Safe navigation in addition to attaining the shortest path is of prime concern in the problem of interest. Significant effort has been made in the early research work to make robots intelligent via several algorithms to address the concern. The proposed algorithms do not substantiate solutions of interest in the case of multi-robot path planning. Furthermore, the inevitability of achieving path smoothness as well as minimizing energy requirements has made the present problem more complex. Therefore, there is a need of searching for some computationally stable algorithms that can provide the desired solutions with a less computational burden. The emerging of meta-heuristic approaches has made it possible of solving numerous complex engineering optimization problems because of some positive attributes such as 1. Simple; 2. Easy to implement; 3. Robust; and 4. Computationally stable. The need of the present scenario is to figure out some meta-heuristic approaches whose architecture resembles the multi-robot path planning problem. To achieve this, an efficient navigation controller embedding a hybrid Jaya-DE algorithm has been proposed to obtain an optimum path of the individual robot. The efficiency of the proposed navigation controller is evaluated through simulation. The outcomes of the simulation reveal the efficacy of the suggested controller in monitoring the robots towards achieving a safe and optimal path. The strength of the suggested controller is further verified with a similar problem framework. The potency of the proposed controller can be seen from the outcome in resolving the navigation of mobile robots as compared to its competitor.

Keywords: Multi-robot Navigation, waypoints, Jaya algorithm, Differential Evolution, V-Rep, Pioneer-P3dx

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Automated TSR Using DNN Approach for Intelligent Vehicles

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Abstract:

Traffic Sign Recognition (TSR) system has become an indispensable component for intelligent vehicles. The primary focus is to develop an efficient DNN with a reduced number of parameters to make it real-time implementable. The architecture was implemented on GTSRB. Four variations of Neural network architectures; Feed Forward Neural Network (FFNN), Radial Basis Function NN (RBN), Convolutional Neural Network (CNN), and Recurrent Neural Network (RNN) are designed. The various hyper-parameters: Batch Size, Number of epochs, Momentum, Initial Learning Rate of the architectures, are tuned to achieve the best results. Extensive experiments are performed to study and improve the effects on efficiency. The effects of other techniques such as validation split (0.1 and 0.2) and data augmentation are also investigated. All results are tabulated to learn the effects of different techniques. The best performing model was selected as the real-time implementable architecture of our research. Four pre-trained models, namely LeNet, GoogleNet, ResNet, and AlexNet, were also implemented on the same database for comparative studies. Various other schemes of other researchers have also been provided. The comparative studies prove the supremacy of our proposed architecture.

Keywords: Traffic sign recognition, DNN, Validation split, Pre-trained models, Neural network

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Car Buying Criteria Evaluation Using Machine Learning Approach

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Abstract

People in the modern world are looking for a lifestyle that is fast and easy. In the field of transportation, people have invented cars and these cars are almost seen to be owned by everyone and one is trying to purchase one. Each of these cars has different features and based on these features, people try to analyze the move towards purchasing it. Hence, in this research work, the author builds a classification model that classifies whether a customer is going to buy a car with specific features. This research work is consisting of four machine learning models with their result analysis. These classifying models are Gaussian Naïve Bayes, Decision Tree, Karnough Nearest Neighbors and Neural Networks. We also try finding the best hyper-parameter value to obtain the best result from these models. These results are used to compare the accuracies of every model and decide the best model to be used in real-time prediction. Here, the author was predicting whether a customer is going to buy a car or not buy a car with particular features available in it. Hence, for this prediction, the best accuracy we get is 97.4% which is given by the Decision Tree classifier. Also, the neural network gives around the same accuracy for the prediction. Therefore, this Machine Learning model can be used by the firm whether a new car with specific features will be sold in good quantity or not or by a customer to know whether a particular car is bought by other customers as well.

Keywords: Cars, classification model, Gaussian Naïve Bayes, Decision Tree, Karnough Nearest Neighbors, Neural Networks, Hyper-parameter.

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Categorization Model for Parkinson's Disease Occurrence and Severity Prediction

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Abstract

Machine learning and AI centre on empowering PC programs naturally to build their exhibition at certain undertakings through old experience. Healthcare is one of a zone where the utilization of AI can be exceptionally useful. This work depicts the investigation of a few AI procedures for medical healthcare. There is one region, which centres on quick pace improvements which promises outcomes as well as expand the ease of use, it is AI. AI answers a large number of the old and new healthcare difficulties; AI is comprehensively examined by different scientists and medical professionals. In any case, this field is exceptionally basic and, in any event, healthcare provides wide application. Here, this part introduces a review of healthcare and how AI can be utilized to help diagnose.

In the case of medical diagnosis, many information-based frameworks are utilized to computerize various activities. For physical impairment-based diseases such as Parkinson's disease, models are generated using gazettes, questionnaires, surveys, puzzles, activities etc. These Knowledge-based frameworks can collaborate with AI and machine learning techniques. AI calculations help in mechanizing the tedious procedure of information assembling that is fundamentally for the improvement of the information-based framework.

Machine learning and AI empowers PC programs consequently to expand their presentation for certain assignments through old information. This field is generally identified with measurable derivation and example acknowledgement. A decent effect of research in AI is centre around characterization, the activity of model advancement, from a lot of recently ordered models, which can accurately sort new models from the equivalent dataset.

Parkinson disease (PD) is most typical to handle and irreparable loss cannot be recovered just by medication. Even severity of the same can damage the person and quality of life degrades drastically. Early diagnosis of Parkinson's will be helpful for the elderly person. If examined later this ailment can become hopeless. Henceforth, evaluating the illness at an early stage is critical. Diagnosis of the disease can be done using three major activities. Motor movement, behaviour and Voice impairment. This chapter introduces the investigation for the finding of Parkinson's diagnosis using different ML (Machine Learning) for categorization and severity prediction through the measure of 16 voice and 8 kinematic feature information accomplished from various archives. The data set includes 40 people with Parkinson's disease and healthy patients generated with the help of spiral drawings and voice readings. Various machine learning algorithms estimate, including the highest accuracy (94.87 percent) demonstrated by ANN, while Naïve Byes has indicated the least precision (79.49%). The work also predicted severity scores by suggesting some scientific measures with a prototype dataset.

Keywords: Voice dataset, Kinematic features, Parkinson's disease, SVM, ANN, Random Forest.

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Impact of Optimized Segment Routing in Software-Defined Network

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Abstract

Software Defined Network (SDN) tends to provide an agile and flexible network. Segment Routing (SR) protocol uses a source to receiver sensible way and is made out of a succession of fragments as a compelling routing procedure. Each section is spoken to by a centre point. Combining the SR and SDN can result in the separated requirements of clients and can rapidly send applications. In this research chapter, the authors have tried to explain the impact of SR in SDN. For this, authors have implemented two algorithms known as Multi-Objective Particle Swarm Optimization (MOPSO), Advance MOPSO (A-MOSPO) and Minimum Interference Routing Algorithm (MIRA) on a Waxman Network Topology created randomly having 100 nodes. For performance evaluation, MATLAB and the parameters such as throughput, link utilization, and delay have been taken as the key parameter for evaluating these above protocols in the SDN environment.

Keyword: SDN, MOPSO, A-MOPSO, MIRA, SR

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PSO based Hybrid Weighted k-Nearest Neighbor Algorithm for Workload Prediction in Cloud Infrastructure

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Abstract

Elasticity in Cloud Infrastructure is used to take huge computation and repository demands effectively. Since the load in cloud environments varies from time to time that will be the obstacle to providing guaranteed Quality of Service (QoS) to end-users. The workload prediction in cloud environments improves the proper utilization of resources and service level agreement at a stable level. Hence, Particle Swarm Optimization (PSO) based Hybrid Wavelet Weighted k-Nearest Neighbors (PHWkNN) algorithm is proposed to predict workload in Cloud Data Centre. This algorithm combines Wavelet Transform with a Weighted kNN algorithm and seeing weights to get better accuracy of workload prediction. PSO algorithm is utilized as a Parameter Optimization algorithm to find the best possible values for the parameters in HWkNN model. The leave One Out Cross-Validation (LOOCV) method is adopted to validate the accuracy of the proposed model. In addition, it helps to adjust the weight value of the proposed algorithm and avoid premature convergence concurrently. However, Google CPU and Memory workload dataset are used to assess the accomplishment of the proposed algorithm. The evaluation outcomes demonstrate that PHWkNN algorithm is better than ANN and KSVR algorithms in the accuracy of the workload prediction.

Keywords: Cloud Infrastructure, k-Nearest Neighbor, Particle Swarm Optimization, Load Prediction, Wavelet Transform

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Development of Health Care System Using Soft Computing Methods

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Abstract

Real-world problems associated with the health care domain are dynamic and non-deterministic. Traditional analytics models are no longer effective for diagnostic processes and frequently require a large amount of computation time for decision making, which cannot be sustainable in a technology-driven world. Soft computing methods, such as neural networks, machine learning, fuzzy logic etc., not only deal with the existing environment but are also highly self-adaptive in terms of predicting and classifying new diseases that appear in the existing environment. As a result, these techniques are extremely beneficial and effective for use in the healthcare system.

Keywords: Erythemato Squamous Diseases, Soft Computing Techniques, Neural Networks, Ensemble

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Route Mapping of Multiple Humanoid Robots Using Firefly Based Artificial Potential Field Algorithm in a Cluttered Terrain

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Abstract:

The hybrid outcome of the Firefly Algorithm (FA) and Artificial Potential Field (APF) algorithm for humanoid control is preferred in the present study for navigational tasks. Initially, the APF algorithm is procured with sensory input concerning the barrier range in a different direction, source points, and respective targets that give an intermediate steering angle. It is then fed to FA to obtain the ultimate steering angle as an output. FA guides the robot close (safest distance) to the obstacle and optimizes the footsteps to provide a better path. Simulations and real-time experiments are carried out for the motion of multiple humanoids in a cluttered terrain. Humanoid robots can manoeuvre comfortably from source point to target using the preferred algorithm. In the system containing multiple humanoid robots, one robot behaves like a dynamic obstacle to the other humanoids, leading to a conflicting situation during navigation. This situation is eliminated by the implementation of the dining philosopher controller in the base algorithm. The simulation and experiment result shows a good relationship with a deviation of under 6 %. Finally, the established trajectory planning algorithm is also tested in contrast to the existing navigational model.

Keywords: Humanoid NAOs, Dinning philosopher controller, Artificial potential field, Firefly algorithm, Conflicting situation, Navigation.

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Sarcastic Sentiment Detection and Polarity Classification of Tweets Using Supervised Learning

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Abstract

Nowadays, due to the rapid growth in web technologies and internet usage, there is an enormous amount of data available in WWW and also growing progressively. The data includes online learning, exchanging ideas and opinions, etc. People are using social networking websites such as Twitter, Facebook, Instagram, Google+ as a common platform for all these. These platforms nowadays have become very popular as they permit people to share and exchange their views about any topics/events and have been considered by the researchers for sentiment analysis, opinion mining, text summarization, question answering etc. In this paper, we proposed an approach to classifying the tweets into sarcastic and non-sarcastic sentences. Initially, Twitter data is pre-processed and feature extraction is done that considers n-grams, POS tags, term position and frequencies. Further, the approach uses machine learning and deep learning algorithms for identifying sarcasm in tweets. Further, the classification algorithms such as Navy Bayes, Decision Tree, Random Forest and CNN's used to classify the polarities of non-sarcastic sentences. The experimental results are promising with good classification accuracy.

Keywords: sarcasm, Sentiment Analysis, Polarity, Classification, Tweets, CNN

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Skin Cancer Classification: Analysis of Different CNN Models Via Classification Accuracy

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Abstract

Skin cancer is the most common form of cancer, which can be best treated if detected early. The main objective is to apply deep learning neural networks to discover the relevant patterns which can help to guide the classification accurately. The paper has considered the well-known deep learning model that is the convolutional neural network and compared the accuracy of the model by applying a vast dataset by varying the parameters such as the number of layers, activation functions etc. to find the best suitable parameters for CNN to design the classifier that could give the best accuracy while classifying the images of the seven types of skin cancer. Lastly, the results achieved 84.31% accuracy in classification and also models where Resnet application, CNN model gave an accuracy of 99.22%.

Keywords: Skin cancer, CNN, Classification, Resnet, Deep learning

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Algorithmic Aspects of k-Secure Domination in Graphs

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Abstract

The theory of domination in graphs has good applications in wireless sensor networks, social networks and biological networks. Due to this, several new concepts such as independent domination, connected domination, restrained domination, etc. are studied. With this motivation, we define a new domination parameter called k-secure domination. A set $S \subseteq V(G)$ is a k-secure dominating set if $\forall\ S_1 \subseteq S$ with $1 \leq |S_1| \leq k$, $\exists\ S_2 \subseteq V(G) \setminus S$ such that $|S_1|=|S_2|$, $G[S_1 \cup S_2]$ has a perfect matching P with each edge of P has one end in S_1 and another end in S_2 and also $(S \setminus S_1) \cup S_2$ is a dominating set of G. The minimum cardinality of a k-secure dominating set in G is called k-secure domination number of G. In this paper, we give preliminary results related to this new parameter. We also study the computational complexity of k-Secure Domination (k-SDM) in some important graph classes.

Keywords: Secure domination, Securely connected domination, NP-complete, Corona product.

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Secure Connected Domination in Graphs: Revisited

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Abstract

Let $G = (V, E)$ be a simple, undirected and connected graph. A connected dominating set $S \subseteq V$ is a secure connected dominating set of G, if for each $u \in V \setminus S$, there exists $v \in S$ such that 11 $(u,v) \in E$ and the set $(S \setminus \{v\}) \cup \{u\}$ is a connected dominating set of G. The minimum size of a 12 secure connected dominating set of G denoted by $\gamma_{sc}(G)$, is called the secure connected domination 13 number of G. Given a graph G and a positive integer k, the Secure Connected Domination (SCDM) 14 problem is to check whether G has a secure connected dominating set of size at most k. In this paper, 15 we prove that the SCDM problem is NP-complete for undirected path graphs, a subclass of chordal 16 graphs. On the positive side, we give a polynomial-time algorithm to calculate secure connected 17 domination number of proper interval graphs. Moreover, we show that the connected domination 18 and securely connected domination problems are not equivalent in computational complexity aspects.

Keywords: Secure domination, Securely connected domination, NP-complete, Corona product. *2010 MSC:* 05C69, 68Q25

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An Empirical Analysis of Intrusion Detection in Cyber-Physical Systems using Machine Learning

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Abstract

In this digital period, the internet has turned into an indispensable wellspring of correspondence in just about every call. With the expanded use of system engineering, its security has developed to be an exceptionally discriminating issue as the workstations in distinctive associations hold very private data and touchy information. The system which helps in screening the system security is termed Network detection. Intrusion detection is to get ambushes against a machine structure. One of the vital tests to Intrusion Detection is the issue of misjudgement, misdetection and unsuccessful deficiency of steady response to the strike. In the past years, as the second line of boundary after firewall, the Intrusion Detection (ID) strategy has got a speedy progression. Two diverse Machine Learning techniques are prepared in this research work, which includes both supervised and unsupervised, for Network Intrusion Detection. Naive Bayes (supervised learning) and Self Organizing Maps (unsupervised learning) are the presented techniques. Deep learning techniques such as CNN is used for feature extraction. These remain provisional chances adaptation technique and pointer variables transformation. The two machine learning procedures are prepared on both kinds of transformed datasets and afterwards their outcomes are looked at with respect to the correctness of intrusion detection. The best Detection Rate (DR) was for the 93.0% User to Root attack (U2R) attack type and the most horrible result was displayed for Denial-of-Service attack (DOS) attacks with 0.02%.

Keywords Autonomous networks. Wireless. Security. Trust. Detection of Intrusion

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An Experimental Study of Vulnerability Assessment and Penetration Testing on Cyber-Physical Systems

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Abstract

Now a day's most people and organizations are depending on computer machines to store confidential information and transmit messages over the network. There is a chance of unauthorized access to confidential information by hackers. Vulnerability assessment and penetration testing is the most powerful service for auditing, reporting, information gathering and patches for web applications. Vulnerability assessment and penetration testing are two different approaches (internal and external) to assess the security behaviour of an information's network. This paper proposes a Nmap security assessment tool, it is a free and open-source utility for network discovery and security auditing. Nmap (Network mapper) uses raw IP packets in a novel way to determine the availability of hosts on the network infrastructure and it also includes the host discovery, TCP pings, ICMP messages and vulnerability analysis tools.

Keywords: Vulnerability assessment, Vulnerability exposures, Nmap, ICMP.

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Conceptual Understanding of Blockchain: Implications for Supply chain, Finance and Accounting

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Abstract:

Blockchain is a term widely used to represent a suite of technologies. Much like the early internet, blockchain has the potential to fundamentally change the way the industry works, causing a big paradigm shift in how money, goods and digital assets move around the world. Right from its initial use case as an underlying technology for various cryptocurrencies, it is now being used in a plethora of application domains. The biggest challenge here is to identify the application domains where –blockchain-based solutions would be a good fit. Blockchain technology will benefit areas where information is distributed and decentralized, information stored is time-sensitive, and the security of data is important. Given these challenges, the two areas that emerge as good candidates and could benefit greatly from the technology include – Supply Chain, and Finance and Accounting. All these domains generate thousands of transactions each day. All the transactions require some form of verification and auditing. This paper suggests how the use of blockchain technology could reconcile transactions at a lower cost and can also be used to generate immutable audit trails to create a better identity system to improve the tracking of goods. This paper proposes a framework of how leveraging the power of blockchain technology could enable businesses to perform *costless verification* and in the long run reduce the cost of running a secure network.

Keywords: Audit-trail, Blockchain, Costless-verification, Immutability, Reconciliation, Supply chain, Transactions.

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Blockchain Architecture, Challenges and Opportunities: A Survey

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Abstract

Blockchain has gathered massive momentum in the past few years and is called by many researchers the disruptive technology that could revolutionize the internet. On a high level, blockchains are distributed ledgers that store information in blocks that are chained together using some cryptographic scheme. Transactions need to pass through the collective consensus before they can be added to the ledger. The technology offers numerous benefits like anonymity, privacy, security and auditability. There exists a wide spectrum of applications that stand to benefit from blockchain, namely, cloud computing, social service, IoT, finance to name a few. As the technological landscape of blockchain is expanding, it is ever so important to understand the core technologies that the blockchain has to offer and understand how parties that do not trust each other maintain consensus on a set of global states. This research paper focuses on providing a high-level technical overview of the impact of the core technologies that make up the blockchain. We conduct a comprehensive survey on the architecture, challenges and opportunities associated with the technology in three dimensions: design trade-offs, performance gaps and data processing capability. We study the commercial, financial and technical aspects of the technology. Drawing from these insights, we discuss several research directions that will bring blockchain closer to mainstream adoption.

Keywords: Blockbench, Blockchain, Cryptocurrency, Security, Smart Contract

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Analysis of increased block size on Blockchain Systems

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Abstract

Blockchain is a type of distributed ledger that draws its components from core computer technologies, namely distributed computing, encryption algorithm and consensus protocols. A good blockchain-based system should allow easy and faster verification of transactions if it must evolve into a mainstream public verification system. The biggest challenge here is the challenge of system scalability. Scalability is a metric that refers to the ability of the system to increase or balance its performance depending upon the load and the processing demands on the system. The success of any blockchain-based application is dependent on the kind of consensus algorithm is deployed. Consensus determines the ordering of the blocks in the chain as well as the performance and security of the system. Scalability is inadvertently tied to the consensus protocol the blockchain runs on. This paper determines how scalability is influenced by consensus algorithms and how by improving the consensus protocols we can improve the performance of the system. We make use of nature-inspired algorithms to determine the link between block size and scalability and propose how increasing or decreasing block size can influence the scalability of the system.

Keywords: Blockchain, block size, Consensus Protocols, Nature-inspired algorithms, Scalability

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Middleware for Smart City using Docker Swarm

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Abstract

Smart cities consist of many producers and consumers/subscribers of data that require middleware to act as a broker between them. The smart city middleware is an enabling platform to facilitate the exchange of data between producers and consumers securely. One of the challenges in a smart city middleware is to scale it with the rising number of users. The goal is to propose and build a novel scalable architecture using the RabbitMQ message broker and study its various configurations. To address the scaling issue, this paper proposes the use of the Advanced Message Queuing Protocol (AMQP) proxies, which intelligently balance the load.

Keywords: Smart city, Middleware, Docker, AMQP

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Hybrid Digital Watermarking for Images

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Abstract.

From our studies on multiple image and colour image watermarking, we have concluded that sometimes the robustness is affected. That is, the number of robustness tests the watermarked grey image passes with flying colours is slightly more than the multiple or the colour watermarked image. Due to the much more practical applications of the colour and multiple images watermarking the number of robustness should test that these passes be as many as possible. With this and other aspects being taken into consideration we would like to develop a hybrid digital image watermarking algorithm using SVD and other transformation technique which is more robust and can be used for various applications like source-based and destination-based watermarking technique.

Keywords: Watermarking, SVD, Hilbert Transform

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Embedding Isolation and Blacklisting of Malicious Nodes in RPL for Efficient Security Management of IoT

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Abstract:

The constrained characteristics of devices in the Internet of Things (IoT) environment deters the implementation of robust security solutions. Consequently, intrusion of malicious nodes in IoT is a frequent phenomenon. Such malicious nodes often exploit the vulnerabilities of the underlying routing protocols to instigate several DDoS attacks. The IPv6 Routing Protocol for Low Power and Lossy Networks (RPL), popularly used in numerous IoT applications, is susceptible to several routing attacks. Various researchers have proposed mechanisms for detecting routing attacks and identifying malicious nodes in RPL-based IoT environments. However, the benefit of such mechanisms can only be harnessed when identified malicious nodes are quickly isolated from the IoT environment. Therefore, the removal of identified malicious nodes outweighs any other security measure. Malicious nodes, often located in remote locations, are difficult to dislodge at the earliest. This paper proposes to embed the isolation and blacklisting mechanism of suspected malicious nodes in the routing process itself. We propose upgrades in the existing RPL routing process to enable fair nodes to collaboratively weed out malicious nodes and restrict the spread of malicious activities in the IoT environment.

Keywords: RPL, Routing Security, Blacklisting, Isolating

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Mind Map-based Vulnerability Assessment of IPv6 Routing Protocol for Low Power & Lossy Networks

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Abstract

A Mind Map is a graphical representation of concepts and ideas that help in structuring and comprehending information. Mind Map facilitates better analysis and recall of information as well as the generation of new ideas. The motivation behind our proposed Mind Map-based Vulnerability Assessment of RPL is two-fold. First, the existing literature does not focus on partitioning attacks in RPL-based IoT-LLNs. Second, we need to explore the vulnerabilities associated with each step of the RPL routing process as it may aid in better preparedness for unknown or Zero-day attacks. A malicious actor can also exploit the vulnerabilities of the routing process, i.e., the steps involved in the topology formation. To this end, we examine the RPL routing process's vulnerabilities through the proposed Mind Map-based model. The Mind Map model examines the working of the RPL routing process in detail and explores the associated vulnerabilities. Based on the understanding gained from the vulnerability assessment models, we analyze the symptoms and impact of various routing attacks in RPL-based IoT-LLNs and define their threat models.

Keyword: RPL, IoT, Vulnerability Assessment, Mind Map

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Enhanced Attention based Network for Medical Image retrieval

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Abstract

In the field of biomedical imaging, there is a large increment in biomedical data because of the use of advanced techniques like X-ray, magnetic resonance imaging, computed tomography. This causes difficulty in managing and querying these large databases leading to the need of content based medical image retrieval (CBMIR) systems. A major challenge in CBMIR systems is the semantic gap that exists between the low-level visual information captured by imaging devices and high-level semantic information perceived by human. To solve this problem, an Enhanced Attention based Network for image reconstruction is proposed for medical image retrieval. Attention mechanism is used in the proposed network to suppress feature redundancy and enhance feature learning ability. The proposed method encodes the input image into a set of features using self-attention mechanism followed by up-convolution operation in the expansive path in decoder for reconstruction of the input image from the encoded features. The robust reconstruction of the input image from encoded features shows that the encoded features can be used as an abstract version of an input image. Average retrieval rate and average precision rate are used to evaluate the performance of proposed and existing state-of-the-art methods for medical image retrieval task with the help of three benchmark medical image databases.

Keywords: Self-Attention · Adversarial Networks· Image Reconstruction · Index Matching.

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Biomedical Image Retrieval Using Quantized Local Neighbourhood Patterns Using Sign and Magnitude

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Abstract

Image indexing and retrieval is still exploratory and, despite an improvement in the field of multimedia image retrieval, many challenges remain to increase the accuracy of the system. The proposed work introduces a new approach to improve accuracy of the medical image retrieval system by extracting more information from an image. Existing research primarily focuses on collecting the information from the pixels of whole image. Further, there is a little evidence that researchers have focused on the usage of magnitude to extract more texture information from the image. We present an integrative framework that collects more information from the image in an effective manner which is less sensitive to Gray level variations due to its discriminative information as well as more robust against illumination changes. Very specifically, two novel texture patterns for medical image retrieval system named Quantized local neighbourhood sign pattern (QLNSP) and Quantized local neighbourhood magnitude patterns (QLNMP) are proposed. QLNSP depends on the relative intensity difference and QLNMP uses the mean deviation calculated according to a preset threshold value for this purpose. As a result of unique method of extraction, proposed framework yields better results in medical image retrieval. Resultant descriptor is used for medical image retrieval on two databases (MRI, CT). Four types of distance metrics are employed to test the effectiveness of the proposed method. The proposed method. Robustness, efficiency of the proposed system is evaluated by means of Precision and Recall metrics.

Key words: Image retrieval, Quantization, Neighbourhood, Local patterns

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Smart Home Application for Visitor Face Detection Through SMS Notification

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Abstract

With the advancement of artificial intelligence, smart home security devices are widely used and become a necessity. Now-a-days machines are able to automatically verify identity of a person for secure transactions, surveillance and security tasks and for access control to buildings etc. Existing work uses Haarcascade for face detection which are prone to false positive detections. We are proposing a combination of HOG and SVM algorithm using Dlib libraries for face detection to recognize the visitors coming to house by displaying the name of the person and by sending an SMS alert about the visitor. Voice modules are embedded to alert the people about the visitor information through smart tv or smart phone. The proposed system is trained on a database of 250 images and videos of 50 families and tested on 180 images. Proposed system outperforms by giving better accuracy when compared to existing algorithms.

Keywords: Face detection, SVM, HOG,Open-C

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Application for Early Detection of Cardiac Diseases Based On Classification Algorithms

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Abstract

Over the last decade heart disease is the main reason for majority of the deaths in the world. Almost one person dies of heart disease about every minute in India alone. With the increasing number of deaths due to heart diseases, it has become mandatory to develop a system to predict heart diseases effectively and accurately. This study compares the accuracy score of Decision Tree, Logistic Regression, Random Forest, SVM, K-Neighbours and Perceptron algorithms for predicting heart disease using UCI machine learning repository dataset. The result of this study indicates that the Perceptron algorithm is the most efficient algorithm with accuracy score of 81.967% for prediction of heart disease. The existing data of heart disease patients from Cleveland database of UCI repository is used to make a test and clearance to the performance of decision tree algorithms. These datasets consist of 303 instances and 76 attributes. The dataset for this project is automatically taken from the raw value of the heart pulse sensor and it also used some manually given data. In the proposed work, we noticed that the raw data from the sensor actually increases the accuracy of the model. In the proposed work, we develop a web application based on the Perceptron algorithm using a larger dataset which helps the health professionals in predicting the heart disease effectively and efficiently.

Keywords: Machine Learning, AI algorithms, Heart Attack, Heart Disease, Cleveland Dataset, Smart monitoring system

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A Secure Novel Cloud Framework for Personal Healthcare Records

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Abstract

The Personal Healthcare Record (PHR) allows the patients or other authorized persons to accomplish their own medical records in a centralized way, and it (PHR) appears as a patient-centric model which helps in the health information interchange. The PHRs can be deposited in the server maintained by the hospital/clinic or other trusted third-party including cloud providers. However, the data must be secure in the server. To provide security cryptographic service may be the solution. However, encryption and decryption of all the PHRs may degrade the processing performance of the system. So, we have proposed a novel framework that provisions the data in two domains. One is public domain and another is private. The PHRs in the private domain needs more security than the public domain. The data (PHRs) of the private domain is further classified according to their class of sensitivities and provided security according to the sensitivity levels. This leads to the enhancement of the processing performance of the system.

Keywords - PHR, security, suite, classification, sensitivity

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Sentiment Analysis for Segregation of Reviews Using Machine Learning Algorithm

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Astract

With the advent of the World Wide Web and its ease of access to the general public, people who used to be dependent on word of mouth to get an opinion or review of products are now turning to the web for the same. This project, as the title suggests, aims towards the Segregation of Positive and Negative Reviews that we come across in our day to day lives on internet and help the consumers derive a non-ambiguous idea about the product, using the concept of Sentiment Analysis in Machine Learning. In the modern world, with so many options and varieties around us in each and every domain and category, it seems to have become a tough call for us to make a choice, be it shopping from a particular brand or deciding on a restaurant to go to for a family lunch. However, Internet, on the other hand, is what makes these choices easier for us. Thousands and Lakhs of reviews that people leave on the internet today about a particular experience, serve as a deciding factor for other people to make a choice. These reviews can be directed directly towards the brand/experience or through a third party website/application, like Google and Zomato. The Model developed under this project will use the concept of Sentiment Analysis and help Segregate the reviews and distinguish between the Positive and the Negative ones, thereby assisting in an easier rating of the reviewed object and helping the viewer get an easier, summarized version of the reviews. The dataset has been created by collecting reviews of a restaurant which were obtained from Kaggle. Next, the data was pre-processed using Natural Language Processing (NLP) which was followed by Model Training using various concepts such as Bag of Words, CountVectorizer, Stopwords etc. The algorithm used is the Naïve Bayes algorithm. Finally, the model was tested to check the accuracy of Model.

KEYWORDS: Machine Learning, Segregation, Reviews, Sentiment Analysis, NaïveBayes.

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Robustness Indices of 3R and 4R Planar Serial Manipulators with Fixed Actuation Scheme

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Abstract

The applications of automation and robotic manipulators are evidently increasing due to many advantages; this paper presents the planar serial manipulator performance analysis. There are many performance indices to explain the suitability and selection of manipulators, in this analysis, the Robustness index-I and Robustness index-II are considered for 4R and 3R manipulators. The 4R and 3R planar serial manipulator is taken in planar condition as the moment is restricted to a single plane. The 4R and 3R manipulators have all joints with revolute type in nature and the actuators are arranged at the fixed base joint; the manipulators are provided with base actuation which is fixed. The link lengths of the manipulator are varied in different ratios and the performance evaluation is conducted; these indices are calculated with the help of the Jacobian Matrix. Direct kinematic relations were used to generate the Jacobian Matrix.

Keywords: Performance measures, Serial manipulators, Robustness Index-I, II and Different kinematic link lengths

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Applications of Artificial Intelligence in Robot manipulators –Review

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Abstract

Our society is undergoing several technological changes. In just a couple of decades, it will be entirely different from what it is today. One important factor that affects and transforms various aspects of everyday life is the rapid growth of the artificial intelligence and robotics industry. Scientists, industry adepts and ordinary people all express multiple viewpoints about the potential outcomes of the constant Artificial Intelligence and robotics expansion. Artificial intelligence (AI) and robotics, collectively, is the enhancement and imitation of human pursuit and behavior to increase efficiency or output. Driven vastly by technological advancements and a rise in implementation and demand, these prospering fields have both gained a lot of attention in the past few years. However, their underlying sciences have been in development for years. What is most enthralling today is, the intersection of these two fields, where advancements in both AI and robotics depend on each other, erecting a multiplier effect on this intersection.

Keywords: Artificial Intelligence, Robotics, Technological Advancements, Scientists, Applications, Human Pursuit, Efficiency.

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Water Evaporation Optimization Based PI Speed Controller for Direct Torque Control of Induction Motor

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Abstract

This paper presents the use of the modern heuristic optimization technique Water Evaporation Optimization (WEO) for tuning the PI speed controller in senseless Direct Torque Control(DTC) of induction motor. The optimization is designed to improve the speed response of the induction motor, subjected to step-change in reference speed. The performance of the WEO optimization is compared with conventional PI and particle swarm optimization (PSO) based optimized PI controllers. The PI controller is optimized with objective functions for minimization of Peak Overshoot, settling time of speed response subjected to step input. The comparative performance of the tuned PI Controller is analyzed using standard stability analysis using Integral time square error (ITSE) and Integral absolute error (IAE). The simulation model of sensorless DTC of induction motor is developed using Matlab/Simulink environment. The WEO and PSO algorithms are developed in Matlab editor to develop the optimized values of KP and KI of the Speed Controller of DTC.

Keywords: Direct Torque Control (DTC), Induction Motor, PI controller Optimization, particle swarm optimization (PSO) Water Evaporation Optimization (WEO).

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Real Time Smart Parking System Using Internet of Things (IoT)

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Abstract

Internet of Things (IoT) as referred to plays a vital role in the day-to-day routine of every individual. It is eminent in every aspect of human life. The paper gives an IoT based smart parking system as the latest technology, we also talk about the use of IoT for smart parking system. A smart parking system is the need of the hour as the idea of smart cities is on its boost. Utilizing the spaces, effective handling of traffic and exploiting resources in their best is what our paper focuses upon. In past years, works have been done on smart parking systems making it an even smarter system, where researchers have done and still working to create a system that is not technologically savvy but also user friendly. This paper proposes a design of IoT Based Smart Parking System where it helps the users to reserve and find parking slots using Android applications and Web Applications. This project is aimed to create a system that helps people with personal vehicles to find parking easily in selected areas. Both software and hardware platform have been developed in this system.

Keywords: IoT, Smart city, Smart systems, Mobile app.

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Bernstein Multiplicity of Local Cohomology Modules

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Abstract

Let K be an algebraically closed field of characteristic zero and let $R = K[X_1,...,X_n]$. Let $A_n(K)$ be the nth Weyl algebra over K and N be a left $A_n(K)$ module. The de Rham cohomology modules $H^*(\partial;N)$ are in general only K-vector spaces. As a result, due to Bernstein de Rham cohomology modules are finite-dimensional K vector spaces if N is holonomic. Let I be an ideal in R. Let $H_I^i(R)$ denote the local cohomology module of R for ideal I. As a result of Lyubeznik, the local cohomology modules $H_I^i(R)$ are holonomic $A_n(K)$-modules for each $i \geq 0$. In this paper, we compute the Bernstein multiplicity of $H_I^i(R)$ for certain classes of ideals I in R.

Keywords: local cohomology, associated primes, D-modules, Koszul homology, Bernstein multiplicity

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Growth of Hilbert coefficients of Syzygy modules

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Abstract

Let $(A,\mathfrak{m})$ be a local complete intersection ring of dimension d and let I *will* be an $\mathfrak{m}$ primary ideal. Let M be a maximal Cohen-Macaulay A−module. For $i = 0,1,2,3,\cdots,d$ let $e^I_i(M)$ denote the ith Hilbert-coefficient of M with respect to I. A result due to Tony, the function $j \mapsto e^I_i(Syz^A_j(M))$ is of quasi-polynomial type with period 2, for $i = 0,1,2$. Let $G_I(M)$ be the associated graded module of M with respect to I. If $G_I(A)$ is Cohen-Macaulay and $dim(A) \leq 2$ he also proved that the function $j \mapsto depth G_I(Syz^A_{2j+i}(M_{}))$ are eventually constants for $i = 0,1$. As the Syzygy modules over a complete intersection ring possess many nice properties. This motivates us to further investigate the nature of Hilbert coefficients Syzygy modules.

Keywords: Hilbert function, Hilbert-coefficients, Syzygy Modules, Complete intersection rings.

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Detecting Fake Accounts on Social Media Using Recurrent Neural Networks

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Abstract

In the present generation, On-Line social networks (OSNs) have become increasingly popular, which impacts people's social lives and impel them to become associated with various social media sites. Social Networks are the essential platforms through which many activities such as promotion, communications, agenda creation, advertisements, and news creation have started to be done. Adding new friends and keeping in contact with them and their updates has become easier. Researchers have been studying these online social networks to see the impact they make on people. Some malicious accounts are used for purposes such as misinformation and agenda creation. Detection of malicious accounts is significant. The methods based on machine learning were used to detect fake accounts that could mislead people. The dataset is pre-processed using various python libraries and a comparison model is obtained to get a feasible algorithm suitable for the given dataset. An attempt to detect fake accounts on social media platforms is determined by various Machine Learning algorithms. The classification performances of the algorithms Random Forest, Neural Network and Support Vector Machines are used for the detection of fake accounts.

Keywords: Security, Privacy, Machine learning, Fake Account, Activity Analysis, Neural Networks, social media

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Detecting Phishing Websites Using Deep Learning

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Abstract

Phishing attacks target vulnerabilities that exist in systems due to the human factor. Many cyberattacks are spread via mechanisms that exploit weaknesses found in end-users, which makes users the weakest element in the security chain. The phishing problem is broad and no single silver-bullet solution exists to mitigate all the vulnerabilities effectively, thus multiple techniques. Detection of Phishing websites is an intelligent and effective model that is based on using classification or association Data Mining algorithms. These algorithms were used to identify and characterize all rules and factors to classify the phishing website and the relationship that correlate them with each other so we detect them by their performance accuracy, several rules generated and speed. The proposed system implements both algorithms which are Classification that optimizes the system which is more efficient and faster than the existing system. Phishing is one of the most common and most dangerous attacks among cyber-crimes. These attacks aim to steal the information used by individuals and organizations to conduct transactions. Phishing websites contain various hints among their contents and web browser-based information. The purpose of this study is to perform Extreme Learning Machine (ELM) based classification for 40 features including Phishing Websites Data in the UC Irvine Machine Learning Repository database.

Keywords: Random forest, Artificial Neural Network(ANN), URL, browser extension, machine learning, phishing websites, phishing features

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An experimental Study on Optimal Semi-Partitioned Scheduling in SRT Systems

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Abstract

Semi-partitioned real-time scheduling algorithms extend partitioned ones by allowing a (usually small) subset of tasks to migrate. The first such algorithm to be proposed was directed at soft real-time (SRT) sporadic task systems where bounded deadline tardiness is acceptable. That algorithm, called EDF-fm, has the desirable property that migrations are boundary-limited, i.e., they can only occur at job boundaries. However, it is not optimal because per-task utilization restrictions are required. In this work, a new optimal semi-partitioned scheduling algorithm for SRT sporadic task systems is proposed that eliminates such restrictions. This algorithm, called EDF-os, preserves the boundary-limited property. In overhead-aware schedulability experiments presented herein, EDF-os proved to be better than all other tested alternatives in terms of schedulability in almost all considered scenarios. It also proved capable of ensuring very low tardiness bounds, which were near zero in most considered scenarios.

Keywords: Semi-Partitioned, Soft Real-Time, Real-Time Scheduling, EDF

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Real-Time Operating System Support for Multicore Applications: A Survey

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Abstract

Modern multicore platforms feature multiple levels of cache memory placed between the processor and main memory to hide the latency of ordinary memory systems. The primary goal of this cache hierarchy is to improve average execution time (at the cost of predictability). The uncontrolled use of the cache hierarchy by real-time tasks may impact the estimation of their worst-case execution times (WCET), especially when real-time tasks access a shared cache level, causing contention for shared cache lines and increasing the application execution time. This contention in the shared cache may lead to deadline losses, which is intolerable particularly for hard real-time (HRT) systems. Shared cache partitioning is a well-known technique used in multicore real-time systems to isolate task workloads and to improve system predictability. Presently, the state-of-the-art studies that evaluate shared cache partitioning on multicore processors lack two key issues. First, the cache partitioning mechanism is typically implemented either in a simulated environment or in a general-purpose OS (GPOS), and so the impact of kernel activities, such as interrupt handlers and context switching, on the task partitions tend to be overlooked. Second, the evaluation is typically restricted to either a global or partitioned scheduler, thereby failing to compare the performance of cache partitioning when tasks are scheduled by different schedulers. Furthermore, recent works have confirmed that OS implementation aspects, such as the choice of scheduling data structures and interrupt handling mechanisms, impact real-time schedulability as much as scheduling theoretic aspects. However, these studies also used real-time patches applied into GPOSes, which affects the run-time overhead observed in these works and consequently the schedulability of real-time tasks. Additionally, current multicore scheduling algorithms do not consider scenarios where real-time tasks access the same cache lines due to true or false sharing, which also impacts the WCET. This work addresses these aforementioned problems with cache partitioning techniques and multicore real-time scheduling algorithms. The results show that by simply assigning tasks that shared cache partitions to the same processor, it is possible to reduce the contention for shared cache lines and to provide HRT guarantees. Finally, a two-phase multicore scheduler that provides HRT and soft real-time (SRT) guarantees is proposed. It is shown that by using information from hardware performance counters at run-time, the RTOS can detect when best-effort tasks interfere with real-time tasks in the shared cache. Then, the RTOS can prevent best-effort tasks from interfering with real-time tasks. The results also show that the assignment of exclusive partitions to HRT tasks together with the two-phase multicore scheduler provides HRT and SRT guarantees, even when best-effort tasks share partitions with real-time tasks.

Keywords: Real-time operating systems, multicore real-time scheduling, task partitioning, shared cache memory partitioning.

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An Intelligent COVID-19 Classification Model Using Optimal Grey-Level Co-Occurrence Matrix Features with an Extreme Learning Machine to Investigate the Diagnostic Value and Consistency of Chest CT

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Abstract

An outbreak of coronavirus disease 2019 (COVID-19) infection began in December 2019 in Wuhan, the capital of central China's Hubei province. Although the virus likely has a zoonotic origin related to the city's Huanan Seafood Market, widespread human to-human transmission has resulted in 73 451 cases in 26 countries, with 1875 deaths as of February 18, 2020. The disease was first reported in the United States on January 20, 2020, and the total number of cases in the United States has reached 15 as of February 17, 2020. The most common clinical symptoms at presentation are fever and cough in addition to other nonspecific symptoms including dyspnea, headache, muscle soreness, and fatigue. About 20% of cases are severe, and mortality is approximately 3%. The World Health Organization declared a global health emergency on January 30, 2020. In this retrospective study, chest CT scans from 121 symptomatic patients infected with coronavirus disease 2019 (COVID-19) from four centers in China from January 18, 2020, to February 2, 2020, were reviewed for common CT findings in relation to the time between symptom onset and the initial CT scan (ie, early, 0–2 days [36 patients]; intermediate, 3–5 days [33 patients]; late, 6–12 days [25 patients]). The hallmarks of COVID-19 infection on images were bilateral and peripheral ground-glass and consolidative pulmonary opacities. Notably, 20 of the 36 patients (56%) imaged in the early phase had a normal CT scan. With a longer time after the onset of symptoms, CT findings were more frequent, including consolidation, bilateral and peripheral disease, greater total lung involvement, linear opacities, crazy-paving pattern, and the reverse halo sign. Bilateral lung involvement was observed in 10 of the 36 early patients (28%), 25 of the 33 intermediate patients (76%), and 22 of the 25 late patients (88%).

Keywords: COVID-19; disease diagnosis; feature extraction; classification; deep learning.

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Hybrid Genetic Algorithm and Machine Learning Framework for COVID-19 Detection from Cough Signals

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Abstract: With many successful applications, Artificial Intelligence (AI) has been seen in our everyday lives in a variety of ways. Nowadays with the COVID-19 outbreak and due to the extreme economic and health effects of this disease, many scholars try to utilize Machine Learning (ML) techniques to control the spread of the disease using various scenarios. AI has proven effective and powerful in combating the spread of the disease. The preliminary diagnosis of the COVID-19 from the cough sound is one of the successful scenarios of employing ML techniques in fighting the disease. With the help of ML, the COVID-19 diseases can be diagnosed by performing a differential analysis for the sound of the cough of an infected person and comparing it to a cough of non-COVID-19. Therefore, this paper proposes a hybrid framework for efficiently COVID19 detection and diagnosis using various ML algorithms from cough audio signals. The accuracy of this framework is improved with the utilization of the Genetic algorithm with the ML techniques. We also assess our system for diagnosis on metrics such as precision, recall, F-measure. The results proved that the hybrid (GA-ML) technique provides superior results based on different evaluation metrics as compared with different ML approaches. The proposed framework will efficiently help the physicians in providing a proper medical decision regarding the COVID-19 analysis thereby saving more lives.

Keywords: COVID-19, AI, GA-ML technique, Cough audio signals, Classification.

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An Adaptive Flying Sparrow Search Algorithm

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Abstract

Currently, intelligent optimization algorithms are favoured by researchers. The sparrow search algorithm has better-searching ability than other algorithms, but it still has the drawbacks of trapping into local extremes and relying on population initialization. To compensate for these shortcomings, we present an adaptive flight sparrow search algorithm (ALSSA). First, the tent mapping based on random variables is used to initialize the population, which makes the individual position distribution more uniform, enlarges the workspace, and improves the diversity of the population. Then, in the discoverer stage, the adaptive weight strategy is integrated with the Levy flight mechanism, and the fusion search method becomes extensive and flexible. Finally, in the follower stage, a variable spiral search strategy is used to make the search scope of the algorithm more detailed, which improves the convergence accuracy of the algorithm. The improved algorithm ALSSA is verified by 18 standard test functions and the Wilcoxon rank-sum test. At the same time, ALSSA is applied to robot path planning. The feasibility and practicability of ALSSA are verified by comparing the algorithms in the two models' raster map planning routes. Although ALSSA can make up for some of the deficiencies of the optimization algorithm, it still has some shortcomings and needs further study in the future.

Keywords: Sparrow search algorithm; Random variable; tent mapping; Adaptive weights; Levy flight; Robot path planning

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An Extensive Survey on Bankruptcy Dataset

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Abstract

Prediction of bankruptcy is an active area for research that is associated with the state of insolvency where a company or a person is unable to repay the creditors the debt amount. Up to now, so many statistical and machine learning-based models have been introduced for bankruptcy prediction. The pre-processing phase is an important step to enhancing the performance of the model. Thus, one needs to choose effective pre-processing techniques which can be more suitable for the data set considered. However, this paper focused on both the model, specifically, ensemble models for classification to address how new improved models are developed by combining two or more simple developed techniques and pre-processing techniques to address the imbalanced nature of the data and outlier if any present in the data. In most of the papers, the authors make some comparisons to show up the performance of their models with some other previously developed models. Here, from the survey, the paper concludes that the pre-processed datasets give better prediction outcomes and it also proved that the ensemble models are more powerful for bankruptcy prediction as compared to the single models.

Keywords: Prediction, Bankruptcy, Pre-processing

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Distributed Ledger Technology in the Construction Industry using Corda

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Abstract

The population of the entire world has been increasing steadily over the past decades. One of the most basic requirements for the survival of humans is a shelter that could be anything from a small hut to a luxurious skyscraper, ultimately giving the construction industry a major role in this process. In comparison to many other industries, the construction industry can be termed as one of the world's most fragmented sectors due to the scattered and complex supply chain. Furthermore, this complexity moves a step higher while keeping track of the various factors involved, like the clients, architects, contractors, material suppliers, etc. Also, the complex supply chain of the globally manufactured construction products has to be managed for the sake of meeting quality requirements and customer satisfaction. But the lack of accountability in the construction industry sometimes leads to various types of faults, delays, and even accidents at some stages. Keeping these main points in mind, this chapter introduces a key to this dispute with the help of Corda, a distributed ledger platform for permissioned networks, inspired by blockchain technology. This helps in maintaining transparency amongst the stakeholders involved in this industry, thus preventing any form of miscommunication.

Keywords: Construction Industry, Supply Chain, Corda, Distributed Ledger, Blockchain

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Hand Hygiene Monitoring and Compliance System Using Convolution Neural Networks

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Abstract

Hand hygiene monitoring and compliance systems play a significant role in curbing the spread of healthcare-associated infections and the COVID-19 virus. In this paper, a model has been developed using convolution neural networks (CNN) and computer vision to detect an individual's germ level, monitor their hand wash technique, and create a database containing all records. The proposed model ensures all individuals entering a public place prevent the spread of healthcare-associated infections (HCAI). In our model, the individual's identity is verified using two-factor authentication, followed by checking the hand germ level. Furthermore, if required the model will request sanitizing/ hand wash for completion of the process. During this time, the hand movements are checked to ensure each hand wash step is completed according to World Health Organization (WHO) guidelines. Upon completion of the process, a database with details of the individual's germ level is created. The advantage of our model is that it can be implemented in every public place and it is easily integrable. The performance of each segment of the model has been tested on real-time images.

Keywords: Convolution neural networks (CNN), Template matching, Optical character recognition (OCR), Frame extraction, Image processing, Hand hygiene.

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Smart Dustbin using Arduino

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Abstract

The main objective of the project is to design a smart dustbin that will help in keeping our current environment clean and also eco-friendly. We are inspired by the Swachh Bharat Mission. These days' technologies are getting smarter day by day thus, as to clean the environment. The paper presents the design of a smart dustbin by using Arduino. This smart dustbin management system depends on the microcontroller setup structure having ultrasonic sensors concerning the dustbin. In case the dustbin is not kept up then this can cause an unhealthy environment and can cause pollution that impacts our prosperity. In this proposed innovation we have planned a keen dustbin utilizing ARDUINO UNO, alongside ultrasonic sensor, servo engine, and battery jumper wire. After all hardware and programming affiliation, as of now, the Smart Dustbin program will be run. Dustbin lid will open when someone comes near at some range then wait for the user to put the garbage and close it. It's properly running or not. For society, it will help toward health and cleanliness, for business we try to make it as cheap as possible. So that normal people and rich people can benefit from it.

Keywords: Arduino, microcontroller, IOT, circuitry

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DESIGN, MATERIAL TUNING AND PROCESS OPTIMIZATION OF 3D PRINTING USING MACHINE LEARNING

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ABSTRACT

Additive manufacturing is a low-cost and superior quality manufacturing process when compared to other processes in batch and mass production. Design and manufacturing workflow has improved with the application of CAD/CAM. However, there are some issues that still persist is how to avoid printing objects that don't meet expectations and thus can't be used, leading to waste in materials and resources. An application of machine learning allows us to predict certain behaviors and properties based on a large amount of data set provided. In this article, we have reviewed a large amount of data available for the design, material tuning, and process optimization of 3D printing.

Keywords- *Machine Learning, 3D printing, Design, material tuning for Additive Manufacturing, Process Optimization.*

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RAPID PROTOTYPING TECHNIQUES FOR FABRICATION OF BIO SENSORS: A REVIEW

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ABSTRACT

The use and application of rapid prototyping techniques in the production of biosensors create a new era in transforming the sensor sector in the bio industry. The research is based on the understanding of micro-molding, extrusion, 3D printing, stereolithography, and xurography in the prototyping of microfluidic biosensors. In addition, it introduces performance and pattern methods for adding bio-element substances and transducers to biosensors. Finally, presenting the future trends in biosensors and the ongoing and emerging role of rapid prototyping methods in their development.

Keywords: *biosensors, rapid prototyping, 3D printing, inkjet, biomaterial, microfabrication.*

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HEAT AND MATERIAL FLOW IN METAL MATRIX COMPOSITES USING FRICTION STIR WELDING

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ABSTRACT

Welding technologies have been widely used in commercial and defense manufacturing industries for the joining of ferrous and non-ferrous metals. This is because of the high strength of the joints as compared to other joining methods, such as riveting, fastening, adhesive bonding, and so on. Conventional fusion welding processes such as GTAW, GMAW, and Laser have been widely used for joining aluminum and steel alloys. During fusion welding, heating, melting, solidification, and various solid-state transformations occur and these processes influence the microstructures and properties of the weldment. This paper focuses on the transformation of the metal matrix composites during FSW. The non-uniform heating and cooling during the welding process give rise to considerable in-homogeneity concerning strength and ductility across the weldment.

Keywords: *Weldability, Mechanical properties, Residual stresses, Mechanical model, Nugget geometry, microstructures.*

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PREDICTION OF WELD DEFECTS IN FRICTION STIR WELDING OF ALUMINUM ALLOY AA5052-H32 FROM PROCESS PARAMETERS USING IMAGE PROCESSING TECHNIQUES

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ABSTRACT

In the present study, image processing techniques have been used to predict weld defects and residual stress during in-Friction Stir welding of Aluminum alloy AA5052-H32 using the information of input process parameters and natural frequency of vibrations. Traverse speed, Rotational speed, and Tool pin height have been considered as input process parameters. Both residual stress and natural frequencies of vibration of the weld obtained using each set of the input parameters are measured experimentally. Several image recognition techniques are used for various cross-sections both in horizontal and vertical directions have been used for the said purpose. The predicted welding residual stresses have been validated experimentally through X-ray diffraction (XRD) and good agreements are obtained. In addition, statistical tests are conducted, and the estimated reliability values of the employed models are also analyzed through Monte-Carlo simulations.

Keywords: *Friction Stir welding, Weld defects, Image processing techniques, Rotational Speed, Traverse Speed*

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ALTERNATE FUEL BY PYROLYSIS PROCESS AND ITS USES IN IC ENGINES

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ABSTRACT

Pollution and environmental change are the present problems in our daily lives because of a growing population and growing industries. Plastic waste causes server damage to human health. Due to these changes happening in the environment because of plastic we need to take some measures. The recycling and disposal of plastic are causing environmental pollution. The pyrolysis process is the best way to dispose of plastic waste. Presently, we are short of fuels, and in the future, if fuels completely don't exist that would be a great tragedy to humans. So, we have chosen the alternative resource called pyrolysis. This pyrolytic oil can be directly poured into the engines. These fuels can reduce combustion and even reduce the internal loss to the engines which occur by combustion. The vehicles which emit more smoke can be reduced by using pyrolytic oil. Due to this slight reduction in combustion, the pollution in the environment can be decreased.

Keywords: Environmental pollution, Alternate fuel, Pyrolysis, Plastic waste, Pyrolytic oil.

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DESIGN AND MANUFACTURING OF CUSTOMIZED PROSTHETIC ARM USING 3D PRINTING

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ABSTRACT

A prosthetic hand is a common medical device for pediatric patients with a partial hand congenital defect or amputation. Among the various types of prosthesis, the myoelectric interface prosthetic hand recently has been highlighted and many researchers have tried to improve its functions. However, the high cost is one of the major limitations to its widespread use. There has been greater availability of the manufacturing knowledge source to the public with the goal of allowing more people to develop these prostheses without as great a financial burden. The advent of modern three-dimensional (3D) printing technology has facilitated these activities and the development of a low-cost, reliable, and durable prosthesis can have a major social impact on patients. These devices are manufactured using 3D printing technology which allows cheap, fast, and accessible manufacture, and because the Computer-Aided Design (CAD) modeled designs are easily scalable for growing kids and can be readily customized patient-to-patient for aesthetics or functionality. The 3D Printed prosthetic arm uses a string tensioning mechanism to allow for grip actuation upon activation and elastics to spring the fingers back during relaxation.

Keywords: Computer-Aided Design, Customized Prosthetic, Prosthetic hand, 3D-Printing

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FLIGHT CONTROL AND STABILITY ANALYSIS OF A SYMMETRICALLY STRUCTURED QUADCOPTER

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ABSTRACT

The vast utilization of unmanned aerial vehicles has been increasing in recent years due to growing demands in various sectors operated for critical missions and time-saving purposes. The major advantage of UAVs is no risk of human life with secure and suitable surveillance. The UAV facilitates live video streaming and wide aerial coverage for monitoring. The dynamics of unmanned aerial vehicles (UAVs) dealing with vertical take-off and landing (VTOL) are equipped with various configurations such as single-main-rotor, tandem rotor, coaxial rotor, tri-rotor, quad-rotor, and Hexa-rotor. Among various configurations, quad-rotor and Hexa-rotor configurations have been chosen frequently for various applications through miniature aircraft. The components and subsystems of such configurations have been widely available for easy integration and flight tests. The modeling and attitude stabilization control problems of a four-rotor vertical takeoff and landing unmanned air vehicle (UAV) quadrotor are investigated. Taking the dynamical behavior of motors into consideration and ignoring the aerodynamic effect, a nonlinear controller is developed to stabilize the attitude. Additionally, an experimental demonstration is carried-out to investigate the stability behavior of a quadcopter undergoing a range of instantaneous step pay-load changes.

Keywords: Thrust; Sensor; Quadcopter; Measurement; Control systems; Stability

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ANALYSIS OF HEAT TRANSFER CHARACTERISTICS THROUGH A PLATE HEAT EXCHANGER USING VARIOUS NANOFLUIDS

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ABSTRACT

In this paper, a corrugated plate heat exchanger in solar energy systems is used to investigate heat transfer and fluid flow characteristics of various nanofluids. By adding various nanoparticles (Al_2O_3-30 nm, SiC-40 nm, CuO-30 nm, and Fe_3O_4-25 nm) into the base fluid, effects of nanofluid types and particle concentrations (0.05 wt.%, 0.1 wt.%, 0.5 wt.%, and 1.0 wt.%) on the thermal performance of the plate heat exchanger are analyzed at flow rates in the range of 3–9 L/min. Results indicate that both heat transfer enhancement and pressure drop for nanofluids show significant increases compared to the base fluid. The Fe_3O_4-water and CuO-water nanofluids show the best and the worst thermal performances of the plate heat exchanger, respectively. When 1.0 wt.% Fe_3O_4-water nanofluid is used as the working fluid, compared to DI-water, the convective heat transfer coefficient is increased by 21.9%. However, an increase of 10.1% in pressure drop is obtained for the 1.0 wt.% Fe_3O_4-water nanofluid. Finally, empirical formulas of the experimental Nusselt number are obtained based on the experimental data. A new way to predict the thermal performance for various nanofluids in heat transfer systems is provided.

Keywords: Nanofluid, Heat transfer enhancement, Pressure drop, Empirical formula, Plate heat exchanger

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OPTIMIZATION OF FRICTION STIR WELDING PROCESS PARAMETERS OF AA5052-H32 USING TAGUCHI TECHNIQUE

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ABSTRACT

The quality of the welded joint is evaluated by examining the characteristics of the joint efficiency based on the ultimate tensile strength of the weld. In Friction Stir Welding (FSW) process, parameters like tool geometry (shape and size) play a significant role in the overall heat input, resulting in plasticized material flow around the rotating tool. In this study, the Taguchi approach of parameter design was used as a statistical tool for the design of experiment techniques to set the optimal welding parameters. The experimental results are laid by using Taguchi's L27 orthogonal array. The signal-to-noise ratio and the analysis of variance were utilized to obtain the influence of the FSW parameters on the weld strength. The results indicate that the rotational speed is the most significant parameter influencing the tensile strength, temperature, and hardness of the joint. The effect of FSW process parameters on the mechanical properties of AA 5052-H32 aluminum alloy has been analyzed in this work.

Keywords: *Friction Stir Welding, Tensile strength, Process parameters, Taguchi method, ANOVA.*

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MODELLING AND ANALYSIS OF SOFT STOREY BUILDING UNDER SEISMIC LOADING

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ABSTRACT

Open ground storey RC frame buildings are ordinary practice in India. However, the adverse performance of such buildings all over the world was known from long ago. Still, there are many buildings constructed with the ground floor as the soft storey. This means ground story columns are kept open without any infill walls. Even though we assume the load is transferred through the RCC members during design, these infills have a significant role in carrying the load under accidental loads such as earthquakes. The infill wall provides more stiffness to the structure and thereby increases the lateral strength of the structure. To overcome the effect of the soft storey, IS code 1893: 2002 recommends using a magnification factor of 2.5 for both bending moments and shear force calculations of the ground floor columns under seismic loading conditions. This paper focuses on the effect of the height of the soft storey floor on the seismic behavior and how drift will be varying with height.

Keywords: Seismic loading, modeling and analysis, soft storey building, RC frame

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DEVELOPMENT OF DIGITAL FACTORY AND CYBER-PHYSICAL SYSTEMS USING IIOT

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ABSTRACT

The manufacturing organizations are facing numerous challenges to sustain and grow due to the current crisis arising out of the pandemic. The organizations are looking at various options to tide over the crisis they face today. Due to pandemics and lockdowns, production is at a halt and the companies cannot operate due to lack of manpower. The technologies like Internet of Things (IoT), Machine Learning (ML), Artificial Intelligence (AI), Robotics; Shop floor simulation, etc. have started to play an important role in manufacturing industries during this era. The application of intelligence to manufacturing has emerged as a compelling topic for researchers and industries around the world. The IoT application in the industrial sector is called as Industrial Internet of things(IIOT) and using these we can convert the manufacturing organizations into digital factories and cyber-physical systems. The paper presents a review of the application of IIOT for converting the existing factory into a digital factory.

Keywords: Internet of Things (IoT), Industrial Internet of Things (IIoT), Machine Learning (ML), Artificial Intelligence (AI), Robotics; Shop floor simulation

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Investigation on Corrosion Inhibition of Mild Steel Using CoPIm1.2 and CoPIm2.1 Nanocomposites

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Abstract

Herein, we report the synthesis, characterization of two $CoPIm_{1.2}$ and $CoPIm_{2.1}$ nanocomposites. The characterization was done by adopting various electro-analytical techniques such as elemental analysis (ICP-OES and C-H-N-S), X-ray Powder Diffraction (XRD), Thermogravimetric Analysis (TGA) and Derivative Thermogravimetry (DTG), Fourier Transform Infrared (FT-IR) Spectrometry, Absorption Spectrophotometry and Ultraviolet-Visible and near Infrared (UV–Vis-NIR), Scanning Electronic Microscope (SEM) and Transmission Electron Microscope (TEM). Two coating materials of $CoPIm_{1.2}$ and $CoPIm_{2.1}$ acrylic paint (black) have been fabricated. The weight-loss method was used to detect the corrosion rate of mild steel plates in an acidic environment (0.05N HCL) with and without coatings. The corrosion rates in the presence of $CoPIm_{1.2}$ and $CoPIm_{2.1}$ are 2.61% and 2.02% and with paint, the corrosion rate is 7.03% whereas, without coatings, it is 13.01%. Hence, these nanocomposites can be utilized as corrosion inhibitors for mild steel.

Keywords: Corrosion, Nanocomposites, Coating Material, Corrosion inhibitor

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UNMANNED AIRCRAFT SYSTEMS: REGULATIONS, APPLICATIONS AND FUTURE IN INDIA

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ABSTRACT

Adopting the new-age technologies such as Unmanned Aircraft System (UAS), Bio 3D printing, Robotics, IIOT, and Machine Learning, etc., is essential for the technological development of the countries. These technologies may also enhance the economic growth of the countries. Unmanned Aircraft Systems (hereinafter referred to as drones) offer immense opportunities for economic growth and employment generation. In essence, a drone is a flying robot that may be commanded remotely or fly autonomously using software-controlled flight plans in embedded systems in conjunction with onboard sensors and GPS. UAVs have been seen as enablers of a wide range of applications due to their small size and high stability. Drones are currently employed in a variety of civilian applications, including search and rescue, surveillance, traffic monitoring, weather monitoring, and firefighting, as well as personal drones and commercial drone-based photography, videography, agricultural, and even delivery services. This present review study focused on rules and regulations (UAS Rules, 2021) of the Unmanned Aircraft System, pros and cons, and the future of UAS in India.

Keywords: *Aircraft, Drone, Flying robot, Unmanned Aircraft System.*

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ADDITIVE MANUFACTURING OF A PROSTHETIC LIMB: A REVIEW

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ABSTRACT

This study will highlight the problems identified with a modern prosthetic leg. Continuing to improve existing advances in digital data acquisition, parametric modeling, and additive manufacturing techniques that should improve the quality of care for the disabled. Current research will provide information on the various strategies and benefits offered by the flexibility found in these digital methods.

Keywords: *prosthetics, additive fabrication, additive manufacturing, 3D scanning, 3D printing, biomimicry, parametrics, parametric modeling, finite element analysis.*

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FORMULATION OF METHODS FOR WATER DISTRIBUTION NETWORK

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ABSTRACT

Water is the basic need for many plants and human life. The development of any nation depends on the availability and supply of water. Due to contamination of water or scarcity of water in some of the rural areas, there are a lot of challenges will be raised. The supply of water is the primary concern for a society's growth and development. The living standards in a given geographic area depend on the supply of water to the public community. The quality of unprotected water seriously affects all living species. The social and economic status of a given rural area depends on the supply of water. The increase in the human population is one of the concerns for the supply of drinking water. The water is required for different purposes like irrigation, industrial use, mining use, generation of power supply, aquacultural use, etc., To ensure proper distribution of water supply, formulation of methods is necessary.

Keywords: *water, supply, population, development.*

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PERFORMANCE EVALUATION OF SHELL AND TUBE HEAT EXCHANGER USING NANOFLUIDS

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ABSTRACT

This study is about the performance evaluation of a shell and tube heat exchanger operated with nanofluid. Thermal conductivity, viscosity, and density of the nanofluids were increased, but the specific heat of the nanofluids was decreased with increasing the concentrations of the particles. The convective heat transfer coefficient was found to be 2–15 % higher than that of water at 50 kg/min of fluids on both sides. Nevertheless, energy effectiveness has improved by about 23–52 % for the above-mentioned nanofluids. As energy effectiveness (ε) strongly depends on the density and specific heat of the operating fluids, therefore, maximum ε has obtained for ZnO–W nanofluid and lowest found for SiO_2–W nanofluid.

Keywords: *-NTU Method, Heat Transfer Characteristics, Nanofluid, Tube-in-Tube Heat Exchanger, Water*

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HTML AND CSS: A BEGINNER'S GUIDE TO THE WORLD'S MOST VERSATILE LANGUAGES

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ABSTRACT

The purpose of this article is to introduce the Web languages, HTML and CSS which are widely perceived as the most versatile languages in the world. The paper will look in-depth into the history, development, and the current scenario for the respective languages. This paper will cover various aspects of the languages and in its conclusion will enable the reader to be acquainted with these languages. HTML 5 is the current generation of the markup language which is widely used for designing, structuring, and showcasing various contents on the Internet. Cascading Style Sheets or generally known as "CSS" is the standard language that is used for styling and structuring documents related to HTML or XML. The final leg of this paper will showcase the process of website creation using the languages and methods described in the article, which will enable all the readers to be familiarized with the languages and in general the basics of Web Development.

Keywords: CSS, HTML, XML, Web Design

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ANALYSIS AND DESIGN OF MULTI-STOREYED BUILDINGS

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ABSTRACT

The safety and stability of a structure is the primary objective of a civil engineer in design. Safe designing of a structure depends on the, what are all the possible loads the structure will be subjected in its life span. The various types of loads that are to be considered for design are to be followed as per IS codes. These codes also include load combinations that are to be used during design. There are various design philosophies are available as per the IS standards. Analysis pertains to determining the forces that will be generated during the application of loads on the structural members. To analyze a structure and determining forces, there are a good number of software are available. But usage of software requires the knowledge of structural behavior. Both reinforced concrete design and steel structural design are available. A thorough understanding of the basic concepts in analysis and design will help design a safe and stable structural design.

Keywords: *structural design, analysis, safety, stability, loads*

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ASSESSMENT OF MULTIPLE-WIRE WELDING AS CANDIDATE FOR MULTI-MATERIAL ADDITIVE MANUFACTURING COMPONENTS

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ABSTRACT

Multi-Material Additive Manufacturing (MMAM) is an extension of Additive manufacturing (AM) technology. This extension has the capability to enhance the functional properties of the components. However, MMAM of metals is still a challenge in various AM processes due the material delivery system. In this study, MMAM of metals is investigated through multi-wire gas metal arc welding (GMAW) processwherein the material delivery is dealt with by wire feed rollers and controlled by welding current. This process is integrated with six-axis robot/ computer numeric control (CNC) that is capable of fabricating complex geometries without support structures using different torch positions. The proposed research aims to develop an MMAM metallic component through an insert that bonds between different materials similar to machicolation in building structures. Further, the relation of process parameters on thermal modelling, microstructure, and mechanical properties will be investigated.

Keywords: *Additive Manufacturing; Multi-material; Arc stability; Microstructure; Mechanical properties.*

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PRODUCTION OF 3D PRINTED FILAMENTS FROM WASTE PLASTICS

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ABSTRACT

Plastic pollution is the accumulation of plastic objects and particles (e.g., plastic bottles, bags, and microbeads) in the Earth's environment that adversely affects wildlife, wildlife habitat, and humans. Researchers estimate that more than 8.3 billion tons of plastic have been produced since the early 1950s. About 60% of that plastic has ended up in either a landfill or the natural environment. This project is about the production of 3D Printing filaments from waste plastics. The term 3D printing covers a process of technologies that offer a full spectrum of capabilities for the production of parts and products in different materials. Recycling waste plastic into usable filament requires two steps shredding the plastic into small pieces then extruding it with a filament extruder. 3D printing filament is created using a process of heating, extruding, and cooling plastic to transform small pieces into the finished product. A different speed is applied to the filament as it is pulled out of the extruder to define the width of the filament, most commonly 1.75 mm diameter. The filament can be used for the manufacturing of various physical models from virtual models.

Keywords: *3D Printing, Filaments, Extrusion, Plastic pollution, Waste plastics*

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A STUDY ON RAPID PROTOTYPING OF COMPLEX TISSUES WITH LASER-ASSISTED BIOPRINTING (LAB)

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ABSTRACT

Laser-assisted bioprinting (LAB) is an emerging tissue engineering (TE) tool that allows the printing of cells and fluids through cell-level modification, to reproduce bio-isotropy of living tissue. After introducing the reason for LAB in TE, we present the portable parameters related to the laser transmission method (LIFT), used in LAB. These parameters must be tuned to print active cell patterns with respect to the histological sequence of cell level, as well as high volume production. Finally, we introduce standard multi-component printing, 3D printing methods, in vitro and in vivo.

Keywords: *laser-assisted bioprinting, rapid prototyping, tissue engineering, regenerative medicine.*

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DESIGN AND FABRICATION OF PROTOTYPE HAND OPERATED CAN CRUSHER

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ABSTRACT

The importance of recycling in the area of engineering and technology increasing day by day. The amount of waste generated in tremendous quantity in the form of tiny cans is the important product that is to be recycled on an increasing scale. For performing recycling, can crushers be used where the tiny cans are designed for durability, flexibility, lightweight, strong and recyclable? The tiny cans are the most recycled of any beverated containers till today. The amount of research work carried out in this paper focuses on the design and fabrication of a prototype can crusher with the aim to reduce the scrap volume and make use of the cans to be recycled easily. The single slider crank mechanics are designed and applied for reducing the volume of the cans to 70%. The mechanism makes use of converting reciprocating motion to rotary motion. The applied methodology make use for automatic removal of can crusher from the crushing site without human intervention. Even though there are several types of can crushers are available in the market, the completion of the new model provides a more practical usage than the previous one.

Keywords: *Can Crusher, Moment Arm, Single slider crank mechanism*

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OPTIMIZATION AND EXPERIMENTAL INVESTIGATION ON VARIOUS METAL CUTTING OPERATIONS

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ABSTRACT

From the last two decades, removing the unwanted material to produce the desired product in various manufacturing industries has been increased rapidly. Conventional machining (tool and workpiece in direct contact with each other) processes such as Turning, Milling, Drilling, Planning, Shaping, and Knurling, etc., have been used to remove the unwanted material to produce a good surface finish and accurate size of the product. Every engineer should know various machining operations considering the various operating conditions such as cutting speed, feed, and depth of cut, etc. In this proposed work, an experimental investigation will be done on the effect of operating conditions on the various metal cutting operations. Aluminum has been selected as a workpiece material to perform the various metal cutting operations because it is easily available, low cost, easy to machine, etc. The output of the proposed work is not only to gain basic knowledge but also to understand the operating conditions.

Keywords: *Acme thread, Buttress thread, BSW thread, Concave and convex turning, Diamond knurling.*

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PERFORMANCE PREDICTION OF SHELL AND TUBE HEAT EXCHANGER USING COMPUTATIONAL FLUID DYNAMICS

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ABSTRACT

Transfer of heat from one fluid to another is an important process for most chemical industries. The most common application of heat transfer lies in designing heat transfer equipment for exchanging heat from one fluid to another fluid. The devices for efficient transfer of heat are generally called Heat Exchanger. The most common and widely used type of exchanger in the oil refinery and the chemical industries is the Shell and tube heat exchanger employed for high-pressure applications. The objective of the present work is to design a shell and tube heat exchanger with a helical baffle and study the flow and temperature field inside the shell. The present work has been carried out with a view to predicting the performance of a shell and tube heat exchanger. The process in solving simulation consists of modeling and meshing the basic geometry of shell and tube heat exchanger using Computational Fluid Dynamics package ANSYS 19.0. The performance of the heat exchanger has been evaluated by using the CFD package FLUENT and has been compared with the existing literature values. An attempt has also been made to calculate the performance of the above heat exchanger by considering helix baffles instead of regular Segmental Baffles and the result so obtained have been compared. The performance parameters pertaining to a heat exchanger such as effectiveness, overall heat transfer coefficient, energy extraction rate, etc., have been reported in this work.

Keywords: Ansys, Computational Fluid Dynamics, Heat Exchanger, Simulation.

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BRIDGE CONSTRUCTION IN INDIA - VARIOUS CONSTRUCTION METHODS, TECHNOLOGIES AND EQUIPMENT

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ABSTRACT

From ancient times onwards, bridges play a significant role in communication between various points inland and thereby developing the locality. Over the period, as the technology advanced, there is a remarkable change in the construction technologies, materials used, and types of equipment used in constructing bridges. The paper gives an overall outlook on the different types of bridges available in India (with examples) and the different types of equipment and technologies used in its construction in India. The various types of FEM tools available for the analysis and design of the bridges, various methods of construction of bridges, factors affecting the selection of construction methods, various latest advanced technologies used in the construction of bridges, advanced equipment used for the construction of bridges are discussed in detail. The availability of advanced FEM tools, technologies, and equipment makes the design, construction, and maintenance of bridges effortless.

Keywords: Bridges, FEM, Technology, equipment, types

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REVIEW OF PCM ENCAPSULATION TECHNIQUES IN THERMAL ENERGY STORAGE SYSTEMS

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ABSTRACT

Phase change materials (PCM) are used for storing latent heat while changing from one phase to another (usually between solid and liquid states). Most commonly used PCMs materials may be grouped into organic, inorganic, and eutectic. These materials suffer from limitations such as subcooling, phase segregation, flammability, low thermal conductivity, and thermal instability. These problems may be overcome by encapsulation which reduces subcooling, increases heat transfer area, and control the volume change of the storage materials during the phase transition process.

A number of studies have been reported in the area of encapsulation methods for organic PCMs while the information about inorganic PCMs is limited. Also, the influence of encapsulation techniques on the thermophysical properties of PCMs is not well addressed. Therefore, the objective of this paper is to conduct a comprehensive review of encapsulation and characterization techniques for inorganic PCMs and to provide an analysis of the influence of synthesis parameters on the thermophysical properties of encapsulated PCMs. Two principal types of encapsulated inorganic PCMs were found: core-shell PCMs (core-shell EPCMs) and shape-stabilized PCMs (SS-PCMs). Classification of encapsulation methods of core-shell EPCMs and SS-PCMs are reported in this work.

Keywords: *PCM, Encapsulation, thermo-physical properties, subcooling, phase segregation, thermal instability, nano, meso, & microencapsulation*

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REDUCTION OF THERMAL GRADIENT OF MOLTEN POOL IN AM PROCESS

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ABSTRACT

Additive manufacturing (AM)—colloquially termed as 3D printing—is resulting in a paradigm change across multiple industries, such as the aerospace, biomedical, and automotive sectors. With rapid footsteps AM enters into the manufacturing sector and medical fronts; it almost omits the conventional processes and eradicates the use of traditional materials. From plastics, ceramics, and polymers to metals - the journey of AM process goes on and Titanium and its alloys play an important role in this path for its wide applicability, advantages, and biocompatibility. In the aerospace industry reduction of "Buy to fly ratio", repairing of engine brackets, weight reduction of seat buckles to medical fields for making patient-specific replacements, providing lightweight performance; medical strength, etc. towards the commercial use of geometrically critical industry products; titanium is accepted almost everywhere. This study reviews how to reduce the steep thermal gradient of the molten pool and checks epitaxial growth by maintaining equiaxed lattice structure in the different AM processes (specifically SLM) using Titanium.

Keywords- *AM,3D Applications, Its Alloy, Ti-6Al-4V, Medical Implant, BTF, Heating Cycles, Post Processing.*

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Keywords: *Transmission Loss (TL), Hybrid Muffler, Sound Absorptive Materials, Two Load Method, Wave 1-D.*

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DESIGN AND MANUFACTURING OF MODERN DENTAL ARTICULATOR DEVICE

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ABSTRACT

An articulator is a mechanical device used in dentistry to which casts of the maxillary (upper) and mandibular (lower) teeth are fixed, reproducing recorded positions of the mandible in relation to the maxilla. An articulator assists in the fabrication of removable prosthodontic appliances, fixed prosthodontics restorations, and orthodontic appliances. The use of second-generation semi-adjustable articulators for the reproduction of the mandibular kinematic often proves to be a technical and time constraint for the dentist. This paper presents designing an Articulator in order to simulate the mandibular movements of the human jaw. Its main goal is to improve the design of dental prostheses, an articulator is designed in a way in which it has movement in all directions. The Computer-Aided Design (CAD) articulator models are manufactured by using Additive Manufacturing (AM) Process.

Keywords: *Additive Manufacturing, Computer-Aided Design, Dental Articulator, Mandibular*

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STRUCTURAL ANALYSIS OF 3D PRINTED SCAPULA PROSTHESIS

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ABSTRACT

In anatomy, the scapula shoulder bone, shoulder blade, wing bone, septal bone or blade bone, is the bone that connects the upper arm bone with the clavicle collar bone. The bone in a patient who suffers from a tumor may have to be replaced with an implant for preserving the full use. Additive manufacturing can provide the fastest solution as the implant required can be easily customized according to the patient. It allows the best solution available in the market. It is also mandatory for anyone who is looking for the implant to properly analyze, so it can be used accurately. In this research, we have chosen a customized scapula and done structural analysis for the feasibility of the implant for a patient. Three different materials were used for the structural analysis of the implant. The material chosen were composite resin, zirconia; titanium.

Keywords- *3D printing; Scapula; multi-material 3D printing; 3D models; 3D printing using composite resin, zirconia; titanium.*

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ESTIMATION OF CONCRETE COMPRESSIVE STRENGTH USING MACHINE LEARNING ALGORITHMS

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ABSTRACT

For the design and analysis of structures, prior knowledge of the compression strength of concrete is essential. Concrete is prepared by mixing the coarse aggregate, fine aggregate, cement, and water in proper proportion. As the coarse aggregates and fine aggregates are collected from the natural source, the uncertainties associated with their physical properties are also high. These uncertainties are affecting the compressive strength of the concrete. To account for the variability of compressive strengths of the same grade of concrete, the safety factor, and partial safety factors are introduced in the structural design. Due to advances in the data science and electronics industry, machine learning algorithms can be deployed in predicting the compressive strength of concretes. In this study, we have used linear regression, K Neighborhood, Decision Tree, Random Forest, and XGBOOST algorithm to predict the compressive strength of concrete. The hyperparameters are optimized for the minimum errors. The regression coefficient (R2) value is 0.92 for the XGBOOST algorithm and for the regression model the R2 value is 0.67. So, Machine learning models can be deployed in the prediction of compressive strength of concrete and the performance of the algorithm is satisfactory.

Keywords: Compressive strength of Concrete, Machine Learning, XGBOOST, Random Forest

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RETROFITTING TECHNIQUES OF OLD BUILDINGS AND LATEST BUILDING TECHNIQUES - CASE STUDY

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ABSTRACT

Indian culture is reinforced with many historically significant buildings and structures. It is very much essential for the rehabilitation of such old structures through various retrofitting techniques for preserving the history, architecture, and culture of our country. In this paper, the various retrofitting techniques used in the rehabilitation of existing structures and the latest innovative techniques in building construction are discussed in detail. Besides, the application of retrofitting techniques used in structures was illustrated with the help of some case studies from India. The retrofitting of Chhatrapati Shivaji Maharaj Terminus, Mumbai, and the latest building techniques used for the construction of Bogibeel Bridge were considered for case study purposes. In the case study, the reason for choosing the particular restoring techniques, the challenges faced during the construction and rehabilitation process are convoluted in brief.

Keywords: Latest technology in construction, case study, retrofitting, rehabilitation.

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SURFACE CRACK DETECTIONS IN BUILDINGS USING DEEP LEARNING

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ABSTRACT

Due to advances in the electronic industry, sensors are nowadays installed in buildings to automate the many utilities. For the structural health monitoring of structures sensors such as accelerometers, high-definition cameras, etc. are attached and continuously analyzed for detecting the faults on the structures. In this study, we will use deep learning algorithms for detecting the cracks on the building surfaces. The 40000 high-definition images are available in the literature in which have been labeled as "Positive" and "Negative". Each class of images has 20000 samples and each image has 227 x 227 pixels with RGB channels. Four convolution network models such as VGG16, ResNet50, Xception, and MobileNet are used in our study. All four models have performed very well with more than 99% accuracy. So, Deep learning algorithms are very much effective in detecting the cracks from the images and can be used for real-time structural health monitoring.

Keywords: *Deep Learning, CNN, Crack detection*

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PREDICTION OF ROCKFALL TRAJECTORY

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ABSTRACT

The landslides in recent times of Uttarkhand caused very serious damage to the life of the people and the loss of property. This is due to the major rockfall which is occurred in that area. There may be several reasons for this rockfall. Individual rock bounces along the steep hills and causes damage to the property and life. Due to heavy rainfall, the contact between the rock boulders and hills will be lost and rock rolls along the steep slopes of hills. With very high-velocity rock travels and bounces and will hit the nearby properties or highways. The momentum with which rock travels at a high speed causes damage to life and property. Research to address these problems and possible numerical and analytical solutions have to be found.

The role of a civil engineer is to identify the areas of weak rock zones causing landslides and rockfall trajectories have to be calculated. The analysis and research in this direction will help to design suitable protection measures and required construction structures has to build.

Keywords: *rockfall, landslides, analytical solutions, velocity.*

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STRUCTURAL ANALYSIS OF 3D PRINTED DENTAL IMPLANT USING DIFFERENT MATERIALS

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ABSTRACT

Advanced manufacturing technologies use computer-aided design digital models to create personalized 3D objects automatically. 3D printing is one of the most commonly used processes where the model designed in any of the CAD software is fed through the 3D printers and desired products are produced. The process uses various materials and each material has its own capabilities. The choice of material will completely rely on the application we intend for. In this study, we have designed the dental implant using Creo and the model is analyzed using Ansys. Three different materials were used for the structural analysis of the implant. The material chosen were composite resin, zirconia; titanium. This paper also reviews the types of 3D printing technologies available for the production of chosen materials and their applications in dentistry and in maxillofacial surgery.

Keywords- *3D printing; digital one-piece casting; multi-material 3D printing; 3D models; 3D printing using composite resin, zirconia; titanium.*

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DESIGN AND DEVELOPMENT OF SMART DUAL AXIS SOLAR TRACKING (DAST) SYSTEM

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ABSTRACT

Increasing global warming and depleting fossil fuels necessitate the utilization of alternate energy sources to meet future energy needs. Renewable energy sources are capable of providing pollution-free and cost-effective electricity. Solar energy is one such free and abundant energy source that can be captured & stored in the day and used whenever required. For maximum energy capture efficiency, the sun rays have to fall perpendicular to the solar panels, and thus a mechanism is required to move/align the panel to maximize the panel efficiency.

The aim of this work is to design and develop a Smart Dual Axis Solar Tracking (DAST) system for the accurate positioning of solar panels in order to maximize power output. The designed solar tracking system utilizes two motors that rotate the solar panel through a hemispheroidal 3-D rotation. The differential voltage between the solar panel and LDRs will drive the motors to position the panel. The motors are decoupled from each other to avoid control problems. The developed DAST system was found to have panel collection efficiency by out 36% compared to that of the fixed board.

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Keywords: Solar tracking, Dual Axis, Renewable Energy, Panel Efficiency, Solar Panel Control

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WELD DEFECT MONITORING IN GAS METAL ARC WELDING PROCESS USING MACHINE LEARNING TECHNIQUES

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ABSTRACT

The gas metal arc welding process (GMAW) is one of the arc welding processes commonly used in industries due to its wide range of applications and economic advantages. In the GMAW process, the arc interacts with the environment leading to weld defects that are realized in post-weld non-destructive techniques (NDT). This leads to the necessity of in-process monitoring and control of the process to ensure quality by defect-free welds. The present work is a preliminary study intended to develop an in-process monitoring system that can identify and classify the defects in the GMAW process. In this study, experiments are conducted on the tube-to-tube butt joints in a flat position by varying the process variables such as current, voltage, travel speed, and contact-tube-to-work piece-distance (CTWD). It involves good weld as reference for three types of defects such as porosity, burn through and lack of penetration were considered. The instantaneous current and voltage signals were recorded using an acquisition system that is later used in statistical features extraction. Based on statistical features such machine techniques were deployed to classify the defects with reference to good weld and their efficiencies are reported.

Keywords: *Arc welding process; Real-time monitoring; Machine learning; Weld defect classification.*

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IDENTIFICATION OF TRAFFIC SIGNS USING DEEP NEURAL NETWORKS

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ABSTRACT

In recent days, we have been moving towards automated self-driving transport systems. For the smooth movement of vehicles on the roads, it is essential to follow the traffic rules by the vehicles. The road signs are not always clear in India due to less maintenance. In this study deep learning model is employed to classify the given traffic signs. The testing dataset consists of 12000 images, and convolutional neural networks are trained to predict the new road signs. The hyperparameter of the networks is optimized to obtain maximum accuracy. The trained model is accurate up to 86% in the testing datasets. So, the usage of convolutional neural networks for the prediction of a traffic sign is successful and can be deployed in real-world problems.

Keywords: *traffic sign classifications, convolutional neural network, deep learning*

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WIRE ARC ADDITIVE MANUFACTURING OF SHAPE MEMORY ALLOY

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ABSTRACT

Wire arc additive manufacturing (WAAM) processes play a vital role due to its layer-by-layer deposition technique capable to produce complex geometries that are not possible with traditional manufacturing processes. The WAAM of shape memory alloys (SMA's) components could enhance the functional properties, economic efficiency of the component, reduction in assembly, and lead time. The present proposal proposes wire arc additive manufacturing (WAAM) of SMA's that are used to fabricate components for damping applications in various fields such as automotive, aerospace and medical, etc. In this study single-wire GMAW process and Twin-wire or Tandem GMAW process is considered for material delivery and deposited layer by layer with help of six-axis motion either by CNC or robot that is capable to deposit at any position allows fabricating complex components without support material.

Keywords: *Wire arc additive manufacturing; Shape memory alloys; Microstructure; Mechanical properties*

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IMPROVEMENT OF BIO-COMPATIBLE IMPLANTS USING LASER ENGINEERED NET SHAPING PROCESS

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ABSTRACT

Additive manufacturing or Rapid Prototyping (RP) is an advanced manufacturing technology emerging as key player in both industrial and medical fields. Dissimilar to traditional manufacturing processes, in additive manufacturing process material is added as sequential thin layer to achieve the build parts with minimal post processing and it requires less time to fabricate prototypes with high accuracy. Additive manufacturing shows desired results for fabricating the customized medical implants. As there is a large variation to part structure from patient to patient, it is difficult to make implants from conventional manufacturing processes. So, rapid prototyping is most advanced and convenient to fabricate a medical implant that suits the patient's requirements. The present paper reviews the works produced by Laser Engineered Net Shaping (LENS) technique to fabricate the medical implants from bio-materials.

Keywords: *Net shaping, bio-compatible implants, 3D printing, LENS*

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Insertion in Missing: An Optimality Theoretic Perspective

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Abstract

The paper outlines the establishment of the framework Optimality Theory (Prince & Smolensky, 1993) along with an investigation and demonstration of the relevant positional markedness and positional faithfulness constraints. The paper concentrates on the process of epenthesis, which is the insertion of a sound in between the other two sounds. Epenthesis is a well-known process in phonology, which is used as a repair strategy to attain a desirable state of a candidate to present it as the optimal one. Mostly, in epenthesis, the inserted segment is a vowel. Vocalic epenthesis is such a conventional method that consonant epenthesis is almost not regarded as epenthesis. Although consonant epenthesis is rare, approximants are regarded as the most suitable for this purpose, if any consonant epenthesis takes place. Mising has shown consonant epenthesis /j/ and /w/ which is used to repair a condition of having a syllable without onset, to have a satisfying faithful candidate with a syllable having onset, starting with a consonant. ONSET is the most important constraint used during the process of epenthesis for an OT analysis.

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Assimilation in Mising: An Optimality Theoretic Perspective

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Abstract

This abstract outlines the establishment of the framework Optimality Theory. An investigation and demonstration have been made of the relevant positional markedness and positional faithfulness constraints considered throughout the work to show the positional asymmetry through the process of assimilation. This paper further investigates the direction of assimilation and discusses regressive assimilation and progressive assimilation as repair strategies. Nasal assimilation is shown as a trigger of progressive assimilation in the paper. Onsets are stronger and privileged by nature and resist assimilation. Onsets trigger the process of assimilation in regressive assimilation. Progressive assimilation is cross-linguistically rare as stated by researchers. Mising is one of those languages which prefer progressive assimilation in the language. During progressive assimilation, the coda resists a change and triggers the assimilation, while the onset of the following syllable gets triggered by the assimilation. Nasal assimilation in Mising shows opposite characteristics of the universal process of nasal assimilation. Universally, nasals undergo the process of assimilation by acquiring the place or manner feature of the neighboring consonant. But in Mising, nasals play the role of assimilator rather than an assimilee. Even the universal concept of nasal-obstruent cluster preferring regressive assimilation and marked cluster, obstruent-nasal preferring progressive assimilation in nasal assimilation is also reversed in Mising. AGREE constraint plays a pivotal role in analyzing the process of assimilation in Mising in the light of Optimality Theory.

Keywords: Optimality Theory, Assimilation, Markedness, Faithfulness, Repair Strategy.

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Onset-coda Asymmetry in Mising in the light of Optimality Theory

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In the arrangement of segmental speech sound in any language, segments in privileged or prominent positions such as syllable onsets, roots, and root initial syllables are considered to resist and trigger alternation whereas segments in non-privileged or non-prominent positions, such as codas, are neutralized and go under alternation (Beckman, 1998). The current study endeavors to address a phonological matter best known as onset-coda asymmetry resulting in positional asymmetry found in Mising, a Tibeto-Burman language spoken in Assam. The onset-coda licensing and positional asymmetry are best evident in the phonological processes of assimilation and deletion in Mising. Thus, the assimilatory processes (voicing and devoicing assimilation as regressive as well as progressive assimilation) and three types of deletions, (i.e. word-final velar nasal deletion, word-final vowel deletion, and syllable initial vowel deletion) are taken into consideration for the analysis. These phonological processes have been interpreted, discussed, and analyzed in the framework of Optimality theory. The study finds that, though the phenomenon of positional privilege or positional faithfulness is observed cross-linguistically, there is a natural class of segment, i.e. Nasals in Mising which are not prone to alternation, rather they resist and trigger alternation despite occurring in the coda, a non-privileged position. This is evident in the instances of both progressive and regressive assimilation which goes against the well-established view of positional faithfulness and positional privilege and adds crucial characteristics to the debate on onset-coda and positional asymmetries.

Keywords: Onset-coda asymmetry, positional asymmetry, Directions of Assimilation and deletion, Vowel hiatus, Mising Phonology

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A Needs Analysis Based ESP Syllabus Design for Architecture Students in ESL Context

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Abstract

Needs Analysis is one of the essential elements for any type of syllabus design. Need Analysis is carried out by all the syllabus designers so that the syllabus design meets the requirements of students for both academic and professional purposes in terms of language use. The current study is carried out with this perspective of Needs Analysis. The study aimed to understand the English language skills requisites of the architecture learners at ICFAI School of Architecture - Hyderabad, with respect to the Target Situation Analysis and Present Situation Analysis. The data for the current study was collected using the tools of questionnaires, semi-structured interviews with the students and the faculty members at the institute along standardized English language tests for the students. The analysis of the data revealed that the receptive skills of English, reading, and listening were important in academic fields and the productive skills of writing and speaking in English were important in both academic and professional fields of architecture. Based on these findings the study outlined certain parameters for the designing of English for Specific Purposes syllabus for the architecture students and a syllabus was designed.

Keywords: ESP, Needs analysis, Productive skills, Receptive Skills.

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Understanding Differential Psychology and its impact on both Student Achievement Rates and Teaching Strategies

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Abstract

The objective of any education system is to empower learners in a holistic manner and to make them proficient in their fields of study. In order to accomplish this, appropriate teaching and learning strategies should be designed and implemented. But, we understand that not all learners achieve the goals of education equally; despite the teacher practicing standardized and well-researched teaching strategies. There are learners who achieve beyond the set goals and there are learners who underachieve. Various educational and Psychology theorists have extensively researched and theorized that there are certain factors that affect learners' achievement. These factors are studied under a separate branch of psychology called Differential Psychology or Individual Differences. This field of science is concerned with understanding and learning the differences in humans, how each individual systematically differs from one another. This present paper focuses on understanding the major components of Individual Differences that impact student achievement rates and their implications on teaching strategies.

Key Words: Differential Psychology, Individual Differences, Achievement rates, Teaching strategies

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Curriculum Design Aspects for the 21st Century Hybrid Classrooms: An Explorative Study

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Abstract

The curriculum is a crucial part of any educational system. It defines the values, knowledge, content to be taught, guides teachers in developing teaching strategies and highlights the various ways of assessing students at various levels of education. In the current century the value systems, the knowledge requirements, the contents are no longer the same as they were a few years ago. We are surrounded by various plagues, environmental issues, globalization, changed value systems, advancing technologies etc. The volatile conditions of post-COVID gave rise to new methods of teaching and assessing as well. A consequential rethinking should be carried out in the curriculum design aspects for 21st-century classrooms. It should include a full range of skills and competencies that fit the current society which is constantly turbulent and evolving at a fast pace. The current paper highlights some of the important 21st-century values, skills and competencies that ought to be considered for curriculum design and development and a few suggestions for their implementation in the current hybrid educational environment.

Keywords: Curriculum, Hybrid classrooms

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Another Short Proof of Huckaba and Marley

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Abstract

Let (A, m) be Cohen-Macaulay local ring and I be an m− primary ideal in A. Let $e^{I}_{j}(A)$ denote the ith−Hilbert coefficient of A with respect to I and $G_I(A)$ denote the associated graded ring of A with respect to I. Let J be a minimal reduction of I. A result due to Huckaba and Marley,

$$e^{I}_{1}(A) \leq \sum_{\lambda} I^{n}/JI^{n-1}.$$

Their proof relies on the in-depth study of homology modules of complex similar to the koszul complex (see, [5]). In [14] we have developed some new techniques to study the Hilbert-Coefficients and Hilbert functions. So in this paper, we will provide a short proof of Huckaba and Marley's result by applying our techniques developed in [14].

Keywords: Hilbert functions, Hilbert coefficients, Blow up Algebra, Rees Al gebra

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Deep Learning in Wheat Diseases Classification

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Abstract

The main goal of this paper is to review systematically the recent studies that have been published and discussed Wheat Disease (WD) prediction models. The literature analysis is performed based on studies published from January 1997 to February 2021 by following kitchenham instructions. After inclusion/exclusion and quality assessment criteria screening, a total of 74 studies have been selected. The literature shows that WD is categorized into three (fungal diseases, bacterial diseases, and insect diseases) types. The research analysis shows that most of the work in the literature has been found on wheat stripe rust (60.81%) disease and the most used prediction technique is ANN (13.32%). The results show that accuracy (67%) is the most prominent performance metrics and in the year 2020, a maximum number of papers are published on WD. Also, only five studies have used hybrid approaches which are the combination of SVM and NN techniques.

Keywords: Deep Learning, Neural Networks, Support Vector Machine, Wheat Diseases

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AI and IoT Readiness: Inclination for Hotels to support a Sustainable Environment

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Abstract

The idea of Smart Cities has been one of the key driving factors for the urban transformation to a low carbon climate, sustainable economy, and mobility in recent years because of the alarming situation of Global warming. The hotel industry being one of the fastest-growing industries is a major carbon emission generator and leaves environmental footprints. The new emerging concept of sustainable tourism is envisaged as an important part of the Smart Cities paradigm. Improving sustainability by saving on energy is becoming a priority for many hotels. Artificial Intelligence (AI) and Internet-of-Things (IoT) technology provide the opportunity to integrate various systems on a platform, encouraging and assisting hotel guests to operate them through a single device and also optimizing hotel operations. The purpose of this paper is to identify the strategic positions of a hotel in terms of sustainability, AI, and IoT technology. Components that will be considered by Hotels for the strategic intention of adopting AI and IoT for environmental sustainability. Different development and modification needed to be taken if management wants high sustainability readiness and/or IoT readiness. This conceptual paper constructs the comprehensive study and systematic review of different areas where the Hotels can feasibly implement AI and IoT for improving sustainably and the new technology-based products that are available to guide them to do so. When it comes to AI and IoT related sustainability readiness this paper identifies that it is related to the internal and external conditions of the hotel This study also indicates that a hotel is more likely to adopt AI and IoT if (a) the focus of the hotel is energy conservation because of green certificates (b) it is part of international hotel group (c) Sustainability is considered an important as a customer decision-makers (d) the hotel focuses more B2B (business) than B2C (leisure) guest (e) it is a five-star property (f) More International guests. The path of development within sustainability is focused on saving energy and not on the social dimension of sustainability. The amount of investment needed for the various positions and unique AI and IoT resources will be addressed. These limitations can form the basis for future research.

Keywords: Sustainability, Artificial Intelligence, Internet-of-Things, Hotel Management, Sustainability readiness

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Lung Nodule Detection and Classification based on Feature Merging and Genetic Algorithm

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Abstract

The purpose of this study is to increase the accuracy of the early detection of lung nodes through the design of Computer-Aided Detection (CAD). Comparative studies of the effectiveness of the most commonly used methods for extracting and classifying features were conducted, and methods that give the highest accuracy and the least false-positive results were identified. To develop an accurate automatic detection system for the early detection of lung nodules, we directly investigated candidates for lung nodules without removing blood vessels. The feature is extracted by using feature extraction methods. To utilize the extracted features, the extracted features were connected using the feature merge technique, and the features were selected by the new hybrid feature vector. The genetic algorithm (GA) search based on the classification accuracy rate of the used classifier was also applied to the hybrid feature vector. To archive, high classification accuracy was selected three classifiers and performed a comparison of their performance.

Keywords: Computer-Aided Detection, Genetic Algorithm, Classification, Lung nodule

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Devops – Scaling Ideas and Implementing Cloud Automation

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Abstract

The automation and cloud have independently taken things in a very fluent and smooth way like never before. Employing cloud platform has changed the outlook on the utilization of data in everything. The number of individuals who are employed to perform a single task is now reduced with the help of automation getting implemented. In order to achieve cloud automation, DevOps is the new methodology that the software circle is adapting to. DevOps enables speed along with quality and risk management in cloud. Only knowing the programming or only working on the operational knowledge base will not accomplish today's need of automating the cloud procedures but a bit more dwelling up and integrating the development and operational pools will make it and that's what the DevOps will be radiating. This culture of DevOps is an approach to introduce new methods and bring all the ideas and different wings of work under one roof. Cloud technology is the revolutionary phase the industry is going through and many major organizations have seen profits as well as fast growth adapting to this. The various industries like Genetic, manufacturing, construction, service, and many more but, these are using automation in and out by deploying cloud at some end in it. DevOps uses various tools and technologies like Git, Jenkins, Docker, and many more, improving the security concerns thus giving the best result. In the perspective of companies offering cloud as a service, they really have a lot that can be automated. Though we have taken the services up to the cloud, the ratio of the dedicated employees and the manpower needed to maintain it has increased very much and thus become very expensive. Therefore, automating the workflow in cloud will result in better cloud architecture and service to be delivered promptly.

Keywords: Devops, Cloud, Automation, Git, Docker, Jenkins

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Progression towards Society 5.0: Internet of Things (IoT) based Wireless Sensor Network for Tracking & Monitoring Wetlands of Odisha

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Abstract

Today we live in a world with increasingly complex societal problems and only sustainable development goals can be a trade-off which Society 5.0 talks about. Ageing society with huge industrial advancements, improper wealth distribution, increased carbon footprint, and inadequate Artificial intelligence-based approaches in the agriculture domain and urbanization accomplishments have hugely impacted the level and quality of natural groundwater resources around the globe. Here, we especially address - Odisha, an eastern state of India. It has about 78,000 wetlands which have a huge impact on the socio-economic activities in the region. Water from these wetlands is used for agriculture and domestic use as well. Wetlands are important for carbon sequestration, flood control, groundwater recharge, and biodiversity maintenance. They directly impact society in terms of employment and the quality of livelihood. The state of Odisha has two important wetlands, namely - Bhitarkanika Mangroves and Chilika Lake that are extensively monitored. However, there is no mechanism to monitor the entire wetland system as a whole. An Internet of Things (IoT) based heterogeneous wireless sensor network can be deployed in an economically viable manner for monitoring these water bodies. The huge amount of data generated by these sensors can be collated into a cloud system. A software system is modeled here, which can use the data collected by sensors and efficiently report the changes in the salinity, pollution levels, groundwater level, and the changes in biodiversity of the state. When the change in the values reaches a certain threshold as per the proposed system design, necessary alarms would be raised that could aid in taking effective decisions for agriculture-related activities.

Keywords- Society 5.0, Internet of Things (IoT), Wireless Sensor Network (WSN), Wetland Monitoring

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Economic Analysis of Different Variants of Unreliable Server

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Abstract

This paper analyzes a finite capacity queueing system with a single server in a Markovian environment for different variants of the unreliable server. Three different cases are discussed using the queueing-theoretic approach and nomenclatures based on the characteristics of the unreliable server. For each case, the Chapman-Kolmogorov differential-difference equations are demonstrated. Further, to depict the steady-state queue-size distribution, the matrix method is used. Additionally, explicit closed-form expressions of the various quality performance measures are provided, which are used to construct an expected total cost function. A cost optimization problem is developed to determine the optimal combination of system design parameters with the minimal expected cost of the service system. To ascertain the solution of the developed cost optimization problem, the classical optimizer: Quasi-Newton method is used. Lastly, several graphs and tables are provided for the validity of the research findings.

Keywords: Markov chain, Server breakdown, Working breakdown, Service pressure condition, Threshold-based recovery policy, Quasi-Newton method.

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Markovian Analysis of Finite Capacity Queue with Unreliable Server

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Abstract

In this paper, we analyze a queueing system that is composed of impatience of customers, working breakdown under service pressure condition with threshold-based recovery policy. Customers arrive in the system in a Poisson manner, and service rendered follows an exponential distribution. When the queue length is large enough, the server under pressure conditions increases the service rate in order to reduce the queue length. The arriving customers have a tendency to behave impatiently and leave the system without getting service. Further, the matrix analytic method is used to calculate the steady-state probability distribution. The profit maximization problem is formulated, and the classical optimizer: The Quasi-Newton method, is used to calculate the optimal values of system design parameters. Lastly, several graphs and tables are provided to show the quality performance of the service system.

Keywords: Single server, Customers' Impatience, Unreliability of the server, Working breakdown, Service pressure condition, Threshold-based recovery policy, Quasi-Newton method.

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Duality Theorems for k-Invex Functions

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Abstract

For a class of k- invex functions we present duality theorems, namely the weak duality, strong duality and converse duality. Lagrangean duality, Wolfe's duality and Frenchel's duality are taken into consideration. We have generalized the existing results for convex, k- convex and invex functions. The concept of k - convexity is analyzed for both smooth and non- smooth cases which are important in vector optimization.

Keywords: k- convex functions, invexity, duality, vector optimization

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A Parametric Non-Convex Optimization Approach to Machine Learning Problem

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Abstract

In recent times, in the field of signal processing and machine learning the non-convex optimization approach has proved itself to be efficient in finding optimal solutions to problems which were thought of as NP-hard. Stochastic optimization, gradient descent, relaxation methods, expectation maximization algorithm are some of the techniques which are frequently used in non-convex optimization. In this presentation we generalize some of the existing application oriented problems to functional domain so that the preview and scope is broadened to a large scale of problems. The paper studies the basic tools theoretically with an analytical approach. We also propose a non-convex vector optimization model for a generalized machine learning problem. Here we have used parametric non-convex programming.

Keywords: Parametric non-convex optimization, machine learning, vector optimization

2020 MATHEMATICS SUBJECT CLASSIFICATION: AMS: 68U01, AMS: 90-02

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Second Law Analysis of Mixed Convective Eyring-Powell Nanofluid Flow Between Porous Parallel Plates with Hall and Ion Slip Currents

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Abstract

This present article investigates the entropy generation on an unsteady mixed convective Eyring-Powell Nano fluid flow confined between parallel plates in a porous medium with Brownian motion and thermophoresis, Hall and ion slip currents. Considered there be a periodic suction and injection along with the plates and the temperature and concentration are changing periodically concerning time. The governing set of flow field partial differential equations (PDEs) are reduced into nonlinear ordinary differential equations (ODEs) by using feasible suitable similarity variables then solved numerically using the shooting method with Runge-Kutta 4th order method. The results are discussed in detail for Non-dimensional velocity profiles, temperature, concentration profiles, entropy generation number and Bejan number for various fluid and geometric parameters and presented in the form of graphs. Skin friction coefficient, heat and mass transfer rates are also calculated and presented in the form of tables.

Keywords: Eyring Powell fluid; Brownian motion; thermophoresis; shooting method; Hall and ion slip effects.

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Second Law Analysis in Squeezing Flow of MHD Casson Nanofluid Between Parallel Disks with Thermal Radiation

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Abstract

This paper discusses the second law analysis of an unsteady squeezing flow of MHD Casson nanofluid confined between two parallel disks under the influence of thermal radiation. The lower disk is porous and the upper one is impermeable. The governing partial differential equations are converted as nonlinear ordinary differential equations by using similarity variables then the reduced ordinary differential equations are solved with the help of the shooting method along with the Runge-Kutta 4th order method. The effects of various non-dimensional fluid and geometric parameters on the velocity components, temperature components, entropy generation number and Bejan number are studied in detail and presented in the form of graphs and also the skin friction at lower and upper plates are presented in the form of tables.

Keywords: Entropy generation; Casson Nano fluid; MHD; thermal radiation; shooting method.

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Heat and Mass Transfer of Mixed Convective MHD Micropolar Nanofluid Flow between Parallel Plates in a Porous Medium

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Abstract

In this present study, thermophoresis and Brownian motion effects on Micro-polar fluid flow between parallel plates are discussed. The boundaries of the plates are maintained at distinct temperatures and concentrations while the fluid is being sucked and injected periodically through upper and lower plates. The system of governing partial differential equations is converted as a system of ordinary differential equations by using similarity transformations. The shooting method with Runge-kutta fourth-order scheme is used for solutions. The dimensionless velocity, heat and mass profiles are analyzed for various fluid and geometric parameters and shown graphically.

Keywords: Micro-polas nanofluid; thermophoresis; Brownian motion; shooting method.

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Experimental Study of Nanofluids Heat Transfer Characteristics for Application in a Car Radiator

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Abstract

The study of heat transfer characteristics of heat exchangers in a car radiator is used nanofluids as heat transfer media. The convective heat transfer of water-based CuO nanofluid flowing through a uniformly heated tube has been investigated. The thermal conductivity and dynamic viscosity of the prepared nanofluids have also been measured and modelled at different temperatures and nanoparticle concentrations. This model has investigated the effects of particle concentration, particle diameter, and particle and base fluid material on the heat transfer rate at different Reynolds numbers. The investigated results can be very useful to annualize the potential application of nanofluid-based car radiators.

Keywords: Nanofluid, Convective heat transfer, Experimental study, Car radiator.

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Numerical and Experimental Study on Heat Transfer Enhancement in Car Radiator by Using Nano Fluid

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Abstract

This study review heat transfer enhancement in car radiators by using different types of nanofluids like CuO, Al_2O_3, etc. applying the car radiator industries. In the present world, it requires powerful water-cooled engines in modern cars. Currently, it created problems of insufficient rate of engine cooling. So that, it requires a compact design of a radiator which being small in size and equivalent capacity of engine cooling. For enhancing the cooling capacity, whereas many approaches are used in the design and there is no more scope in this area to enhance heat transfer. So, there is a gap to study modern technology. Heat transfer enhancement of nanofluid is more than conventional fluids. This reduced or compact shape may result in improving the fuel economy and reducing the weight of the vehicle.

Keywords: Car radiator, Experimental study, Heat transfer enhancement, Nanofluid

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Thermal Convection Analysis in an Inclined Porous Layer with the Effect of Mass Flow

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Abstract

The present study is analyzing the influence of mass flow on thermal convection in an inclined fluid-saturated porous layer. Also, examine the thermal instability effect on inclined porous layer by applying the linear stability analysis. The stability to small-amplitude distributions is analyzed concerning longitudinal and transidental rolls by using three dimensional normal modes. The resultant eigenvalue problem is solved numerically by using the Chebyshev-Tau method for evaluating the critical thermal Rayleigh number with respect to various flow governing parameters.

Keywords: Linear stability analysis, heat source, inclined porous layer.

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Improved Ferroelectric, Piezoelectric and Conductivity Properties of Sm, Na Substituted Strontium Bismuth Titanate Lead-Free Piezoelectric Ceramics

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Abstract

Lead-free Bismuth Layer-Structured Ferroelectrics (BLSF) ceramics, Sr1-2xSmxNaxBi4Ti4O15 (x=0.0 to 0.4), are synthesized by solid-state reaction method via mechanical ball milling for 10 hours. The role of Sm, Na on ferroelectric, piezoelectric and electrical conduction of these Lead-free piezoelectric ceramics, are investigated. The XRD and SEM studies are employed to identify the phase composition and morphology of the samples, which confirms single phase formation and typical orthorhombic sheet-like structure of the material. The ferroelectric (P-E loop) and piezoelectric properties (piezoelectric coefficient and electromechanical coupling factor) are studied at room temperature. These results show improved ferroelectric (2Pr) and piezoelectric properties with an increase of Sm, Na content in SrBi4Ti4O15 ceramics. The optimal properties are achieved at x=0.4 with a maximum remnant polarization (2Pr) of 0.63 μC/cm2, piezoelectric coefficient (d33) of 17 pC/N and electromechanical coupling factor (kp) of 0.67. The temperature and frequency dependant electrical conductivity studies are carried out between room temperature and 650oC, in the frequency range 1 kHz to 100 kHz. The activation energies (Ea) are determined from Arrhenius plots, and it is observed that there is an increase in Ea with increasing concentrations of Sm, Na which can be attributed to the decrease in oxygen vacancies due to doping at the A-site of the BLSF ceramics.

Keywords: Ferroelectricity, piezoelectric coefficients, activation energy and AC conductivity.

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Effect of Ball Milling Duration on Structural and Dielectric Properties of Sm, Na Substituted SBTi Ceramics

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Abstract

$Sr_{1-2x}Sm_xNa_xBi_4Ti_4O_{15}$ (x=0.0 - 0.4) lead-free piezoelectric ceramics were prepared via a solid-state sintering approach using a high energy planetary ball mill. The milling time was for 10 hours for one batch of samples and 20 hours for another. The ball-mill was operated at a constant speed of 200 rpm. XRD (X-Ray Diffraction) studies reveal a single-phase formation, and there was no significant difference in the XRD between 10 and 20 hours' samples. The average grain size was effectively reduced from 5μm to 2 μm with increasing milling duration. Temperature-dependent dielectric properties were carried out at different frequencies. Although both the batches showed improved dielectric properties due to Sm, Na substitution, a pronounced lowering of dielectric constant and increase in Curie temperature was achieved with an increase of milling time. This is due to the reduction of granular size and better homogeneity seen in the micrographs of the 20 hours' samples.

Keywords: Ball mill, grain size, Curie temperature, dielectric constant and homogeneity.

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Controlling Non-Autonomous Matter Waves in ``Smart" Transient Trap Variations

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Abstract

In this paper, we study the controllable behaviour of non-autonomous matter waves in different "smart" transient trap variations in the context of the cigar-shaped Bose-Einstein condensates. By utilizing a novel self-similarity transformation, we reduce the non-autonomous Gross-Pitaevskii (GP) equation, to the familiar elliptic equation with soliton solutions. This process leads to a consistency equation which is in the form of a Riccati equation. The connection between the Riccati and the linear Schroedinger equation through the Cole-Hopf transformation is exploited here to introduce temporal trap variations. For our study, we explore the possibility of using one dimensional exactly solvable potentials and their newly constructed rational extensions, as functions of time, to introduce interesting temporal trap modulations. The regular potentials and their rational extensions being structurally different, leads to different temporal modulations. It is exhibited that the soliton behaviour with respect to compression/amplification etc., in both these cases is different.

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Non-abelian Chern-Simons Spinor Electrodynamics in the Light-Cone Gauge

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Abstract

We investigate the one-loop quantum corrections of Non-abelian Chern-Simons spinor electrodynamics in the light-cone gauge. For this investigation, we have used a hybrid regularization consisting of a higher covariant derivative regularization and dimensional continuation. To handle the spurious light-cone singularity in the gauge field propagator we make use of the Mandelstan-Leibbrandt prescription.

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Experimental Investigation of Laser-Induced Shock Waves from Polymers

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Abstract

Characterization of the new polymers is not an easy task as the conversion of optical energy to kinetic energy is essential in understanding the laser ablation of polymers. Polymers are considered to be cleaner, environmentally friendly replacements for older perchlorate-based propellants and hence used as plasma thrusters. For e.g., energetic hydroxyl terminated polybutadiene (HTPB) is being used as a binder for high-performance composite propellants. The energy released in the process and the propagation speed of the gaseous products can be understood by studying the laser ablative shock waves and blow-off shock waves. Propagation of Laser Ablative Shock Waves and contact front from the polymers into the ambient atmosphere was studied using time-resolved defocused shadowgraphy technique. Second harmonic of Nd:YAG laser of wavelength 532nm, pulse duration 7ns and repetition rate 10Hz is used to create laser ablative shock waves by ablating energetic polymers of HTPB (~ 260μm thick) and its variants with energetic additives taken in the form of a sheet were studied over 0.2-30 μs time scales. The results were compared with non-energetic Poly Vinyl Chloride polymer (PVC) (130μm) under the same experimental conditions.

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Rational Calogero Model: Bound State Problem with Exceptional Gegenbauer Polynomial Solutions

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Abstract

The three-body calogero model is a separable problem in the Jacobi coordinates. The angular part can be mapped to the Scarf potential, which displays band and bound spectra based on the range of the potential parameter. In this study, we construct the rational extension of the Calogero model for the bound state spectrum in the angular variable. The corresponding eigenfunctions are in terms of the rational Gegenbauer polynomials. A similar extension of the radial part leads to the exceptional Laguerre polynomials.

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Fractional Statistics in 1D with Exceptional Gegenbauer Polynomial Solutions

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Abstract

The angular part of the separable three-body Calogero model exhibits a band spectrum for a certain potential parameter range. It is rationally extended using the isospectral shift method. The band-edge eigenfunctions of the new rational periodic potential are in terms of the exceptional Gegenbauer polynomials. The new periodic potential is discussed in the context of fractional statistics by applying the anyonic boundary conditions.

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Nickel and Sodium Phosphate Composite with Wall Putty Substantive as Energy Saving Decorating Material

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Abstract

A phosphate-based inorganic mixture of Nickel and Sodium has been synthesized and various measurement techniques were used to characterize it. Composite mixtures of this mixture were synthesized with assimilation of wall putty. The DSC (Differential Scanning Calorimetry) of the mixture was studied in two thermal cycles from 298 K to 223 K at 10 K min^{-1} in a normal atmosphere and found endothermic behaviour after a cycle, Cp = 75.13 J g^{-1} K^{-1}. The specific heat capacity (Cp) of 4.42 % composite mixture is found to exhibit a lower Cp value as compared to wall putty by 20% at 343K. The Cp of wall putty is 4.96 Jg^{-1} K^{-1} at 300 K while Cp of 4.42 % and 12.11 % composite mixture is 2.70 Jg^{-1} K^{-1} and 4.00 Jg^{-1} K^{-1} at 300 K, respectively. This composite mixture can be used in exterior walls of the buildings instead of wall putty alone. So, coating material of 4.42% mixture can keep the buildings cooler than expected.

Keywords: Composite mixture; Heat storage; Phosphate; wall putty; Differential Scanning Calorimetry (DSC)

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Structural, Magnetic and Thermal Study of CoFe2O4/MnO2/C Core–Shell Nanoparticles

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Abstract

The synthesis of $CoFe_2O_4/MnO_2/C$ core–shell nanoparticles (NPs) was performed using a two-step method by vapour deposition. The diameter and crystallite size of the synthesized $CoFe_2O_4/MnO_2$ NPs were lower than 20 nm after sintering at 800^0C for a period of 5 hrs. Both phases were confirmed by XRD and Fourier transform infrared spectroscopy (FT-IR). Acetylene gas (C_2H_2) was used as a carbon precursor and coating was performed for 1, 2, and 3 h. After coating, the core size was below 30 nm and the thickness of the shell was below 8 nm. The composition, structure, and morphology of the fabricated NPs were characterized using X-ray diffraction (XRD), transmission electron microscopy (TEM), CHNS analysis. The vibrational sample magnetometer (VSM) was used to investigate the magnetic properties. To study the coated carbon, micro-Raman spectroscopy was used. A combined TG-DSC analysis was carried out to analyse the thermal behaviour which revealed endothermic behaviour of the NPs.

Keywords

Nano-composites; Precipitation; Vapor deposition; Raman spectroscopy; VSM; TG-DSC

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Phosphate and Sulfate Containing Inorganic Mixtures of Copper as Thermal Retardant: Synthesis, Characterization and Study of Thermal Behaviour

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Abstract

The phosphate and sulfate mixture of inorganic compounds such as $Cu_3(PO_4)_2$, $CuH(PO_4)_2$ and $NaHSO_4.H_2O$ was synthesized by charging copper sulfate pentahydrate with phosphoric acid. The specific heat capacity of this mixture was evaluated using Differential Scanning Calorimetry (DSC) at both high and low temperatures compared to room temperature at a rate of 10 K min^{-1}. The composite materials were prepared using this mixture with wall care putty alone as well as $CaCO_3$ along with glue. The thermal property of these composite materials was also studied in the N_2 atmosphere at a rate of 5 K min^{-1}. The thermal property of the mixture was measured from 303 to 573 K and vice versa in two thermal cycles and one thermal cycle at low temperature up to 173 K from 298 K. The evaluated specific heat capacity revealed that the mixture shows endothermic, while its composite materials show the same behavior with reduced magnitude of endothermicity. Due to this behavior, these composite materials can be used at the interface of any substance such as buildings in order to prevent the conduction of heat inside the substance. As far as the application is concerned, this composite is a better candidate compared to building decorating substances alone.

Keywords Coating, DSC; heat retardant; wall care putty, $CaCO_3$ with glue

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SnO2/LiFe2O4/Graphene Nanocomposites as Anode Materials for Lithium-Ion Batteries

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Abstract

$SnO_2/LiFe_2O_4$/Graphene nanocomposites have been developed by a one-step hydrothermal synthesis method for Lithium-ion batteries. The nanocomposites have good electrochemical performance due to the synergetic effect of graphene, $LiFe_2O_4$, and SnO_2 nanoparticles. The electrochemical performance was found to be better as the SnO_2 content was increased. After 50 cycles, the nanocomposite with 50 wt% SnO_2 typically has a high reversible capacity of 600.3 mA h/g at a current density of 195 mA/g, which can be as high as 76.9% of the first cycle. After 100 cycles, the material likewise has a discharge capacity of 613 mA h/g at 800 mA/g. The incorporation of SnO_2 in the host $LiFe_2O_4$-graphene oxide accounts for the increased electrochemical performance. Furthermore, graphene sheets can improve electrical conductivity and absorb volume changes to some extent, allowing the structure to remain intact while cycling stability and rate capability are improved.

Keywords:

Anode material; Li-ion batteries; Raman spectroscopy; TG-DSC; XPS

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Spectrophotometric Studies of Cefotaxime (CFX) and their CFX- Cd (II) and CFX- Cu (II) Complexes

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Abstract

In the present investigations, the determination of Cefotoxime (CFX) and its Cd (II) and Cu (II) metal complexes was carried out by the spectrophotometric method. Effect of pH, the effect of concentration of metal ion, the effect of concentration of a drug, effect of time, the effect of organic solvents and the composition of the complex were studied by mole ratio and Job's continuous variation method. Interference studies were also carried out for the determination of metal ions and drugs. In this research work, it is clear that Cd(II) and Cu(II) form stable 1:1 colored complexes with CFX in basic and acidic mediums respectively. pH studies reveal that the formation of CFX-Cd(II) and CFX-Cu(II) complexes have taken place at pH 11.0 and 5.5 respectively. In these reactions, it is found that the metal ions are in the range 1.12 to 6.74 and 3.812 to 8.895 µg/ml for Cd(II) and Cu(II)complexes respectively whereas the drug is in the range 0.02 to 0.14 mg/ml respectively. Effect of time clearly suggests that the maximum absorbance is obtained only after heating the mixture at 40° and 60°C for CFX- Cd (II) and CFX- Cu (II) complexes respectively. It has been observed that the absorbance values remain constant thereafter which indicates the formation of 1:1 stable metal complexes.

KEYWORDS: Spectrophotometric technique, Cefotaxime, Cadmium (II) and Copper (II).

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A Design Model of Copyright Protection System Based on Distributed Ledger Technology

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Abstract

Nowadays, copyright protection systems are centralized. However, a centralized copyright system is typically tedious and expensive to maintain and does not provide adequate features to the users. Here, we aimed to eliminate copyright infringement, in which all created work of the creators is continuously recorded in a distributed ledger and with the association of smart contracts, ownership transfer and licensing of the created work for user can be carried out effortlessly through association with smart contracts. We developed a model based on blockchain technology that ensures to extract the features provenance for tracing of ownership transfer histories which in turn ensures system transparency and traceability. The copyright system model implementation and design are performed using smart contracts, Web3.js library, and JavaScript. Furthermore, the system is tested on both a local network, the Truffle suite, and the Kovan test network. This paper covers in detail blockchain, the existing copyright system and how blockchain can be implemented in this system effectively. A solution model is designed for the system along with an explanation of the procedure to build the system.

Keywords: Blockchain, Smart Contracts, Transparency, Traceability, Decentralized

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International Conference on Innovative Computing and Communication (ICICC 2020)

Deep Convolutional Neural Networks for Classification of Interstitial Lung Disease

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Abstract:

Automated lung tissue characterization of Interstitial Lung Disease is one of the most important aspects of the Computer Aided Disease diagnosis system. The problem remains challenging, even though there has been much research in this area. While deep learning has produced brilliant success in image applications over the past few years, the majority of training is with sub-optimal parameters, requiring unnecessary long training time, setting up hyper parameters. In this paper, we explore the classification of lung tissue pattern affected with interstitial lung disease (ILD) in high resolution computed tomography (HRCT) scans and evaluated different CNN architectures with and without transfer learning. The effect of cyclical learning rates, the hyper-parameters tuning and data augmentation on classification performance are studied using a popular publicly available dataset called MedGift dataset.

Keywords: Interstitial Lung Disease, Deep learning, cyclical learning rate, Hyper-parameters, Computed Tomography

1. Introduction

Interstitial lung disease (ILD) is a chronic lung disease. Expose to hazardous chemicals is one of the reasons, for the cause. The precise reasons is however unknown. The disease is distinguished by inflammation of the lung tissue, often leading to scarring, usually called pulmonary fibrosis. Once a person is affected with ILD, it is irreversible, may decrease the symptoms by medication, but the disease is progressive [1]. As reported by Dinwiddie et al. through a natural survey of ILD in children's show the prevalence rate for children aged 0-16 years in the United Kingdom and Ireland is estimated to be 3-6 cases/million [3] . It is hard for the doctors to diagnose ILD as many disorders fall under this category. High- Resolution Computed Tomography (HRCT) of chest is considered to be one of the best techniques for the diagnosis of ILD [4]. However, due to large volumetric data, it is often difficult for radiologist to read all the images. This introduces inter as well as intra observer variations in disease diagnosis. Hence, there is a need of development of Computer Aided Diagnosis for ILD. Most of the work reported in literature related to automatic classification of lung tissues uses conventional approach. Each method extracts a fixed set of features and trains a classifier. The progress in image recognition, segmentation and classification has been tremendous, primarily because of the availability of large-scale annotated datasets (Image Net [5] [6]). Image Net is a very extensive database of over 14 million categorized with 1000+ class natural images to date. The objective of this paper is to study the effect of transfer learning on classification performance of different Convolutional Neural Network (CNN) architectures [7, 8] for the classification of lung tissues affected with ILD. The following three major paradigms are evaluated in this paper:-

1) Performance of different CNN architectures without transfer learning
2) Performance of different CNN architectures using Transfer learning pre trained on Image Net datasets
3) The effect of data augmentation and hyper parameters tuning

MedGift dataset [11], a publicly available popular lung image dataset I used for the above purposes.

Although ILD's are historically diverse groups of diseases, they mostly have medically similar manifestations even with various lung disorders. Therefore, it is too difficult that even experimental physicians find it difficult to diagnose differences. The inherit property of ILDs, the lack of strict clinical guidelines and the vast number of radiological data that are to be tested, explains the poor diagnostic precision [10]. Due to the lack of large labelled training data, convolution neural networks for computer aided detection problems were previously under studied as they need more data to leverage promising results. Advances in deep learning motivates many researchers to evaluate various CNN architectures varying in width and depth by inheriting and adapting rich hierarchical image features using transfer learning [9] for possible use in medical image classification.

2. Related work

This section provides an overview of the earlier studies on ILD pattern classification. Previously presented systems have used hand-crafted features to identify lung tissue that often refuses to adapt to new information or patterns. Regardless whether made use hand crafted or learned features are used, choosing a suitable classifier to manage feature space properties optimally is also crucial and difficult [19]. Marina et al. [20] used bag of visual words to classify interstitial lung disease. After the impressive performance on Imagenet database [8], some have tried particularly to use deep Convolutional neural networks (CNN) to identify interstitial lung disease. Christodoulidis et al [22] tried to implement CNN on lung tissue classification. Shin et al [23] tried to make use of transfer learning on Convolutional neural networks and they implemented different architectures that won the image net competition.

3. Method

The section discusses about the dataset and the pre-processing techniques and the architectures used to carry out the work.

A. Dataset:

For performance evaluation the publicly available database MedGift [11] is used. Cases with interstitial lung disease are collected at university

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