CHAROTAR UNIVERSITY OF SCIENCE AND TECHNOLOGY

Criteria 3

Research, Innovations and Extension

Metric 3.4.6	Number of books and chapters in edited volumes published per teacher during the last five years
3.4.6.1	Total number of books and chapters in edited volumes / books published, and papers in national/international conference-proceedings year wise during the last five years

Supporting Documents

1	Books and Chapters in Edited Volumes , Books Published, and Papers in National/International Conference Proceedings **(Year : 2016)**

Faculty of Technology & Engineering

International Conference on Vibration Problems 2015

Edited by Santosha K. Dwivedy, Rajiv Tiwari
Volume 144,
Pages 1-1476 (2016)

Previous vol/issue Next vol/issue

Editorial Open access
Preface
S.K. Dwivedy, R. Tiwari
Pages 1-2
Download PDF

A Structural Dynamics

Research article Open access
Advances in Aero Structures
J.S. Rao
Pages 3-25
Download PDF Article preview

Buckling and Vibrations of Multi-directional Functionally Graded Circular Plate Resting on Elastic Foundation
Neha Ahlawat, Roshan Lal
Pages 85-93

Download PDF Article preview

Research article *Open access*

Vibration Control Using BCW Induction Motor
Gaurav Kumar, Karuna Kalita
Pages 94-101

Download PDF Article preview

Research article *Open access*

On Safety Assessment and Base Isolation of Heavy Non-structural Monolithic Objects
Andrea Chiozzi, Michele Simoni, Antonio Tralli
Pages 102-109

Download PDF Article preview

Research article *Open access*

Experimental Determination of Structural Damping of Different Materials
Himanshu Mevada, Dipal Patel
Pages 110-115

Download PDF Article preview

Research article *Open access*

Free Vibration Analysis of an Asymmetric Sandwich Beam Resting on a Variable Pasternak Foundation
M. Pradhan, M.K. Mishra, P.R. Dash
Pages 116-123

Download PDF Article preview

Research article *Open access*

Experimental Study of Plain and Reinforced Concrete Targets Subjected to Impact Loading
Abhishek Rajput, R. Jakka, B.M. Pruthvik, M.A. Iqbal
Pages 124-131

Download PDF Article preview

Research article *Open access*

Progressive Collapse of a Cable Stayed Bridge
R. Das, A.D. Pandey, Soumya, M.J. Mahesh, ... S. Anvesh
Pages 132-139

Download PDF Article preview

Research article *Open access*

Structural Analysis of a Historical Dam
Soumya, A.D. Pandey, R. Das, M.J. Mahesh, ... P. Saini
Pages 140-147

Available online at www.sciencedirect.com

ScienceDirect

Procedia Engineering 144 (2016) 110 – 115

Procedia Engineering

www.elsevier.com/locate/procedia

12th International Conference on Vibration Problems, ICOVP 2015

Experimental determination of structural damping of different materials

Himanshu Mevada[a],Dipal Patel[b]

[a]Department of Mechanical Engineering,cspit,India,388421
[b]Department of Mechanical Engineering,cspit,India,388421

Abstract

Estimating damping in structure composed of different materials (steel, brass, aluminum) and processes still remains as one of the most extremely vast challengers. The paper presents Structural damping effect on beam vibration by impact hammer. Structural damping contributes to about 10-15% of total system damping. The main objective of this work is to estimate the natural frequency and damping ratio of cantilever beams of Aluminum, Brass, and Steel by LabVIEW software and validate the result with vibration analysis and Harmonic analysis utilizing ANSYS. Free vibration analysis was carried out for identifying the natural frequencies and the harmonic analysis was carried out for obtaining frequency replication curves from which damping ratios were estimated utilizing Half- power Band Width Method. It is observed that damping ratio is higher for brass than steel than aluminum.

Peer-review under responsibility of the organizing committee of ICOVP 2015

Keywords: Structural Damping, LabVIEW, FFT, Half-Power Bandwidth Method, Harmonic analysis, Ansys

1. Introduction

The concept of damping within a structural system can have different meanings to the various trade branches. Damping is one of many different methods that have been proposed for allowing a structure to achieve optimal performance when it is subjected to seismic, wind storm or other types of transient shock and vibration disturbances. [5] Vibration is an element which is hard to avoid in practice. Excitation of resonant frequencies of some structural parts can occur with existence of vibration even it is only a small insignificant vibration. The number of times that a complete motion takes place during the period of one second is called frequency which is measured in Hertz (Hz).[10] Dynamic analysis aims at understanding, evaluating and modifying the structural dynamic behaviour which involves many terms such as natural frequencies, eigenvalues, eigenvectors, damping ratios, Frequency Response Functions (FRFs) etc. Modal analysis is an effective means for identifying, accepting and simulating dynamic behaviour and responses of structural elements. Modal analysis using ANSYS is an effective method of determining vibration characteristics [14]. Material

Peer-review under responsibility of the organizing committee of ICOVP 2015
doi:10.1016/j.proeng.2016.05.013

Procedia Technology

Open access

3rd International Conference on Innovations in Automation and Mechatronics Engineering 2016, ICIAME 2016 05-06 February, 2016

Edited by Anand Y Joshi, Vinod N Patel

Volume 23,

Pages 1-572 (2016)

Download full issue

Vinod N. Patel, Anand Y. Joshi

Pages 1-3

Download PDF

Editorial *Open access*

Autonomy for Robots: Design and Developmental Challenges (Keynote Address)

Asokan Thondiyath

Pages 4-6

Download PDF Article preview

Editorial *Open access*

Nonlocal Mechanics Based Computational Methods for Nano-mechanical Sensors (Keynote Address)

Sondipon Adhikari

Pages 7-19

Download PDF Article preview

Research article *Open access*

An Experimental Study on Stress Concentration Around a Hole Under Combined Bending and Stretching Stress Field

Sushanta Ghuku, Kashi Nath Saha

Research article Open access

Investigation of Delamination Factor in High Speed Drilling on Chopped GFRP Using ANFIS

Ashish B. Chaudhari, Vijay Chaudhary, Piyush Gohil, Kundan Patel

Pages 272-279

Download PDF Article preview

Research article Open access

Improvement in the Surface Integrity of AISI D3 Tool Steel Using Rotary Tool Electric Discharge Machining Process

Anand Prakash Dwivedi, Sounak Kumar Choudhury

Pages 280-287

Download PDF Article preview

Research article Open access

Study of Solid Particle Erosion Behaviour of SS 304 at Room Temperature

Mayank Patel, Darshan Patel, S. Sekar, P.B. Tailor, P.V. Ramana

Pages 288-295

Download PDF Article preview

Available online at www.sciencedirect.com

ScienceDirect

Procedia Technology 23 (2016) 272 – 279

Procedia Technology

3rd International Conference on Innovations in Automation and Mechatronics Engineering, ICIAME 2016

Investigation of Delamination Factor in High Speed Drilling on Chopped GFRP using ANFIS

Ashish.B.Chaudhari[a], Vijay Chaudhary[b], Piyush Gohil[c], KundanPatel[d]

[a,b,d]*Mechanical Engineering Department, Charotar University of Science and Technology, Gujarat, 388421, India*
[c]*Department of Mechanical Engineering, Faculty of Technology, M S University Vadodara, Gujarat, 390002, India.*

Abstract

High speed machining is a key method to increase the productivity and reduce the cost during manufacturing. Delamination is a prevalent disadvantage while drilling of composites. Full factorial design (FFD) was used to evaluate delamination factor (DF) by studying process parameters. DF was evaluated with an influence of process parameter during the drilling of composites such as, cutting speed, depth of cut and feed rate. For determination of significance of each process parameters analysis of variance (ANOVA) was studied with their influence on process parameters. Adoptive neuro fuzzy interface system (ANFIS) models were developed to predict delamination factor as a function of different combination of machining parameters. Comparison of experimental DF with the predicted ANFIS model was carried out. After comparing the experimental results with the predicted results it is found that the root means square error (RMS) at DF at entry and exit are1.4732% and 2.9277% respectively.

Peer-review under responsibility of the organizing committee of ICIAME 2016

Keywords: Delamination factor (DF); High Speed Drilling (HSD);Image Analysis; Analysis of Variance (ANOVA); ANFIS;

1. Introduction

The use of fiber reinforced composites (FRC) materials in aerospace as well as automobile industries has grown-up significantly in last decades because of their only one of its kind properties such as high specific stiffness and strength to weight ratio, superior corrosive resistance high damping, and low thermal expansion. Conventional drilling is usually the most essential operation during the assembly of the structures in these applications. The defects in the fiber reinforced composites causes the denial of the parts correspond to an expensive loss. For example, drilling-associated delamination accounts for 60% to 70% rejections during final assembly in the aircraft and automotive industry [1].The quality of the holes such as roughness/waviness at its wall surface may lead to its failure. Delamination, stress concentration, micro and macro cracking associated with machined holes extensively

Peer-review under responsibility of the organizing committee of ICIAME 2016
doi:10.1016/j.protcy.2016.03.027

ScienceDirect

Procedia Technology

Open access

3rd International Conference on Innovations in Automation and Mechatronics Engineering 2016, ICIAME 2016 05-06 February, 2016

Edited by Anand Y Joshi, Vinod N Patel

Volume 23,

Pages 1-572 (2016)

Download full issue

Previous vol/issue Next vol/issue

Editorial Open access

Preface

Vinod N. Patel, Anand Y. Joshi

Pages 1-3

Download PDF

Editorial Open access

Autonomy for Robots: Design and Developmental Challenges (Keynote Address)

Asokan Thondiyath

Pages 4-6

Download PDF Article preview

Editorial Open access

Nonlocal Mechanics Based Computational Methods for Nano-mechanical Sensors (Keynote Address)

Sondipon Adhikari

Pages 7-19

Download PDF Article preview

Research article *Open access*

Multiphysics Simulation of Laser Cladding Process to Study the Effect of Process Parameters on Clad Geometry

Ravi Parekh, Ramesh Kumar Buddu, R.I. Patel

Pages 529-536

Download PDF Article preview

Research article *Open access*

Effect of Velocity Index on Grain Size of Friction Stir Processed Al-Zn-Mg-Cu Alloy

Vivek V. Patel, Vishvesh J. Badheka, Abhishek Kumar

Pages 537-542

Download PDF Article preview

Research article *Open access*

An Experimental Investigation of Temperature Distribution and Joint Properties of Al 7075 T651 Friction Stir Welded Aluminium Alloys

P.H. Shah, Vishvesh Badheka

Pages 543-550

Download PDF Article preview

Research article *Open access*

Experimental Investigation of Ultrasonic Welding on Non-metallic Material

Umang Parmar, D.H. Pandya

Pages 551-557

Download PDF Article preview

Research article *Open access*

Influence of Tool Pin Profile and Welding Parameter on Tensile Strength of Magnesium Alloy AZ91 During FSW

Nikul Patel, K.D. Bhatt, Vishal Mehta

Pages 558-565

Download PDF Article preview

Research article *Open access*

Experimental Analysis of Friction Stir Welding of Dissimilar Alloys AA6061 and Mg AZ31 Using Circular Butt Joint Geometry

Heena K. Sharma, Kamlesh Bhatt, Krunal Shah, Unnati Joshi

Pages 566-572

Download PDF Article preview

Previous vol/issue Next vol/issue

ISSN: 2212-0173

Available online at www.sciencedirect.com

ScienceDirect

Procedia Technology 23 (2016) 558 – 565

Procedia Technology

3rd International Conference on Innovations in Automation and Mechatronics Engineering, ICIAME 2016

Influence of Tool Pin Profile and Welding Parameter on Tensile Strength of Magnesium Alloy AZ91 during FSW

Nikul Patel[a], K.D.Bhatt[b], Vishal Mehta[c]

[a]*M.Tech.PG student, CSPIT,CHARUSAT University, Changa,388421,India*

[b]*Assosiate Professor, Production Engineering Department, BVM, V.V.Nagar,388120,India*

[c]*Assitant Professor, Mechanical Department, CSPIT,CHARUSAT University, Changa,388421,India*

Abstract

Magnesium is flammable material and to avoid its limitation of fusion welding solid state welding process, called friction stir welding (FSW), is applied for joining two plates together. The friction stir welding uses a non-consumable tool for joining abutting plates of magnesium alloy AZ91 having 6 mm thickness. FSW process joins the plates with advantages such as low distortion, no shielding gas required, and fine recrystallized microstructure. In Friction stir welding, process parameters such as welding speed, tool rotation speed, tool dimensions and axial force play an important role during welding. In the present work, the 6 mm thick plates of the said alloy are joined at welding speed of 28 mm/min to 56 mm/min with tool rotation speed ranging from 710 rpm to 1400 rpm. Tensile testing was carried out to know the best parameter from the selected ones. Observations are also made for any defects by using fluorescent penetrant testing and photo micrographs.

Peer-review under responsibility of the organizing committee of ICIAME 2016

Keywords: FSW, Tool Pin Profile, Tensile Strength, FPI, Magnesium Alloy AZ91;

1. Introduction

Welding is most important and widely used process in fabrication industries. There are number of welding techniques used for fabrication according to the applications, environment and material to be welded. Welding techniques are divided into different categories; friction stir welding is one of the categories of solid state welding process. Friction stir welding (FSW) was invented at The Welding Institute (TWI) of The United Kingdom in 1991 as a solid state (fusion less) joining technique [1]. Friction stir welding is considered to be the most significant development in metal joining in decades and, in addition, is a "green" technology due to its energy efficiency, environmental friendliness, and versatility. As compared to conventional welding methods, FSW consumes

Peer-review under responsibility of the organizing committee of ICIAME 2016

doi:10.1016/j.protcy.2016.03.063

ScienceDirect

Procedia Technology

Open access

3rd International Conference on Innovations in Automation and Mechatronics Engineering 2016, ICIAME 2016 05-06 February, 2016

Edited by Anand Y Joshi, Vinod N Patel
Volume 23,
Pages 1-572 (2016)
Download full issue

Previous vol/issue Next vol/issue

Editorial Open access
Preface
Vinod N. Patel, Anand Y. Joshi
Pages 1-3
Download PDF

Editorial Open access
Autonomy for Robots: Design and Developmental Challenges (Keynote Address)
Asokan Thondiyath
Pages 4-6
Download PDF Article preview

Editorial Open access
Nonlocal Mechanics Based Computational Methods for Nano-mechanical Sensors (Keynote Address)
Sondipon Adhikari
Pages 7-19
Download PDF Article preview

Pages 296-303

Download PDF Article preview

Research article *Open access*

Effect of Turning Parameters on Tool Wear, Surface Roughness and Metal Removal Rate of Alumina Reinforced Aluminum Composite

Puneet Bansal, Lokesh Upadhyay

Pages 304-310

Download PDF Article preview

Research article *Open access*

Experimental Study on Temperature Measurement in Turning Operation of Hardened Steel (EN36)

Mehul Gosai, Sanket N. Bhavsar

Pages 311-318

Download PDF Article preview

Research article *Open access*

Theoretical Investigation of Friction at Die/Billet Interface in Hydrostatic Extrusion of Commercially Pure Aluminum

Pankaj Tomar

Pages 319-327

Download PDF Article preview

Research article *Open access*

Examination of Zinc Oxide Films Prepared by Magnetron Sputtering

Pranav Y. Dave, Kartik H. Patel, Kamlesh V. Chauhan, Amit Kumar Chawla, Sushant K. Rawal

Pages 328-335

Download PDF Article preview

Research article *Open access*

Investigation of Various Properties for Zirconium Oxide Films Synthesized by Sputtering

Uttkarsh S. Patel, Kartik H. Patel, Kamlesh V. Chauhan, Amit Kumar Chawla, Sushant K. Rawal

Pages 336-343

Download PDF Article preview

Research article *Open access*

Experimental Investigation and Prediction of Flatness and Surface Roughness During Face Milling Operation of WCB Material

Saurin Sheth, P.M. George

Pages 344-351

Download PDF Article preview

Research article *Open access*

Experimental Investigation of Process Parameters for Rapid Prototyping Technique (Selective Laser Sintering) to Enhance the Part Quality of Prototype by Taguchi Method

Available online at www.sciencedirect.com

ScienceDirect

Procedia Technology 23 (2016) 328 – 335

Procedia Technology

3rd International Conference on Innovations in Automation and Mechatronics Engineering, ICIAME 2016

"Examination of zinc oxide films prepared by magnetron sputtering"

Pranav Y. Dave[a#], Kartik H. Patel[a], Kamlesh V. Chauhan[a], Amit Kumar Chawla[b], Sushant K. Rawal[a*]

[a]CHAMOS Mathusanstha Department of Mechanical Engineering, Chandubhai S. Patel Institute of Technology (CSPIT), Charotar University of Science and Technology (CHARUSAT), Changa- 388421, Gujarat, India
[b]Institute of Nanoscience and Nanotechnology, University of Petroleum and Energy Studies, Energy Acres, Dehradun-248 007, Uttarakhand, India
*Corresponding Author: Sushant K. Rawal E-mail address: sushantrawal@outlook.com Tel.: +912697 265060

Abstract

Nano-structured zinc oxide thin films were deposited on corning glass substrate by magnetron sputtering process. Zinc oxide films were deposited at different gas ratio values of argon:oxygen kept at 2sccm:18sccm, 6sccm:14sccm, 10sccm:10sccm and 14sccm:6sccm. X-ray Diffraction (XRD) technique was used to characterize ZnO thin films. The XRD graphs indicate presence of (100) and (002) peaks for ZnO thin films. Contact angle and surface energy of nano-structured ZnO thin films were determined by contact angle goniometer. Zinc oxide films are hydrophobic by nature and their contact angle value varies from 98.3° to 102.1° with decrease in flow rate of oxygen gas and increase in argon gas flow rate. UV-Vis-NIR spectrophotometer was used to characterize optical properties of ZnO thin films.

Peer-review under responsibility of the organizing committee of ICIAME 2016

Keywords: *Zinc Oxide; Sputtering; Optical properties; Wettability*

1. Introduction

Surface engineering is defined as modification of near-surface structure, chemistry or property of a substrate in order to achieve superior performance and durability. Wetting phenomenon which is identified with surface change or surface treatment procedure has gotten huge enthusiasm from both principal and application perspective. [1][2]. Zinc Oxide (ZnO) is a wide-band gap semiconductor of the II-VI semiconductor group that has several favourable properties, including good transparency, high electron mobility, wide band gap and strong room-temperature luminescence. Zinc compounds were probably used by early humans, in processed and unprocessed forms, as a

Peer-review under responsibility of the organizing committee of ICIAME 2016
doi:10.1016/j.protcy.2016.03.034

Green Approaches to Biocomposite Materials Science and Engineering

Deepak Verma
Graphic Era Hill University, Dehradun, India

Siddharth Jain
College of Engineering Roorkee, India and University of Alberta, Canada

Xiaolei Zhang
Queens University, Belfast, UK

Prakash Chandra Gope
College of Technology, G.B.Pant University of Agriculure and Technology, Pantnagar, India

A volume in the Advances in Chemical and Materials Engineering (ACME) Book Series

ENGINEERING SCIENCE REFERENCE
An Imprint of IGI Global

Published in the United States of America by
Engineering Science Reference (an imprint of IGI Global)
701 E. Chocolate Avenue
Hershey PA 17033
Tel: 717-533-8845
Fax: 717-533-8661
E-mail: cust@igi-global.com
Web site: http://www.igi-global.com

Library of Congress Cataloging-in-Publication Data

Names: Verma, Deepak, 1983- editor. | Jain, Siddharth, 1984- editor. | Zhang, Xiaolei, 1986- editor. | Gope, Prakash Chandra, editor.
Title: Green approaches to biocomposite materials science and engineering / Deepak Verma, Siddharth Jain, Xiaolei Zhang, and Prakash Chandra Gope, editors.
Description: Hershey, PA : Engineering Science Reference, [2016] | Includes bibliographical references and index.
Identifiers: LCCN 2016012151| ISBN 9781522504245 (hardcover) | ISBN 9781522504252 (ebook)
Subjects: LCSH: Fibrous composites. | Sustainable engineering.
Classification: LCC TA418.9.C6 G74 2016 | DDC 620.1/97--dc23 LC record available at https://lccn.loc.gov/2016012151

This book is published in the IGI Global book series Advances in Chemical and Materials Engineering (ACME) (ISSN: 2327-5448; eISSN: 2327-5456)

British Cataloguing in Publication Data
A Cataloguing in Publication record for this book is available from the British Library.

Table of Contents

Preface xiv

Chapter 1
Natural Fibers for the Production of Green Composites 1
Xiaolei Zhang, Queen's University Belfast, UK
Jun Li, University of Strathclyde, UK
Siddharth Jain, College of Engineering Roorkee, India
Deepak Verma, Graphic Era Hill University, Dehradun, India

Chapter 2
Processing Technologies for Green Composites Production 24
Deepak Verma, Graphic Era Hill University, India
Garvit Joshi, Graphic Era Hill University, India
Rajneesh Dabral, Graphic Era Hill University, India

Chapter 3
Concurrent Design of Green Composites 48
Muhd Ridzuan Mansor, Universiti Teknikal Malaysia Melaka, Malaysia
S. M. Sapuan, University Putra Malaysia, Malaysia
Mohd Azli Salim, Universiti Teknikal Malaysia Melaka, Malaysia
Mohd Zaid Akop, Universiti Teknikal Malaysia Melaka, Malaysia
M. T. Musthafah, Universiti Teknikal Malaysia Melaka, Malaysia
M. A. Shaharuzaman, Universiti Teknikal Malaysia Melaka, Malaysia

Chapter 4
Effect of Bamboo Hybridization and Staking Sequence on Mechanical Behavior of Bamboo-Glass Hybrid Composite 76
Piyush P. Gohil, The M. S. University of Baroda, India
Kundan Patel, CHARUSAT, India
Vijaykumar Chaudhary, CHARUSAT, India
Ronak Ramjiyani, CHARUSAT, India

Chapter 5
Estimation of Mechanical and Tribological Properties of Epoxy-Based Green Composites 96
Supriyo Roy, Birla Institute of Technology, India
Sumit Bhowmik, National Institute of Technology, India
J. Paulo Davim, University of Aveiro, Portugal
Kaushik Kumar, Birla Institute of Technology, India

Chapter 6
Fabrication and Processing of Pineapple Leaf Fiber Reinforced Composites 125
S. H. Sheikh Md. Fadzullah, Universiti Teknikal Malaysia Melaka, Malaysia
Zaleha Mustafa, Universiti Teknikal Malaysia Melaka, Malaysia

Chapter 7
Green Composites and Their Properties: A Brief Introduction 148
Deepak Verma, Graphic Era Hill University, India
Prakash Chandra Gope, College of Technology, India
Xiaolei Zhang, Queen's University Belfast, UK
Siddharth Jain, University of Alberta, Canada
Rajneesh Dabral, Graphic Era Hill University, India

Chapter 8
Rice Husk Reinforcement in Polymer Composites 165
Sanjay Sharma, Graphic Era Hill University, India
Deepak Verma, Graphic Era Hill University, India

Chapter 9
Techno-Economic and Life Cycle Assessment for the Production of Green Composites 192
Siddharth Jain, College of Engineering Roorkee, India
Xiaolei Zhang, Queen's University Belfast, UK

Chapter 10
Banana Fiber Reinforcement and Application in Composites: A Review 201
Abhinav Shandilya, Federal Mogul Goetze India Ltd., India
Ayush Gupta, College of Engineering Roorkee, India
Deepak Verma, Graphic Era Hill University, India

Chapter 11
Bamboo Fiber-Reinforced Composites 228
Irem Sanal, Atlim University, Turkey

Chapter 12
Coir Fiber-Reinforced Composites 247
Irem Sanal, Atilim University, Turkey

Compilation of References 276

About the Contributors 312

Index 319

Chapter 4
Effect of Bamboo Hybridization and Staking Sequence on Mechanical Behavior of Bamboo–Glass Hybrid Composite

Piyush P. Gohil
The M. S. University of Baroda, India

Vijaykumar Chaudhary
CHARUSAT, India

Kundan Patel
CHARUSAT, India

Ronak Ramjiyani
CHARUSAT, India

ABSTRACT

The advancement of polymer composites containing natural fibers as a manageable option material for certain designing applications, especially aviation and car applications, is a well-known area of investigation. Nevertheless, the high mechanical properties connected with synthetic fibers they are awesome and lavish contrasted with natural fibers. The utilization of natural plant fibers and mixes of natural and synthetic fibers for making ease building materials has produced much interest recently. In the present work, bamboo–glass hybrid polyester composites were produced and their mechanical properties like elasticity and flexural quality were assessed for different weight fraction and distinctive stacking sequence. The outcomes observed that bamboo–glass mixture composites offered the benefits of both natural and synthetic fibers. It is also observed that hybridization started a material with general intermediate properties between pure glass and pure bamboo. However, the significance of controlling the stacking grouping to upgrade properties was evident.

DOI: 10.4018/978-1-5225-0424-5.ch004

Table of contents

Volume 149
2016

‹ Previous issue Next issue ›

International Conference on Advances in Materials and Manufacturing Applications (IConAMMA-2016) 14–16 July 2016, Bangalore, India

Accepted papers received: 05 September 2016
Published online: 11 October 2016

Open all abstracts

Preface

OPEN ACCESS 011001
IConAMMA Abstract
G B Veeresh Kumar and R Pramod
+ Open abstract View article PDF

OPEN ACCESS 011002
International Conference on Advances in Materials and Manufacturing Applications (IConAMMA-2016)
+ Open abstract View article PDF

OPEN ACCESS 011003
Peer review statement
+ Open abstract View article PDF

Papers

OPEN ACCESS 012001
Engineering Changes in Product Design - A Review
K Karthik and K Janardhan Reddy
+ Open abstract View article PDF

Product Development and its Comparative Analysis by SLA, SLS and FDM Rapid Prototyping Processes

C M Choudhari and V D Patil

+ Open abstract View article PDF

OPEN ACCESS 012010

Effect of Cryogenic Treatment on Tool Life of HSS Tool (S400) and Surface Finish of the Material in Turning of SS304

A V Pradeep, S V Satya Prasad, L V Suryam, Y Kesava Rao and D Kesava

+ Open abstract View article PDF

OPEN ACCESS 012011

A Drone Remote Sensing for Virtual Reality Simulation System for Forest Fires: Semantic Neural Network Approach

Gudikandhula Narasimha Rao, Peddada Jagadeeswara Rao and Rajesh Duvvuru

+ Open abstract View article PDF

OPEN ACCESS 012012

"Investigations on the machinability of Waspaloy under dry environment"

J Deepu, P Kuppan, A S SBalan and R Oyyaravelu

+ Open abstract View article PDF

OPEN ACCESS 012013

Optimization and Analysis of Laser Beam Machining Parameters for Al7075-TiB_2 In-situ Composite

S Manjoth, R. Keshavamurthy and G S Pradeep Kumar

+ Open abstract View article PDF

OPEN ACCESS 012014

Laser assisted machining: a state of art review

Gurabvaiah Punugupati, Kishore Kumar Kandi, P S C Bose and C S P Rao

+ Open abstract View article PDF

OPEN ACCESS 012015

Characterization of sputtered zirconium nitride films deposited at various argon:nitrogen ratio

Nicky P. Patel, Kamlesh V. Chauhan, Jaydeep M. Kapopara, Nayan N. Jariwala and Sushant K. Rawal

+ Open abstract View article PDF

IOP Conf. Series: Materials Science and Engineering **149** (2016) 012015 doi:10.1088/1757-899X/149/1/012015

Characterization of sputtered zirconium nitride films deposited at various argon:nitrogen ratio

Nicky P. Patel[1], Kamlesh V. Chauhan[1], Jaydeep M. Kapopara[1], Nayan N. Jariwala[1], Sushant K. Rawal[2]

[1]CHAMOS Matrusanstha Department of Mechanical Engineering,
Chandubhai S. Patel Institute of Technology (CSPIT),
Charotar University of Science and Technology (CHARUSAT),
Changa-388421, Gujarat, India.
[2]Department of Mechanical Engineering, McMaster University,
1280 Main St., W. Hamilton, ON, L8S 4L7, Canada

Corresponding author: sushantrawal@outlook.com

Abstract. Zirconium nitride films were deposited by reactive magnetron sputtering using argon as inert gas and nitrogen as reactive gas. The nitrogen flow rate in argon:nitrogen ratio was increased from 4sccm to 20sccm by an increment of 4sccm. The effect of increment in nitrogen flow rate on various properties of deposited zirconium nitride films are reported in this paper. The structural characterization was done by X-Ray diffraction which confirms (011) peak of Zr_3N_4 and a very low intensity (111) peak of Zr_3N_4. Optical properties was investigated by Uv-Vis-NIR spectrophotometer which showed that the films were transparent and maximum transmittance observed was around 82%. The wettability properties was investigated by contact angle goniometer which showed the films were hydrophobic and maximum contact angle achieved was 99.5°.

KEY WORDS: Zirconium nitride; Sputtering; Contact angle; Wettability.

1. Introduction

Transition metal nitrides have stimulated many scientific interest because of their properties such as high hardness, good wear and oxidation resistance that permit to use them as hard coating [1]. Zirconium nitride (ZrN) have been extensively studied for industrial applications as hard coatings,

Table of contents

Volume 149

2016

Previous issue Next issue

International Conference on Advances in Materials and Manufacturing Applications (IConAMMA-2016) 14–16 July 2016, Bangalore, India

Accepted papers received: 05 September 2016

Published online: 11 October 2016

Open all abstracts

Preface

OPEN ACCESS 011001

IConAMMA Abstract

G B Veeresh Kumar and R Pramod

+ Open abstract View article PDF

OPEN ACCESS 011002

International Conference on Advances in Materials and Manufacturing Applications (IConAMMA-2016)

+ Open abstract View article PDF

OPEN ACCESS 011003

Peer review statement

+ Open abstract View article PDF

Papers

OPEN ACCESS 012001

Engineering Changes in Product Design - A Review

K Karthik and K Janardhan Reddy

+ Open abstract View article PDF

OPEN ACCESS

012058

Consequences of N_2 gas flow variation on properties of zirconium oxide-nitride films

Nayan N. Jariwala, Kamlesh V. Chauhan, Parth P. Pandya, Nicky P. Patel and Sushant K. Rawal

+ Open abstract View article PDF

OPEN ACCESS

012059

Jet slurry erosion performance of composite clad and its characterization

Lohit R B, Gururaj S Horakeri and Prabakhar M Bhovi

+ Open abstract View article PDF

OPEN ACCESS

012060

A Study on Effect of Graphite Particles on Tensile, Hardness and Machinability of Aluminium 8011 Matrix Material

B Latha Shankar, K.C Anil and Prasann J Karabasappagol

+ Open abstract View article PDF

OPEN ACCESS

012061

Study on performance of concrete with over-burnt bricks aggregates and micro-silica admixture

K Praveen, Dhanya Sathyan and K M Mini

+ Open abstract View article PDF

OPEN ACCESS

012062

Microstructure and Mechanical Behaviour of Al6061-ZrB_2 In-situ Metal Matrix Composites

R Vasanth Kumar, R Keshavamurthy and Chandra S Perugu

+ Open abstract View article PDF

OPEN ACCESS

012063

Effect of dispersant on the rheological properties of gelcast fused silica ceramics

Kishore Kumar Kandi, Sumit Kumar Pal and C S P Rao

+ Open abstract View article PDF

OPEN ACCESS

012064

Corrosion inhibition properties of graphene oxide on mild steel in 3.5% NaCl

Prem Anandh Senthilvasan and Murali Rangarajan

+ Open abstract View article PDF

OPEN ACCESS

012065

IOP Conf. Series: Materials Science and Engineering **149** (2016) 012058 doi:10.1088/1757-899X/149/1/012058

Consequences of N_2 gas flow variation on properties of zirconium oxide-nitride films

Nayan N. Jariwala[1], Kamlesh V. Chauhan[1], Parth P. Pandya[1], Nicky P. Patel[1], Sushant K. Rawal[2]
[1]CHAMOS Matrusanstha Department of Mechanical Engineering,
Chandubhai S. Patel Institute of Technology (CSPIT),
Charotar University of Science and Technology (CHARUSAT),
Changa-388421, Gujarat, India.
[2]Department of Mechanical Engineering, McMaster University,
1280 Main St., W. Hamilton, ON, L8S 4L7, Canada

Coresponding Author: sushantrawal@outlook.com

Abstract. Zirconium oxide-nitride films was prepared by RF reactive magnetron sputtering in presence of helium, oxygen and nitrogen gases. The N_2 gas flow rate was varied for each consecutive run of sputtering at values of 66, 72, 78, 84, and 90 sccm respectively. Zirconium oxide-nitride films showed structural variation in evolution of various textures as detected by X-ray diffraction. It showed good transmission values above 50% for all samples. Wettability studies of zirconium oxide-nitride films was done by contact angle goniometer. All samples depict hydrophobic behaviour as all films have contact angle values above 90° and as nitrogen gas flow rate increases, the films roughness as well as contact angle increases. Tribological test is done on zirconium oxide-nitride films coated on aluminium, brass and mild steel pins, which give excellent wear resistance compared to uncoated pins.

KEY WORDS: Zirconium oxide-nitride; Sputtering; Wettability; Hydrophobic; Tribology

1. Introduction

In recent times, thin films are gaining importance because of their decorative, tribological, self-cleaning, and many more properties. Zirconium oxide-nitrides are one of them having excellent properties like anti corrosion [1], high hardness [2], and hydrophobicity [3]. Zirconium oxide-nitride has attracted researchers because it has properties in between zirconium oxides that have high corrosion resistance and zirconium nitrides that have high hardness. Moreover, it can also be deposited by using air as a reactive gas therefore eliminating the mandatory requirement of oxygen and nitrogen gas cylinders [4], [5].

Zirconium oxide-nitride films are synthesized by many methods including ion plating [6], cathodic arc evaporation [7], metal organic chemical vapor deposition [8], and sputtering [1]–[3], [9]–[18]. Sputtering is relatively very old technology and was reported by Wright in 1877. The power source used for creating the plasma while sputtering is either DC or RF. The main disadvantage of DC power

Table of contents

Volume 149
2016

Previous issue Next issue

International Conference on Advances in Materials and Manufacturing Applications (IConAMMA-2016) 14–16 July 2016, Bangalore, India

Accepted papers received: 05 September 2016
Published online: 11 October 2016

Open all abstracts

Preface

OPEN ACCESS 011001
IConAMMA Abstract
G B Veeresh Kumar and R Pramod
+ Open abstract View article PDF

OPEN ACCESS 011002
International Conference on Advances in Materials and Manufacturing Applications (IConAMMA-2016)
+ Open abstract View article PDF

OPEN ACCESS 011003
Peer review statement
+ Open abstract View article PDF

Papers

OPEN ACCESS 012001
Engineering Changes in Product Design - A Review
K Karthik and K Janardhan Reddy
+ Open abstract View article PDF

OPEN ACCESS 012200

Experimental and Numerical Analysis of Micro-Scale Heat Transfer using Carbon based Nanofluid in Microchannel for Enhanced Thermal Performance

Bhupinder Singh, Maniratan Singh, Harry Garg, Inderpreet Kaur, Suman Suryavanshi and Hemant Kumar

+ Open abstract View article PDF

OPEN ACCESS 012201

A review on graphite and hybrid nano-materials as lubricant additives

Gautam Anand and Prateek Saxena

+ Open abstract View article PDF

OPEN ACCESS 012202

Comparative study of acoustic relaxation time of cholesteric liquid crystal and mixtures

Manisha G Bhave, Rita Gharde and S Radha

+ Open abstract View article PDF

OPEN ACCESS 012203

Selection of Twist and Chord Distribution of Horizontal Axis Wind Turbine in Low Wind Conditions

M Purusothaman, T N Valarmathi and S Praneeth Reddy

+ Open abstract View article PDF

OPEN ACCESS 012204

Experimental Investigation of Heat transfer rate of Nano fluids using a Shell and Tube Heat exchanger

M SIVA ESWARA RAO, DOWLURU SREERAMULU and D ASIRI NAIDU

+ Open abstract View article PDF

OPEN ACCESS 012205

Modelling and analysis of sputter deposited ZrN coating by CFD

Jaydeep M. Kapopara, Akshaykumar R. Mengar, Kamlesh V. Chauhan, Nicky P. Patel and Sushant K. Rawal

+ Open abstract View article PDF

OPEN ACCESS 012206

Performance Evaluation of Diesel Engine with Preheated Bio Diesel with Additives

Sai Ram Vajja and R B V Murali

+ Open abstract View article PDF

OPEN ACCESS 012207

Modelling and analysis of sputter deposited ZrN coating by CFD

Jaydeep M. Kapopara[1], Akshaykumar R. Mengar[2], Kamlesh V. Chauhan[1], Nicky P. Patel[1], and Sushant K. Rawal[3]

[1]CHAMOS Matrusanstha Department of Mechanical Engineering,
Chandubhai S. Patel Institute of Technology (CSPIT),
Charotar University of Science and Technology (CHARUSAT),
Changa-388421, Gujarat, India
[2]Department of Mechanical Engineering, Faculty of Technology,
Dharmsinh Desai University, College Road,
Nadiad- 387001, Gujarat, India
[3]Department of Mechanical Engineering,
McMaster University, 1280 Main St., W. Hamilton, ON, L8S 4L7, Canada

Corresponding author: sushantrawal@outlook.com

Abstract. The objective of the present work is to investigate the effect of various sputtering parameters such as velocity, mass flow rate on velocity profiles, pressure profiles, density profiles and concentration distribution of the process gases (argon and nitrogen) of zirconium nitride films deposited on glass and silica substrate by RF magnetron sputtering. A three dimensional Computational Fluid Dynamics (CFD) study has been carried out using Fluent-ANSYS commercial code to visualize the mixing behavior of process gases inside the deposition chamber. The results show that the location of gas inlet port has a greater influence on gas distribution inside the chamber where reactive gas will form coating. By having this information, one can able to modify the reactor geometry and gas flow openings along with its positions for better gas flow over the substrate which in turns gives an indirect indication of coating from the composition point of view.

KEY WORDS: CFD; Concentration; Sputtering; ANSYS

1. Introduction

In the last few decades, thin films based on transition metal nitrides have been widely used in different technological areas [1–3], because of their promising properties together with their shiny and golden appearance, which makes them highly attractive for applications such as decorative coatings in several commercial and industrial sectors[4,5]. A variety of nanoscale multilayered coatings have been studied

International Conference on Smart Engineering Materials (ICSEM 2016), October 20-22, 2016

Edited by B.E. Kumara Swamy, B.M. Nagabhushana, H.P. Nagaswarupa
Volume 5, Issue 10, Part 1,
Pages 20785-21538 (2018)

Previous vol/issue Next vol/issue

Research article Abstract only
Soft Sensor for Capacitance Tracking in Quality Assurance of Fruit Ripening Process
K. Sujatha, V. Srividhya, R.S. Ponmagal, T. Godhavari
Pages 20785-20792
Download PDF Article preview

Research article Abstract only
Synthesis, characterization and electrical properties of PANI-Ni_2O_3 nanocomposites
D. Syamala Bai, R. Padma Suvarna, B.M. Nagabhushana
Pages 20793-20802
Download PDF Article preview

Research article Abstract only

Research article ○ Abstract only

Assessment of porous media combustion with foam porous media for surface/submerged flame

Ayub Ahmed Janvekar, M.Z. Abdullah, Zainal Arifin Ahmad, Aizat Abas, ... Mohammed Ziad Desai

Pages 20865-20873

Download PDF Article preview

Research article ○ Abstract only

Experimental Studies of D.C. Conductivity and Thermo Electric Power of Polypyrrole/Titanium Dioxide Nano Composites

V.B. Aaditya, Akhil D. Prabhu, B.M. Bharathesh, B.V. Chaluvaraju, ... M.V. Murugendrappa

Pages 20874-20881

Download PDF Article preview

Research article ○ Abstract only

Chemically Synthesized Polypyrrole/Titanium Dioxide-MWCNT (PTM) Nano Composites for Experimental Studies of D.C. Conductivity and Thermo Electric Power

B.M. Bharathesh, V.B. Aaditya, Akhil D. Prabhu, B.V. Chaluvaraju, ... M.V. Murugendrappa

Pages 20882-20889

Download PDF Article preview

Research article ○ Abstract only

Fabrication of carbon black/HDPE/polyaniline functionalized multi-walled carbon nanotube composites for enhancing PTC characteristics

T. Jeevananda, Siddaramaiah, Joong Hee Lee

Pages 20890-20898

Download PDF Article preview

Research article ○ Abstract only

Development and analysis of tantalum nitride coatings prepared by DC reactive sputtering

Jaydeep M. Kapopara, Kamlesh V. Chauhan, Nayan N. Jariwala, Akash A. Gandhi, Sushant K. Rawal

Pages 20899-20903

Download PDF Article preview

Research article ○ Abstract only

Synthesis and Characterization of Copper Doped Zinc Oxide Thin Films for CO Gas Sensing

Sachin S Bharadwaj, B.W. Shivaraj, H.N. Narasimha Murthy, M Krishna, ... Vitthal Sangappa Angadi

Pages 20904-20911

Download PDF Article preview

Available online at www.sciencedirect.com

ScienceDirect

Materials Today: Proceedings 5 (2018) 20899–20903

materialstoday: PROCEEDINGS

www.materialstoday.com/proceedings

ICSEM 2016

Development and analysis of tantalum nitride coatings prepared by DC reactive sputtering

Akash A. Gandhi[a], Kamlesh V. Chauhan[a], Jaydeep M. Kapopara[b], Nayan N. Jariwala[a], Sushant K. Rawal[c*]

[a]CHAMOS Matrusanstha Department of Mechanical Engineering, Chandubhai S. Patel Institute of Technology (CSPIT), Charotar University of Science and Technology (CHARUSAT), Changa-388421, Gujarat, India.
[b]Department of Mechanical Engineering, Alpha College of Engineering and Technology, Khatraj-382721, Gujarat, India.
[c]McMaster Manufacturing research Institute, Department of Mechanical Engineering, McMaster University, 1280 Main Street West, Hamilton, ON, L8S 4L7, Canada.

Abstract

The objective of the present work is to investigate the effect of DC power variation on structural, wettability and tribological properties of tantalum nitride coatings deposited by DC reactive magnetron sputtering. The X-ray diffraction graphs of tantalum nitride coating show evolution of various textures of tantalum nitride with an increase in DC power. Wettability test showed promising results for hydrophobicity as the DC power supply was increased from 230 to 430W. The lowest contact angle of 95.6° was achieved at DC power of 230W and the highest contact angle of 100.2° was achieved at 430W. The wear test was done on uncoated and tantalum nitride coated cylindrical pins of brass and mild steel. The pins showed improvement in wear resistance when coated with tantalum nitride.

Selection and Peer-review under responsibility of INTERNATIONAL CONFERENCE ON SMART ENGINEERING MATERIALS (ICSEM 2016).

Keywords: Tantalum nitride; Wear; Tribology; Hydrophobic; Wettability

1. Introduction

Tantalum nitride coatings are recognized as chemically inert[01], corrosion resistant and hard material [02].They are used as decorative coatings [02], dielectriclayers [03], adhesion promoters in the microelectronics industry and

* Corresponding author. Tel.: +1 647 673 8701
E-mail address: sushantrawal@outlook.com

Selection and Peer-review under responsibility of INTERNATIONAL CONFERENCE ON SMART ENGINEERING MATERIALS (ICSEM 2016).

Proceedings on

2016 2nd International Conference on Next Generation Computing Technologies (NGCT)

October 14th - 16th, 2016

Center for information Technology

University of Petroleum and Energy Studies, Dehradun

Technical Sponsor:

IEEE UP Section (INDIA)

Co-Sponsors

Part Number: CFP16C42-ART
ISBN: 978-1-5090-3257-0

Technical Support & Inquiries

Mr. Ravi Tomar
T: +91-8439363671, F: +91-135-2776095, E: rtomar@ddn.upes.ac.in

Table of Contents

Track 1: ADVANCED TECHNOLOGIES		
Paper ID	**Title**	**Page No.**
56	IoT based Realtime Signature Authentication and Transfer from Document to Document using DNA Encryption *Sharon Ann Zachariah Zachariah, Divya Rajasekar, Dhanya N and Agilandeeswari Loganathan*	1
59	Capital Market Forecasting By Using Sentimental Analysis *Rohan Srivastava, Soumil Agarwal, Dhruv Garg and Jagdish Chandra Patni*	9
107	CSMA/CA Channel Synchronization using Semaphore *Mukesh Kumar Khandelwal, Manali Chandnani and Meeta Sharma*	13
109	An analytical approach for leukemia diagnosis from light microscopic images of RBCs *Madhumita Das and Durjoy Majumder*	21
123	Real Time Prediction Of Bus Arrival Time A Review *Aditya Khamparia, Rubina Choudhary and Amandeep Kaur*	25
144	Smart Tourist for Dubai City *Maninder Jeet Kaur and Piyush Maheshwari*	30
146	WASF -Weighted Average based Subjective Feedback System for E-Healthcare Services. *Salaja Silas, Elijah Blessing Rajsingh and Titus Issac*	35
160	IoT based Interactive Shopping Ecosystem *Abhirup Khanna and Ravi Tomar*	40
181	Network on Chip Simulator: Design, Implementation and Comparison of for Mesh, Torus and RiCoBiT Topologies *Nikhil Baby, Sarah Abraham, Sampoorna Ravindranath, Sangeetha Mathew and Dr.Sanju V*	46
183	Slope Stability Analysis in a part of East Sikkim, using Remote Sensing & GIS *M.S.Rawat, Varun Joshi and Y.P.Sundriyal*	51
201	A High Speed and Low Power 4-Bit Multiplier using FinFET Technology *Shikha Bathla and Nidhi Purohit*	61
212	Resource Reliability using Fault Tolerance in Cloud Computing *Talwana Jonathan Charity and Gu Chun Hua*	65
216	Design of CMOS Instrumentation Amplifier with Improved Gain and CMRR for Low Power Sensor Applications *Buddhi Prakash Sharma and Rajesh Mehra*	72
218	DGS Based Mutual Coupling Reduction between Microstrip Patch Antenna Arrays for WIMAX Applications *Aditi Kumar and Satish Devane*	78
219	Hybrid Method of Reduced Order Modelling for LTI System using Evolutionary Algorithm *Afzal Sikander, Padmanabh Thakur and Ishita Uniyal*	84
224	Intelligent Accident Management System using IoT and Cloud Computing *Sarishma, Akriti Singhal and Ravi Tomar*	89
245	A Novel Approach to Image Steganography using Quadtree Partition *Jeet Kumar*	93
248	A Comparison of Dual Material Double Gate JLFET with Single Material Double Gate JLFET *Ajay Kumar, Amit Chaudhry, Vijay Kumar and Vishal Sharma*	99
256	Query Driven Spatial Pattern Analysis and Visualization through GIS	103

434	Outage and Capacity Analysis of Cascaded Diamond Shaped Cooperative Relay Network *Divya Kumar and Arun Kumar*	463

Track 4: DATA SCIENCES

Paper ID	Title	Page No.
20	Comprehensive Analysis of Various Rough Set Tools for Data Mining *Swati Gupta and Sunita Garhwal*	468
48	Knowledge Discovery, Analysis And Prediction in Healthcare using Data Mining And Analytics *Akshay Raul, Atharva Patil, Prem Raheja and Rupali Sawant*	475
69	Recommender System - Making Lifestyle Healthy Using Information Retrieval *Neha Gaur and Archana Singh*	479
82	The Impact of Effectiveness of the Simulator Training Program on Different factors of Needs and Interest of the Training *Surender Kumar, Kirti Arekar and Rinku Jain*	485
85	An Empirical Analysis of Maternal Health Data: A Case Study of India *Shelly Gupta, Shailender Narayan Singh and Dharminder Kumar Gupta*	490
131	Visualization, Analysis and Structural Pattern Infusion of DBLP Co-Authorship Network using Gephi *Niyati Aggrawal and Anuja Arora*	494
178	Computer Aided Technique for Epilepsy Detection Using Crosswavelet Transform and RBF-Kernel Based Support Vector Machine *Sourya Sengupta, Debarshi Chanda, Anirjit Mitra and Saibal Dutta*	501
184	Stock Market Sentiment Analysis Based On Machine Learning *Vikash Singh Rajput and Shirish Mohan Dubey*	506
194	FPGA Realization of Novel Techniques for DDR based Data Acquisition System *Ravi Mehta, Karan Jasani, Dippal Israni and Arpita Shah*	511
208	Improved Email Spam Classification Method Using Integrated Particle Swarm Optimization and Decision Tree *Harpreet Kaur and Ajay Sharma*	516
239	A Novel Prime Numbers Based Hashing Technique for Minimizing Collisions *Rohit K. Bhullar,Lokesh Pawar, Vijay Kumar and Anjali*	522
252	Design Simulation and Performance Assessment of Yield and Loss Forecasting for 100 KWp Grid Connected Solar PV System *Ashish Raj, Manoj Gupta and Sampurna Panda*	528
255	Context Aware Restricted Domain Question Answering System *Swati Pathak and Nidhi Mishra*	534
281	Aspect based opinion mining for mobile phones *Sonal Singh and Nidhi Mishra*	540
284	Exploratory Data Analysis on Temperature Data of Indian States from 1800-2013 *Aditya Agrawal, Dharvi Verma and Shilpa Gupta*	547
305	Time series and Predictability analysis of Air Pollutants in Delhi *Rashmi Bhardwaj and Dimple Pruthi*	553
380	Multidimensional Attacks Classification Based on Genetic Algorithm and SVM *Ramandeep Kaur and Meenakshi Bansal*	561
386	Experimental Analysis of Traditional Classification Algorithms on Bio Medical Datasets *Shobha Aswal, Neelu Jyothi Ahuja and Ritika Arora*	566
397	An Efficient System using Item and User-based CF Techniques to improve Recommendation	569

2016 2nd International Conference on Next Generation Computing Technologies (NGCT-2016)
Dehradun, India 14-16 October 2016

FPGA Realization of Novel Techniques for DDR based Data Acquisition System

Ravi H. Mehta
U. & P. U Patel Department of Computer Engineering,
CSPIT, CHARUSAT University
14pgce018@charusat.edu.in

Prof. Karan Jasani
V. & T. Patel Department of Electronics & Comm. Engineering, CSPIT ,CHARUSAT University
karanjasani.ec@charusat.ac.in

Prof. Dippal Israni
U. & P. U Patel Department of Computer Engineering,
CSPIT , CHARUSAT University
dippalisrani.ce@charusat.ac.in

Prof. Arpita Shah
U. & P. U Patel Department of Computer Engineering,
CSPIT, CHARUSAT University
arpitashah.ce@charusat.ac.in

***Abstract*— A data acquisition system (DAQ) is an electronic system that collects, stores and distributes information for further processing. This paper put together various DDR techniques for synchronized digital data acquisition algorithms and realization with Field Programmable Gate Array (FPGA). The proposed techniques uses Double data rate for high speed data acquisition where data capturing device is source synchronized with data generation source. These techniques eliminates the high utilization of FPGA resources like IO blocks, LUT RAM and Multiplexers. This system is divided into two sections. First is used to acquire data from the Data source and other part is used to store data on high speed storage device. These techniques are simulated and evaluated in XILINX spartan 6 FPGA and static RAM (SRAM). Implemented techniques are compared in terms of resources utilized.**

***Keywords*— Double Data Rate, Data Acquisition System, FPGA, SRAM, VHDL**

I. INTRODUCTION

All the tangible things around us like hardware components, electrical machines, and other physical objects obeys the rules of physics. And all physical activity has quantifiable magnitudes to be measured. These quantity can be in electrical, acoustic, chemical or in radiation. And these days A/D converter are became so advanced that it can capture different magnitudes with very accuracy, and generates lots of data at very high speed[1]. That's where efficient Data acquisition system comes into the picture. The traditional Data Acquisition system are failed to achieve accuracy with high speed[1,2,3,4].

Data Acquisition systems can be classified according to what kind of processing tool is used. Data acquisition system is classified as computer based in which computer micro processor is utilized for processing, storing, and manipulating the acquired data. The another category of data acquisition system is based on embedded microcontroller system. This category has some advantage like low cost, high performance and mobility. But it has some disadvantages also like it has fixed architecture. Any minor change in logic may lead to replace whole system. Final category is consist of reconfigurable FPGA, as its name suggests it can be reconfigured while it is onboard. And its high performance and capacity makes it first choice of any developer. It also has all I/O, processing and storage capabilities required for data acquisition system[2].

Field Programmable Gate Arrays (FPGAs) have proved fastest growing device among the world of processing devices and controllers. They can be programmed for realization of complex hardware design[3]. The FPGA devices are made up of arrays of logical blocks wrapped around programmable IO blocks, interlinked with programmable interconnects[3,5].

High speed ICs can be used for existing data acquisition system but they proved very expensive and speed of ordinary chip is not enough for these tremendous data processing. Here FPGAs outperforms the speed, accuracy of dedicated ICs with its cost and reconfigurability [4].

The rest of the paper is organized as follow. Section II describes the each blocks of proposed diagram. Section III elaborates the working of data acquisition algorithm. Then In Section IV experimental results are discussed and performance is evaluated. Followed by the conclusion in section V.

II. SYSTEM DESIGN

The main aim of the data acquisition is to handle high data rate and efficient storage mechanism for future analysis[1]. Functional blocks of the proposed system is shown in Fig.1 . The details of each block have been discussed in the following subsections.

978-1-5090-3257-0/16/$31.00 ©2016 IEEE

Cloud Computing Systems and Applications in Healthcare

Chintan M. Bhatt
Charotar University of Science & Technology, India

S. K. Peddoju
Indian Institute of Technology Roorkee, India

A volume in the Advances in Healthcare Information Systems and Administration (AHISA) Book Series

IGI GLOBAL
DISSEMINATOR OF KNOWLEDGE
www.igi-global.com

Table of Contents

Foreword xvi

Preface xviii

Acknowledgment xxi

Chapter 1
Mobile Health Care: A Technology View 1
Veda Prakash Mangu, Graphene Semiconductors Ltd., India

Chapter 2
Cloud Based Wireless Infrastructure for Health Monitoring 19
Ajay Chaudhary, Indian Institute of Technology Roorkee, India
Sateesh Kumar Peddoju, Indian Institute of Technology Roorkee, India
Suresh Kumar Peddoju, Kakatiya Institute of Technology and Science, India

Chapter 3
Cloud Based Secure Data Sharing Algorithm for Health Care 47
Saravana Kumar N., VIT University, India
Rajya Lakshmi Gubburi Venkataramana, Northwestern Polytechnic University, USA
Balamurugan B., VIT University, India

Chapter 4
An Adaptive Cloud Proto Type Model for Health Care System: An Adaptive Cloud Proto Type Model for Health Care System Using Software Defined Network (SDN) 66
Drashti Dave, Central University of Rajasthan, India
Nagaraju Aitha, Central University of Rajasthan, India

Chapter 5
Big Data Analytics for Childhood Pneumonia Monitoring 77
Suresh Kumar Peddoju, Kakatiya Institute of Technology and Science, India
Kavitha K., Indian Institute of Technology, India
Sharma S. C., Indian Institute of Technology, India

Chapter 6
Diabetes Patients Monitoring by Cloud Computing 99
Sepideh Poorejbari, Pervasive and Cloud Computing Laboratory, Iran
Hamed Vahdat-Nejad, University of Birjand, Iran
Wathiq Mansoor, University in Dubai, UAE

Chapter 7
IBM's Watson Analytics for Health Care: A Miracle Made True 117
Mayank Aggarwal, GKV, India
Mani Madhukar, IBM, India

Chapter 8
Data Protection and Security Issues in Social Media 135
Chintan M. Bhatt, Charotar University of Science and Technology, India

Chapter 9
Trust, Privacy, Issues in Cloud-Based Healthcare Services 163
Shweta Kaushik, JIIT Noida, India
Charu Gandhi, JIIT Noida, India

Chapter 10
A Methodological Evaluation of Crypto-Watermarking System for Medical Images 189
Anna Babu, M. G. University, India
Sonal Ayyappan, SCMS School of Engineering and Technology, India

Chapter 11
Personalized Neuro-Fuzzy Expert System for Determination of Nutrient Requirements 218
Priti Srinivas Sajja, Sardar Patel University, India
Jeegar Ashokkumar Trivedi, Sardar Patel University, India

Compilation of References 245

About the Contributors 271

Index 279

INDEX

S. NO.	PAPER TITLE	AUTHOR DETAILS
1	AB-EUIDE: AN APPROACH TO THE DESIGN OF ERGONOMIC USER INTERFACES FOR CLOUD COMPUTING	S.RAVI KUMAR:A.P;MD. ADBUL MUQSIT KHAN:BIHAR;Y.K. SUNDARA KRISHNA:A.P;K. CHANDRA SEKHARAIAH:T.S
2	A SURVEY ON IOT PRIVACY ISSUES AND MITIGATION TECHNIQUES	BIRJU TANK:GUJARAT TECHNOLOGICAL UNIVERSITY;HARDIK UPADHYAY:GUJARAT TECHNOLOGICAL UNIVERSITY;HIREN PATEL:GUJARAT TECHNOLOGICAL UNIVERSITY
3	A STUDY ON AGENT BASED ERGONOMIC AND INTELLIGENT USER INTERFACE DESIGN IN CLOUD COMPUTING	S. RAVI KUMAR:A.P;ABDUL MUQSIT KHAN:BIHAR;K.CHANDRA SEKHARAIAH:T.S;Y.K.SUNDARA KRISHNA:A.P
4	INCREASE OF CAPACITY AND QUALITY OF FREQUENCY BASED IMAGE STEGANOGRAPHY USING PARTICLE SWARM OPTIMIZATION	SAMADRITA GUHA:SYMBIOSIS INSTITUTE OF TECHNOLOGY;DIPTI KAPOOR SARMAH:SYMBIOSIS INSTITUTE OF TECHNOLOGY
5	COMPARATIVE STUDY OF WATERMARKING AN IMAGE USING GA AND BFO WITH GA AND HBO TECHNIQUE	GAGANDEEP SINGH:PTU;SANDEEP KAD:PTU
6	A HYBRID APPROACH FOR DETECTION OF PLAGIARISM USING NATURAL LANGUAGE PROCESSING	TAKSHAK DESAI:D.J. SANGHVI COLLEGE OF ENGINEERING;UDIT DESHMUKH:D.J. SANGHVI COLLEGE OF ENGINEERING;MIHIR GANDHI:D.J. SANGHVI COLLEGE OF ENGINEERING;LAKSHMI KURUP:D.J. SANGHVI COLLEGE OF ENGINEERING
7	A GENERIC DEFECT AWARE HEURISTIC APPROACH FOR DROPLET ROUTING IN A DIGITAL MICROFLUIDIC BIOCHIP WITH MINIMAL PIN ASSIGNMENT	SUBHAMITA MUKHERJEE:DEPT. OF IT, TECHNO INDIA, SALTLAKE;INDRAJIT PAN:DEPT. OF IT, RCCIIT, KOLKATA;TUHINA SAMANTA:DEPT. OF IT, IIEST, SHIBPUR
8	STUDY AND IMPLEMENTATION OF RECORD DE-DUPLICATION ALGORITHMS	VAISHALI WANGIKAR:DEPT. OF COMPUTER ENGINEERING ,MIT ACADEMY OF ENGINEERING,PUNE;SACHIN DESHMUKH:DEPT. OF CSIT, DR. B.A. MARATHWADA UNIVERSITY, AURANGABAD;SUNIL BHIRUD:DEPT. OF COMPUTER ENGINEERING AND INFORMATION TECHNOLOGY, VEERMATA JIJABAI TECHNOLOGICAL INSTITUTE, MATUNGA, MUMBAI
9	ENHANCEMENT OF THE CLASSIFICATION PERFORMANCE OF LEAST SQUARE SUPPORT VECTOR MACHINE USING SIMPLE PARTICLE	SHEETAL BAIRWA:GOVERNMENT ENGINEERING COLLEGE AJMER;JYOTI GAJRANI:GOVERNMENT ENGINEERING COLLEGE AJMER;SATYANARAYAN TAZI:GOVERNMENT ENGINEERING COLLEGE AJMER

	INSTANT MESSAGING SYSTEM NUMBER OF AUTHORS	PATEL:CHARUSAT, GUJARAT
265	MINING OUTLIER TEMPORAL ASSOCIATION PATTERNS	VANGIPURAM RADHAKRISHNA:VNR VJIET;P.V.KUMAR:OSMANIA UNIVERSITY ;V.JANAKI:VAAGDEVI COLLEGE OF ENGINEERING
266	LOW-POWER HIGH SPEED 1-BIT FULL ADDER CIRCUIT DESIGN	SHAILESH DWIVEDI:DEPARTMENT OF ELECTRONICS AND COMMUNICATION MAULANA AZAD NATIONAL INSTITUTE OF TECHNOLOGY BHOPAL, INDIA;KAVITA KHARE:DEPARTMENT OF ELECTRONICS AND COMMUNICATION MAULANA AZAD NATIONAL INSTITUTE OF TECHNOLOGY BHOPAL, INDIA;AJAY KUMAR DADORIA:DEPARTMENT OF ELECTRONICS AND COMMUNICATION MAULANA AZAD NATIONAL INSTITUTE OF TECHNOLOGY BHOPAL, INDIA
267	ANALYSIS OF DECISION SUPPORT SYSTEMS IMPLEMENTED FOR SUGGESTING A COURSE FOR HIGHER EDUCATION	ANKITA KANOJIYA:GLSICA;DR. VIRAL NAGORI: FACULTY OF COMPUTER TECHNOLOGY (MCA)
269	AN ALERT SYSTEM BASED ON SHARED SCORE FOR ONLINE SOCIAL NETWORKS	T.SHANMUGHAPRIYA:ANNA UNIVERSITY,S.SWAMYNATHAN:ANNA UNIVERSITY
270	SIMULATION OF DIGITAL SIGNAL PROCESSOR-FFT FOR COMMUNICATION SYSTEM APPLICATIONS	PARSAD KULKARNI:BABASAHEB GAWDE INSTITUTE OF TECHNOLOGY, MUMBAI, INDIA;B.G. HOGADE:TERNA ENGINEERING COLLEGE,,NAVI MUMBAI,INDIA;VIDULA KULKARNI:SANPADA COLLEGE OF COMMERCE AND TECHNOLOGY,NAVI MUMBAI,INDIA
271	BIG DATA ANALYTICS BASED ON IN-MEMORY INFRASTRUCTURE ON TRADITIONAL HPC: A SURVEY	NIKKITA SHEKHAR:SYMBIOSIS INSTITUTE OF TECHNOLOGY, PUNE;AMBIKA PAWAR:SYMBIOSIS INSTITUTE OF TECHNOLOGY, PUNE
272	THE CYBER SECURITY ISSUES OVER EMERGENCY MANAGEMENT	PRISILLA JAYANTHI G: CADET TRAINING WING
273	AUTHENTICATION OF ELECTRONIC CONTROL UNIT USING ARBITER PHYSICAL UNCLONABLE FUNCTIONS IN MODERN AUTOMOBILES	JAYA NUPUR:SAVITRIBAI PHULE PUNE UNIVERSITY;FARHA SYED:SAVITRIBAI PHULE PUNE UNIVERSITY;AISHWARYA :SAVITRIBAI PHULE PUNE UNIVERSITY;AISHWARYA VICHARE:SAVITRIBAI PHULE PUNE UNIVERSITY;ARUN MISHRA:DEEMED UNIVERSITY, MINISTRY OF DEFENCE, GOVT. OF INDIA

274	MATRIX TRANSPOSITION BASED CRYPTOGRAPHIC CODE WITH TWO DIMENSIONAL PARITY CHECKING	BIDISHA MANDAL:CALCUTTA INSTITUTE OF TECHNOLOGY;SOURABH CHANDRA:CALCUTTA INSTITUTE OF TECHNOLOGY:SK SAFIKUL ALAM:CALCUTTA INSTITUTE OF TECHNOLOGY
275	FEEDBACK BASED TRUST MANAGEMENT FOR CLOUD ENVIRONMENT	SANDIP MACHHIPARUL UNIVERSITY;GORDHAN JETHAVA:PARUL UNIVERSITY
276	EMERGING APPLICATIONS PERSPECTIVE FOR INTERNET OF THINGS	AASHEESH TANDON:NIRMA UNIVERSITY;VISHWA SHAH:NIRMA UNIVERSITY;SACHIN GAJJAR:NIRMA UNIVERSITY
277	SEGMENTED CRYPTO ALGORITHM	SMITA PAIRA:CALCUTTA INSTITUTE OF TECHNOLOGY;SOURABH CHANDRA:CALCUTTA INSTITUTE OF TECHNOLOGY;SK SAFIKUL ALAM:CALCUTTA INSTITUTE OF TECHNOLOGY
278	A GCM AND GPS BASED APPROACH TO HEALTH SERVICE	NABISH KUMAR:INTERNATIONAL INSTITUTE OF INFORMATION TECHNOLOGY, PUNE;NITISH KUMAR:INTERNATIONAL INSTITUTE OF INFORMATION TECHNOLOGY, PUNE:PRADEEP KARKI:INTERNATIONAL INSTITUTE OF INFORMATION TECHNOLOGY, PUNE;ASHWINI JARALI:INTERNATIONAL INSTITUTE OF INFORMATION TECHNOLOGY, PUNE
279	A UNIQUE WORD PREDICTION SYSTEM FOR TEXT ENTRY IN HINDI	NITI SHAH:U & P U. PATEL DEPARTMENT OF COMPUTER ENGINEERING, CSPIT, CHARUSAT;NIKITA BHATT:U & P U. PATEL DEPARTMENT OF COMPUTER ENGINEERING, CSPIT, CHARUSAT;AMIT GANATRA:U & P U. PATEL DEPARTMENT OF COMPUTER ENGINEERING, CSPIT, CHARUSAT
280	UNIQUE CONSTRAINED CLASS LABELED ASSOCIATION RULE MINING	GREESHMA L:DEPARTMENT OF CSE, VNR VIGNANA JYOTHI INSTITUTE OF ENGINEERING AND TECHNOLOGY, TELANGANA, INDIA;G PRADEEPINI:DEPARTMENT OF CSE, K L UNIVERSITY, VADDESWARAM, ANDHRAPRADESH, INDIA
281	A LANGUAGE BASED COMPARISON OF DIFFERENT SIMILARITY FUNCTIONS AND CLASSIFIERS USING WEB BASED BILINGUAL QUESTION ANSWERING SYSTEM DEVELOPED USING MACHINE LEARNING APPROACH	KRISHMA SINGLA:BANASTHALI VIDYAPITH;MOHIT DUA:NIT KURUKSHETRA;GARIMA NANDA:BANASTHALI VIDYAPITH
282	ELLIPTIC CURVE BASED PROXY RE-ENCRYPTION	THANGAM V:DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING NATIONAL INSTITUTE OF TECHNOLOGY KARNATAKA, SURATHKAL, INDIA;K. CHANDRASEKARAN:DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING NATIONAL INSTITUTE OF TECHNOLOGY KARNATAKA, SURATHKAL. INDIA
283	REMOVING FLAMING PROBLEMS FROM SOCIAL NETWORKING SITES USING SEMI-SUPERVISED LEARNING APPROACH	VISHAKHA MAL:SHRI RAMDEOBABA COLLEGE OF ENGINEERING AND MANAGEMENT, NAGPUR (CSE);DR. A.J. AGRAWAL:SHRI RAMDEOBABA COLLEGE OF ENGINEERING AND MANAGEMENT, NAGPUR (CSE)

A Survey of Open Source Protocols XMPP and SIP for Instant Messaging System

Ruturaj Shelat
CHARUSAT
Anand
Gujarat
INDIA
14pgce042@charusat.edu.in

Nirav Patel
CHARUSAT
Anand
Gujarat
INDIA
14pgce031@charusat.edu.in

Chintan Bhatt
CHARUSAT
Anand
Gujarat
INDIA
chintanbhatt.ce@charusat.ac.in

ABSTRACT

The instant messaging system is an application based system used for communication using the internet service, in real time. Its use and popularity is increasing day by day. Many services and applications have been developed for real time communication so far, among them XMPP and SIP are the widely used. The key functionalities of instant messaging system are presence, session management and transfer of data which can be fulfilled using the open source protocols like XMPP, SIP and RTP. Furthermore, a comparison between XMPP and SIP is provided based on a number of criteria.

Keywords

XMPP, SIP and IMs.

1. INTRODUCTION

Instant messaging is a type of communication service providing users with two entities; presence information and real-time messaging. Presence means for finding, retrieving, and subscribing to changes in the presence information of other users. It provides the information about the network availability of the user and also the user's willingness to communicate. Instant messaging service provides the technology for users to communicate more interactively and in a cost effective manner. XMPP (Extensible Messaging and Presence protocol) is a communication protocol, which enables near real time exchange of structured data, based on XML. SIP (Session Initiation Protocol) is a communication protocol for signaling and controlling multimedia communication sessions.

2. BACKGROUND

2.1 XMPP (Extensible Messaging and Presence Protocol)

ICTCS '16, March 04-05, 2016, Udaipur, India
© 2016 ACM. ISBN 978-1-4503-3962-9/16/03…$15.00
DOI: http://dx.doi.org/10.1145/2905055.2905319

Instant Messaging (IM) is a text-based message system that allows the user to exchange short messages in real-time. Instant messaging is more interactively and cost effectively than e-mail. Presence provides the current status of a user to other users. [3]
XMPP is based on XML and it is a communication protocol for message oriented middleware. XMPP, which is cross platform and open source protocol. This protocol was developed in 1999 by the Jabber open-source community for real-time instant messaging (IM), presence information, and contact list maintenance.

XMPP core Methods list: (1) Setup of XML stream (2) Channel Encryption (3) Authentication (4) Error Handling (5) Communication (6) Presence (7) Request-Response interaction (8) Security [3]

Jabber is an open alternative to closed IM and presences. And its core is XMPP, which define how to stream XML contents. RFCs 3920 define a robust, secure, scalable, internationalization friendly architecture for real time messaging and structured data exchange (pure XML).
Rather than documenting, XMPP deals with xml streams **(1) Streams:** Exchanging xml documents between two entities over the networks. **(2) Stanzas:** small pieces of structure data called XMPP Stanzas.

Stream Attributes used JID = [localpart "@"] domainpart ["/" resourcepart]

Ex: <room @ chat.example.com / user@host> (1) From: JID of sender (2) To: JID of receiver (3) Id: unique identification for the stream called a "stream id" (4) Xml:lang :default language (5) Version : XMPP 1.0 supported receiving entity must be sent the Version.[3]

XMPP define three core stanzas types: (1) the <*message/*> stanzas is a 'push' mechanism through which one entities pushes information to another. (2) The <*presence/*> stanzas is a basic broadcast mechanism through which multiple entities receive information about given entity which they have subscribed.(online, away, DND) (3) The <*iq/*>stanzas is a request-response mechanism, that lets entities make request of and receive a response from each other.

Distributed Client-Server Architecture use to implement XMPP. End to end exchange of structured data. Presence-aware Client & Server.XMPP architecture are similar to the email architecture.

A Unique Word Prediction System for Text Entry in Hindi

Niti N. Shah Nikita Bhatt Amit Ganatra
U & P U. PATEL Department of Computer Engineering,
CSPIT, CHARUSAT, Anand, India-388 421
Tel: 02697-265011/21
14pgce040@charusat.edu.in nikitabhatt.ce@charusat.ac.in amitganatra.ce@charusat.ac.in

ABSTRACT

Word prediction is very effective technique for improving efficiency of entering text. Current word prediction systems predict a word if and only if a user has not made mistake in the starting of some characters of the word. This is more applicable for Indian languages, which have a large set of characters, alphabets, words with complex characters and inflections, phonetically similar sets of characters, etc. Therefore, there is a requirement for development of better word prediction. For existing systems, till now "N-Gram" approach is used. N-Gram approach considers only sequence of words in given sentence. It doesn't consider structure and grammar of the sentence. New approach is to use "Syntactic N-Gram" approach. Sn-Grams are differing from traditional n-grams in the way of which elements are considered as the neighbors. Sn-Grams consider Grammar in making prediction. So they are less arbitrary in making predictions.

ICTCS '16, March 04-05, 2016, Udaipur, India © 2016
ACM. ISBN 978-1-4503-3962-9/16/03…$15.00
DOI: http://dx.doi.org/10.1145/2905055.2905334

CCS Concepts

• **Computing methodologies → Artificial intelligence → Natural language processing**

Keywords

Hindi Word Prediction System; Hindi Keyboard; Indian Languages; Syntactic N-Grams; Sn-Grams.

1. INTRODUCTION

Natural Language Processing:

Natural language processing (NLP) is a study of excellence, a field of computer science concerned with the human – computer interactions.

When you want an intelligent system like machines or robots to perform as per your instructions, Natural language is required.

Word Prediction:

Many of us can have problems with correct spelling, or would not like to type more. Software that completes words by showing some words using predictive text on keyboards of mobile phones or from Webpages can help.

Smart Innovation, Systems and Technologies

Volume 50

About this Series

The Smart Innovation, Systems and Technologies book series encompasses the topics of knowledge, intelligence, innovation and sustainability. The aim of the series is to make available a platform for the publication of books on all aspects of single and multi-disciplinary research on these themes in order to make the latest results available in a readily-accessible form. Volumes on interdisciplinary research combining two or more of these areas is particularly sought.

The series covers systems and paradigms that employ knowledge and intelligence in a broad sense. Its scope is systems having embedded knowledge and intelligence, which may be applied to the solution of world problems in industry, the environment and the community. It also focusses on the knowledge-transfer methodologies and innovation strategies employed to make this happen effectively. The combination of intelligent systems tools and a broad range of applications introduces a need for a synergy of disciplines from science, technology, business and the humanities. The series will include conference proceedings, edited collections, monographs, handbooks, reference books, and other relevant types of book in areas of science and technology where smart systems and technologies can offer innovative solutions.

High quality content is an essential feature for all book proposals accepted for the series. It is expected that editors of all accepted volumes will ensure that contributions are subjected to an appropriate level of reviewing process and adhere to KES quality principles.

More information about this series at http://www.springer.com/series/8767

Suresh Chandra Satapathy · Swagatam Das
Editors

Proceedings of First International Conference on Information and Communication Technology for Intelligent Systems: Volume 1

Springer

Editors
Suresh Chandra Satapathy
Department of Computer Science
and Engineering
Anil Neerukonda Institute of Technology
and Sciences
Visakhapatnam
India

Swagatam Das
Indian Statistical Institute
Jadavpur University
Kolkata
India

ISSN 2190-3018 ISSN 2190-3026 (electronic)
Smart Innovation, Systems and Technologies
ISBN 978-3-319-30932-3 ISBN 978-3-319-30933-0 (eBook)
DOI 10.1007/978-3-319-30933-0

Library of Congress Control Number: 2016936566

Printed on acid-free paper

This Springer imprint is published by Springer Nature
The registered company is Springer International Publishing AG Switzerland

Contents

Part I Intelligent Information Retrieval and Business Intelligence

RC6 Based Data Security and Attack Detection 3
Nitin Varshney and Kavindra Raghuwanshi

Application Mapping Methodology for Reconfigurable Architecture . . . 11
Rahul K. Hiware and Dinesh Padole

Circular Quad-Octagon Bits: Stepwise Image Cubic Spread Authentication Analysis 17
Vijayalakshmi Kakulapati and Vijaykrishna Pentapati

Towards the Next Generation of Web of Things: A Survey on Semantic Web of Things' Framework 31
Farhat Jahan, Pranav Fruitwala and Tarjni Vyas

Performance Analysis of Dynamic Addressing Scheme with DSR, DSDV and ZRP Routing Protocols in Wireless Ad Hoc Networks 41
Nagendla Ramakrishnaiah, Pakanati Chenna Reddy and Kuncha Sahadevaiah

EncryptPost: A Framework for User Privacy on Social Networking Sites 51
Shilpi Sharma and J.S. Sodhi

Green Routing Algorithm for Wireless Networks 61
Akshay Atul Deshmukh, Mintu Jothish and K. Chandrasekaran

Decision Theoretic Rough Intuitionistic Fuzzy C-Means Algorithm 71
Sresht Agrawal and B.K. Tripathy

Dual Band/Wide Band Polarization Insensitive Modified Four—Legged Element Frequency Selective Surface for 2.4 GHz Bluetooth, 2.4/5.8 GHz WLAN Applications 83
Vandana Jain, Sanjeev Yadav, Bhavana Peswani, Manish Jain and Ajay Dadhich

Dynamic Power Allocation in Wireless Routing Protocols 91
Ravi Kumar Singh and M.M. Chandane

UWB Microstrip Antenna with Inverted Pie Shaped Slot 99
Minakshi Sharma, Hari Shankar Mewara, Mahendra Mohan Sharma, Sanjeev Yadav and Ajay Dadhech

New Architecture and Routing Protocol for VANETs 107
V.B. Vaghela and D.J. Shah

A Scalable Model for Big Data Analytics in Healthcare Based on Temporal and Spatial Parameters 117
S. Hemanth Chowdary, Sujoy Bhattacharya and K.V.V. Satyanarayana

Part II Intelligent Web Mining and Knowledge Discovery Systems

Comparison of Different Techniques of Camera Autofocusing 125
Dippal Israni, Sandip Patel and Arpita Shah

An Enhanced Version of Key Agreement System with User Privacy for Telecare Medicine Information Systems 137
Trupil Limbasiya and Nishant Doshi

A Framework to Infer Webpage Relevancy for a User 147
Saniya Zahoor, Mangesh Bedekar and Varad Vishwarupe

Comparative Study of Various Features-Mining-Based Classifiers in Different Keystroke Dynamics Datasets 155
Soumen Roy, Utpal Roy and D.D. Sinha

A Novel Leakage Reduction Technique for Ultra-Low Power VLSI Chips 165
Vijay Kumar Magraiya, Tarun Kumar Gupta and Krishna Kant

Techniques for Designing Analog Baseband Filter: A Review 175
Sandeep Garg and Tarun Kumar Gupta

DAREnsemble: Decision Tree and Rule Learner Based Ensemble for Network Intrusion Detection System 185
Dwarkoba Gaikwad and Ravindra Thool

Scalable Design of Open Source Based Dynamic Routed Network for Interconnection of Firewalls at Multiple Geographic Locations 195
Chirag Sheth and Rajesh A. Thakker

Fault Location Estimation in HVDC Transmission Line Using ANN 205
Jenifer Mariam Johnson and Anamika Yadav

Cellular Radiations Effect on Human Health 213
Saloni Bhatia, Sharda Vashisth and Ashok Salhan

Micro-interaction Metrics Based Software Defect Prediction with Machine Learning, Immune Inspired and Evolutionary Classifiers: An Empirical Study 221
Arvinder Kaur and Kamadeep Kaur

Soil Moisture Forecasting Using Ensembles of Classifiers 235
N. Rajathi and L.S. Jayashree

Design of Smart and Intelligent Power Saving System for Indian Universities 245
Monika Lakra, Kappala Vinod Kiran and Suchismita Chinara

Multiview Image Registration 255
Mehfuza Holia

Part III Applications for Intelligent Systems

Optimization Techniques for High Performance 9T SRAM Cell Design 269
Pramod Kumar Patel, M.M. Malik and Tarun Gupta

Comparative Analysis of Data Gathering Protocols with Multiple Mobile Elements for Wireless Sensor Network 281
Bhat Geetalaxmi Jayram and D.V. Ashoka

Hybrid Decision Model for Weather Dependent Farm Irrigation Using Resilient Backpropagation Based Neural Network Pattern Classification and Fuzzy Logic 291
Saroj Kumar Lenka and Ambarish G. Mohapatra

Energy-Hole Minimization in WSN Using Active Bonding and Separating Coverage 303
Chinmaya Kumar Nayak, Subhashree Rath, Manoranjan Pradhan and Satyabrata Das

"Mahoshadha", the Sinhala Tagged Corpus Based Question Answering System 313
J.A.T.K. Jayakody, T.S.K. Gamlath, W.A.N. Lasantha, K.M.K.P. Premachandra, A. Nugaliyadde and Y. Mallawarachchi

Trust Appraisal Based Neighbour Defense Secure Routing to Mitigate Various Attacks in Most Vulnerable Wireless Ad hoc Network 323
Tada Naren, Patalia Tejas and Patel Chirag

Behavior of Adhoc Routing Protocols for H-MANETs 333
Mitul Yadav, Vinay Rishiwal, Omkar Singh and Mano Yadav

Mathematical Treatment of ABC Framework for Requirements Prioritization 341
Sita Devulapalli, O.R.S. Rao and Akhil Khare

Reduction of Micro Aneurysms in Retinal Identification Based on Hierarchical Clustering in Terms of Improved Circular Gabo Filter 349
G. Srinivasa Rao and Y. Srinivasa Rao

Part IV Applications of ICT in Rural and Urban Areas

A Modified Representation of IFSS and Its Usage in GDM 365
B.K. Tripathy, R.K. Mohanty, T.R. Sooraj and A. Tripathy

A State of Art Survey on Shilling Attack in Collaborative Filtering Based Recommendation System 377
Krupa Patel, Amit Thakkar, Chandni Shah and Kamlesh Makvana

Labeling of Quadratic Residue Digraphs Over Finite Field 387
R. Parameswari and R. Rajeswari

Comparative Performance Study of Various Content Based Image Retrieval Methods 397
Rushabh Shah, Jeetendra Vaghela, Khyati Surve, Rutvi Shah, Priyanka Sharma, Rasendu Mishra, Ajay Patel and Rajan Datt

GIS and Statistical Approach to Assess the Groundwater Quality of Nanded Tehsil, (M.S.) India 409
Wagh Vasant, Panaskar Dipak, Muley Aniket, Pawar Ranjitsinh, Mukate Shrikant, Darkunde Nitin, Aamalawar Manesh and Varade Abhay

Observation of AODV Routing Protocol's Performance at Variation in ART Value for Various Node's Mobility 419
Sachin Kumar Gupta and R.K. Saket

A State Of Art Survey on Shilling Attack in Collaborative Filtering Based Recommendation System

Krupa Patel, AmitThakkar, Chandni Shah, Kamlesh Makvana

Department of Information Technology, CSPIT, CHARUSAT
Anand, India
14pgit010@charusat.edu.in,amitthakkar.it@charusat.ac.in,
chandnishah.it@charusat.ac.in,kamleshmakvana.it@charusat.ac.in

Abstract. Recommendation system is a special type of information filtering system that attempts to present information /objects that are likely to the interest of user. Any organization, provides correct recommendation is necessary for maintain the trust of their customers. Collaborative filtering based algorithms are most widely used algorithms for recommendation system.However,recommender systems supported collaborative filtering are known to be extremely prone to attacks. Attackers will insert biased profile information or fake profile to have a big impact on the recommendations made. This paper provide survey on effect of shilling attack in recommendation systems, types of attack, knowledge required and existing shilling attack detection methods.

Keywords: Recommendation System, Collaborative Filtering Shilling Attack, Detection and Evaluation Parameters, Information Filtering.

1 Introduction

Recommendation systems (RS) provide information or item that is interest of the user by analysing rating pattern and stable information of user. The huge growths of information on the web as well as variety of guests to websites add some key challenges to recommender systems technology; these are producing accurate recommendation and handling several recommendations with efficiency [1]. Therefore, new recommender system technologies are required which will quickly turn out prime quality recommendations even for immense information sets.

Content based and collaborative filtering (CF) based are two approaches for developing recommendation systems. In content based system items are recommended based on users past rating history and content of items. Collaborative filtering recommendation system is based on U-I rating matrix. In a typical Collaborative filtering system, an $n \times m$ user-item matrix is created, where n users' preferences about m products are represented as ratings, either numeric or binary. To obtain a prediction for a target item i or a sorted list of items that might be liked, an active user u sends her known ratings and a query to the system. CF system estimates

ICTCS '16: Proceedings of the Second International Conference on Information and Communication Technology for Competitive Strategies

2016 Proceeding

Publisher: Association for Computing Machinery, New York, NY, United States

Conference: ICTCS '16: Second International Conference on Information and Communication Technology for Competitive Strategies • Udaipur India • March, 2016

ISBN: 978-1-4503-3962-9

No abstract available.

INDEX

S. NO.	PAPER TITLE	AUTHOR DETAILS
1	AB-EUIDE: AN APPROACH TO THE DESIGN OF ERGONOMIC USER INTERFACES FOR CLOUD COMPUTING	S.RAVI KUMAR:A.P;MD. ADBUL MUQSIT KHAN:BIHAR;Y.K. SUNDARA KRISHNA:A.P;K. CHANDRA SEKHARAIAH:T.S
2	A SURVEY ON IOT PRIVACY ISSUES AND MITIGATION TECHNIQUES	BIRJU TANK:GUJARAT TECHNOLOGICAL UNIVERSITY;HARDIK UPADHYAY:GUJARAT TECHNOLOGICAL UNIVERSITY;HIREN PATEL:GUJARAT TECHNOLOGICAL UNIVERSITY
3	A STUDY ON AGENT BASED ERGONOMIC AND INTELLIGENT USER INTERFACE DESIGN IN CLOUD COMPUTING	S. RAVI KUMAR:A.P;ABDUL MUQSIT KHAN:BIHAR;K.CHANDRA SEKHARAIAH:T.S;Y.K.SUNDARA KRISHNA:A.P
4	INCREASE OF CAPACITY AND QUALITY OF FREQUENCY BASED IMAGE STEGANOGRAPHY USING PARTICLE SWARM OPTIMIZATION	SAMADRITA GUHA:SYMBIOSIS INSTITUTE OF TECHNOLOGY;DIPTI KAPOOR SARMAH:SYMBIOSIS INSTITUTE OF TECHNOLOGY
5	COMPARATIVE STUDY OF WATERMARKING AN IMAGE USING GA AND BFO WITH GA AND HBO TECHNIQUE	GAGANDEEP SINGH:PTU;SANDEEP KAD:PTU
6	A HYBRID APPROACH FOR DETECTION OF PLAGIARISM USING NATURAL LANGUAGE PROCESSING	TAKSHAK DESAI:D.J. SANGHVI COLLEGE OF ENGINEERING;UDIT DESHMUKH:D.J. SANGHVI COLLEGE OF ENGINEERING;MIHIR GANDHI:D.J. SANGHVI COLLEGE OF ENGINEERING;LAKSHMI KURUP:D.J. SANGHVI COLLEGE OF ENGINEERING
7	A GENERIC DEFECT AWARE HEURISTIC APPROACH FOR DROPLET ROUTING IN A DIGITAL MICROFLUIDIC BIOCHIP WITH MINIMAL PIN ASSIGNMENT	SUBHAMITA MUKHERJEE:DEPT. OF IT, TECHNO INDIA, SALTLAKE;INDRAJIT PAN:DEPT. OF IT, RCCIIT, KOLKATA;TUHINA SAMANTA:DEPT. OF IT, IIEST, SHIBPUR
8	STUDY AND IMPLEMENTATION OF RECORD DE-DUPLICATION ALGORITHMS	VAISHALI WANGIKAR:DEPT. OF COMPUTER ENGINEERING ,MIT ACADEMY OF ENGINEERING,PUNE;SACHIN DESHMUKH:DEPT. OF CSIT, DR. B.A. MARATHWADA UNIVERSITY, AURANGABAD;SUNIL BHIRUD:DEPT. OF COMPUTER ENGINEERING AND INFORMATION TECHNOLOGY, VEERMATA JIJABAI TECHNOLOGICAL INSTITUTE, MATUNGA, MUMBAI
9	ENHANCEMENT OF THE CLASSIFICATION PERFORMANCE OF LEAST SQUARE SUPPORT VECTOR MACHINE USING SIMPLE PARTICLE	SHEETAL BAIRWA:GOVERNMENT ENGINEERING COLLEGE AJMER;JYOTI GAJRANI:GOVERNMENT ENGINEERING COLLEGE AJMER;SATYANARAYAN TAZI:GOVERNMENT ENGINEERING COLLEGE AJMER

		OF ENGINEERING AND TECHNOLOGY
211	ACCELERATION OF BULLET PHYSICS PHYSICAL SIMULATION LIBRARY USING GPU AND DEMONSTRATION ON A SET-TOP BOX PLATFORM	BALAMURUGAN BALUSAMY ,SCHOOL OF INFORMATION TECHNOLOGY AND ENGINEERING, VIT UNIVERSITY;ANIL SKARIAH,ACCENTURE CONSULTANTY SERVICES;G.NALINIPRIYA,DEPARTMENT OF IT, SAVEETHA ENGINEERING COLLEGE;K.G.MAHESWARI,IRTT;MALATHI V,SITE,VIT UNIVERSITY
212	A FRAMEWORK FOR DETECTING EXTERNAL PLAGIARISM FROM MONOLINGUAL DOCUMENTS: USE OF SHALLOW NLP AND N-GRAM FREQUENCY COMPARISON	RITAMBHRA KORPAL:UNIVERSITY OF PUNE, INDIA;SAUGATA BOSE:UNIVERSITY OF LIBERAL ARTS BANGLADESH
213	TEXT MINING PREDICTIVE MODELING ALGORITHM FOR CLASSIFYING ATTITUDES OF CUSTOMERS WITH ACCURACY ESTIMATION	KARUNA C. GULL:KLE INSTITUTE OF TECHNOLOGY, HUBLI;AKSHATA B. ANGADI:KLS GOGTE INSTITUTE OF TECHNOLOGY, BELGAUM
214	SMART INTERACTION USING HAND GESTURE RECOGNITION	SUNEEL KUMAR:GLA UNIVERSITY;NEHA BANSAL:GLA UNIVERSITY;SANKALP NATH SINGH:GLA UNIVERSITY
215	AN APPROACH TO IDENTIFY USER INTEREST BY RERANKING PERSONALIZE WEB	PATEL JAY:CHARUSAT;PINAL SHAH:CHARUSAT;KAMLESH MAKVANA:CHARUSAT;PARTH SHAH:CHARUSAT
216	AN APPROACH TO IDENTIFY SEMANTIC RELATIONS BETWEEN USERS QUERIES IN TEXT RETRIEVAL	KAMLESH MAKVANA:CHARUSAT;JAY PATEL:CHARUSAT;PARTH SHAH:CHARUSAT;AMIT THAKKAR:CHARUSAT
217	AUDIO STEGANOGRAPHY USING ZDT: ENCRYPTION USING INDEXED BASED CHAOTIC SEQUENCE	SHIVANI SHARMA:ABES EC, GHAZIABAD;MUNESH C. TRIVEDI:ABES EC, GHAZIABAD;VIRENDRA KR. YADAV:ABES EC, GHAZIABAD;AVADHESH KUMAR GUPTA:ABES EC, GHAZIABAD
218	AN INNOVATIVE APPROACH FOR IMPUTATION AND CLASSIFICATION OF MEDICAL RECORDS FOR EFFICIENT DISEASE PREDICTION	YELIPE USHA RANI :VNR VJIET;P.SAMMULAL:JNTUH COLLEGE OF ENGINEERING JAGTIAL
220	HYBRID IMAGE FUSION ALGORITHM	SHIV KUMAR VERMA:DEPARTMENT OF CSE,

An Approach to identify semantic relations between user's queries in text retrieval

Kamlesh Makvana
Charusat
Department of IT
CSPIT, Changa, Gujarat India
+919408893572
Kamlesh.makvana1988@gmail.com

Patel Jay
Charusat
Department of IT
CSPIT, Changa, Gujarat India
+919099543717
jaypatel.it@charusat.ac.in

Parth Shah
Charusat
Department of IT
CSPIT, Changa, Gujarat India
+919925020358
parthshah.ce@charusat.ac.in

Amit Thakkar
Charusat
Department of IT
CSPIT, Changa, Gujarat India
+919601290990
amitthakkar.it@charusat.ac.in

ASTRACT

The one size fits the all approach of commercial search engines is that whatever might be the context of the query, the same results are returned to different users. The problem arises as the existing methods concentrate more on the long-term interest which reduce the effectiveness of personalized web search to provide accurate predictions of the query context. Information overload is ongoing obstacle that loses the quality of data among the huge web by providing irrelevant results. To compute the semantic similarity between the query words is challenging task due to insufficient amount of information available in ambiguous keywords submitted by the users. This paper proposes an approach to that works in 2 stages. First from the user web log file, personalized ontology is created. Second, semantic mapper is used to identify semantic relation between query context/topic that improves evaluation measures used for computing semantic relatedness between words.

Keywords:

Information retrieval; personalized web search; relevance feedback; semantic web mining

ICTCS '16, March 04-05, 2016, Udaipur, India

DOI: http://dx.doi.org/10.1145/2905055.2905271.

1. INTRODUCTION

Research in personalized web search has been stagnant due to several reasons. Since every person has a different mix of information, created using a variety of tools, it is hard to design an approach that generalizes across all users. There are 644 million active websites on the internet according to Net Craft. Andrei Broder [26] specifies that "need behind the query" is often not informational in nature. [26] Classify web queries according to their intent into three classes: Navigational, Informational and Transactional. But the query has the characteristics of shortness, ambiguousness and incompleteness which limits the clear expression of user's information requirements and thus influences the results for personalized search. So, it is far enough to achieve user's requirement only from the search queries.

The major problem is due to lack of user adaption, retrieving results based on web popularity rather than user interest and user's typically view first few pages of web results. So, relevant results that are beyond first web page have lower chance of being visited. OneStat.com has reported that 77.2% of all queries submitted to a search-engine were three words long or less in 2009 [21]. The average length of the query keywords in web search was found to be 3 terms. Inevitably, the keywords might be inappropriate to identify need or unable to exactly match the relevant documents because of vocabulary gap.

ICTCS '16: Proceedings of the Second International Conference on Information and Communication Technology for Competitive Strategies

2016 Proceeding

Publisher: Association for Computing Machinery, New York, NY, United States

Conference: ICTCS '16: Second International Conference on Information and Communication Technology for Competitive Strategies • Udaipur India • March, 2016

ISBN: 978-1-4503-3962-9

No abstract available.

INDEX

S. NO.	PAPER TITLE	AUTHOR DETAILS
1	AB-EUIDE: AN APPROACH TO THE DESIGN OF ERGONOMIC USER INTERFACES FOR CLOUD COMPUTING	S.RAVI KUMAR:A.P;MD. ADBUL MUQSIT KHAN:BIHAR;Y.K. SUNDARA KRISHNA:A.P;K. CHANDRA SEKHARAIAH:T.S
2	A SURVEY ON IOT PRIVACY ISSUES AND MITIGATION TECHNIQUES	BIRJU TANK:GUJARAT TECHNOLOGICAL UNIVERSITY;HARDIK UPADHYAY:GUJARAT TECHNOLOGICAL UNIVERSITY;HIREN PATEL:GUJARAT TECHNOLOGICAL UNIVERSITY
3	A STUDY ON AGENT BASED ERGONOMIC AND INTELLIGENT USER INTERFACE DESIGN IN CLOUD COMPUTING	S. RAVI KUMAR:A.P;ABDUL MUQSIT KHAN:BIHAR;K.CHANDRA SEKHARAIAH:T.S;Y.K.SUNDARA KRISHNA:A.P
4	INCREASE OF CAPACITY AND QUALITY OF FREQUENCY BASED IMAGE STEGANOGRAPHY USING PARTICLE SWARM OPTIMIZATION	SAMADRITA GUHA:SYMBIOSIS INSTITUTE OF TECHNOLOGY;DIPTI KAPOOR SARMAH:SYMBIOSIS INSTITUTE OF TECHNOLOGY
5	COMPARATIVE STUDY OF WATERMARKING AN IMAGE USING GA AND BFO WITH GA AND HBO TECHNIQUE	GAGANDEEP SINGH:PTU;SANDEEP KAD:PTU
6	A HYBRID APPROACH FOR DETECTION OF PLAGIARISM USING NATURAL LANGUAGE PROCESSING	TAKSHAK DESAI:D.J. SANGHVI COLLEGE OF ENGINEERING;UDIT DESHMUKH:D.J. SANGHVI COLLEGE OF ENGINEERING;MIHIR GANDHI:D.J. SANGHVI COLLEGE OF ENGINEERING;LAKSHMI KURUP:D.J. SANGHVI COLLEGE OF ENGINEERING
7	A GENERIC DEFECT AWARE HEURISTIC APPROACH FOR DROPLET ROUTING IN A DIGITAL MICROFLUIDIC BIOCHIP WITH MINIMAL PIN ASSIGNMENT	SUBHAMITA MUKHERJEE:DEPT. OF IT, TECHNO INDIA, SALTLAKE;INDRAJIT PAN:DEPT. OF IT, RCCIIT, KOLKATA;TUHINA SAMANTA:DEPT. OF IT, IIEST, SHIBPUR
8	STUDY AND IMPLEMENTATION OF RECORD DE-DUPLICATION ALGORITHMS	VAISHALI WANGIKAR:DEPT. OF COMPUTER ENGINEERING ,MIT ACADEMY OF ENGINEERING,PUNE;SACHIN DESHMUKH:DEPT. OF CSIT, DR. B.A. MARATHWADA UNIVERSITY, AURANGABAD;SUNIL BHIRUD:DEPT. OF COMPUTER ENGINEERING AND INFORMATION TECHNOLOGY, VEERMATA JIJABAI TECHNOLOGICAL INSTITUTE, MATUNGA, MUMBAI
9	ENHANCEMENT OF THE CLASSIFICATION PERFORMANCE OF LEAST SQUARE SUPPORT VECTOR MACHINE USING SIMPLE PARTICLE	SHEETAL BAIRWA:GOVERNMENT ENGINEERING COLLEGE AJMER;JYOTI GAJRANI:GOVERNMENT ENGINEERING COLLEGE AJMER;SATYANARAYAN TAZI:GOVERNMENT ENGINEERING COLLEGE AJMER

		OF ENGINEERING AND TECHNOLOGY
211	ACCELERATION OF BULLET PHYSICS PHYSICAL SIMULATION LIBRARY USING GPU AND DEMONSTRATION ON A SET-TOP BOX PLATFORM	BALAMURUGAN BALUSAMY ,SCHOOL OF INFORMATION TECHNOLOGY AND ENGINEERING, VIT UNIVERSITY;ANIL SKARIAH,ACCENTURE CONSULTANTY SERVICES;G.NALINIPRIYA,DEPARTMENT OF IT, SAVEETHA ENGINEERING COLLEGE;K.G.MAHESWARI,IRTT;MALATHI V,SITE,VIT UNIVERSITY
212	A FRAMEWORK FOR DETECTING EXTERNAL PLAGIARISM FROM MONOLINGUAL DOCUMENTS: USE OF SHALLOW NLP AND N-GRAM FREQUENCY COMPARISON	RITAMBHRA KORPAL:UNIVERSITY OF PUNE, INDIA;SAUGATA BOSE:UNIVERSITY OF LIBERAL ARTS BANGLADESH
213	TEXT MINING PREDICTIVE MODELING ALGORITHM FOR CLASSIFYING ATTITUDES OF CUSTOMERS WITH ACCURACY ESTIMATION	KARUNA C. GULL:KLE INSTITUTE OF TECHNOLOGY, HUBLI;AKSHATA B. ANGADI:KLS GOGTE INSTITUTE OF TECHNOLOGY, BELGAUM
214	SMART INTERACTION USING HAND GESTURE RECOGNITION	SUNEEL KUMAR:GLA UNIVERSITY;NEHA BANSAL:GLA UNIVERSITY;SANKALP NATH SINGH:GLA UNIVERSITY
215	AN APPROACH TO IDENTIFY USER INTEREST BY RERANKING PERSONALIZE WEB	PATEL JAY:CHARUSAT;PINAL SHAH:CHARUSAT;KAMLESH MAKVANA:CHARUSAT;PARTH SHAH:CHARUSAT
216	AN APPROACH TO IDENTIFY SEMANTIC RELATIONS BETWEEN USERS QUERIES IN TEXT RETRIEVAL	KAMLESH MAKVANA:CHARUSAT;JAY PATEL:CHARUSAT;PARTH SHAH:CHARUSAT;AMIT THAKKAR:CHARUSAT
217	AUDIO STEGANOGRAPHY USING ZDT: ENCRYPTION USING INDEXED BASED CHAOTIC SEQUENCE	SHIVANI SHARMA:ABES EC, GHAZIABAD;MUNESH C. TRIVEDI:ABES EC, GHAZIABAD;VIRENDRA KR. YADAV:ABES EC, GHAZIABAD;AVADHESH KUMAR GUPTA:ABES EC, GHAZIABAD
218	AN INNOVATIVE APPROACH FOR IMPUTATION AND CLASSIFICATION OF MEDICAL RECORDS FOR EFFICIENT DISEASE PREDICTION	YELIPE USHA RANI :VNR VJIET;P.SAMMULAL:JNTUH COLLEGE OF ENGINEERING JAGTIAL
220	HYBRID IMAGE FUSION ALGORITHM	SHIV KUMAR VERMA:DEPARTMENT OF CSE,

Optimal Land Allocation in Agricultural Production Planning Using Fuzzy Goal Programming 287
Babita Mishra and S.R. Singh

Quantitative Estimation for Impact of Genomic Features Responsible for 5′ and 3′ UTR Formation in Human Genome 299
Shailesh Kumar, Sumita Kachhwaha and S.L. Kothari

Comparison of Multilayer Perceptron (MLP) and Support Vector Machine (SVM) in Predicting Green Pellet Characteristics of Manganese Concentrate 311
Mohammad Nadeem, Haider Banka and R. Venugopal

Audio Pattern Recognition and Mood Detection System 321
Priyanka Tyagi, Abhishek Mehrotra, Shanu Sharma and Sushil Kumar

Sumdoc: A Unified Approach for Automatic Text Summarization 333
Mudasir Mohd, Muzaffar Bashir Shah, Shabir Ahmad Bhat, Ummer Bashir Kawa, Hilal Ahmad Khanday, Abid Hussain Wani, Mohsin Altaf Wani and Rana Hashmy

Improvising and Optimizing Resource Utilization in Big Data Processing 345
Praveen Kumar and Vijay Singh Rathore

Region-Based Prediction and Quality Measurements for Medical Image Compression 355
P. Eben Sophia and J. Anitha

Recent Advancements in Energy Efficient Routing in Wireless Sensor Networks: A Survey 367
Gaurav Kumar Pandey and Amritpal Singh

A Novel Approach for Market Prediction Using Differential Evolution and Genetic Algorithm 377
Apoorva Gupta, Manoj Kumar and Sushil Kumar

A Novel Approach for Actuation of Robotic Arm Using EEG and Video Processing 391
Saurin Sheth, Saurabh Saboo, Harsh Dhanesha, Love Rajai, Prakash Dholariya and Parth Jetani

A Survey: Artificial Neural Network for Character Recognition 403
Mrudang D. Pandya and R. Patel Jay

About the Editors

Dr. Millie Pant is an Associate Professor with the Department of Paper Technology, Indian Institute of Technology Roorkee, Roorkee, India. She has to her credit several research papers in journals of national and international repute and is a well-known figure in the field of Swarm Intelligence and Evolutionary Algorithms.

Prof. Kusum Deep is working as a full-time professor in the Department of Mathematics, Indian Institute of Technology Roorkee, Roorkee, India. Over the last 25 years, her research is increasingly well cited making her a central International figure in the area of Nature-Inspired Optimisation Techniques, Genetic Algorithms and Particle Swarm Optimisation.

Dr. Jagdish Chand Bansal is an Assistant Professor with the South Asian University, New Delhi, India. Holding an excellent academic record, he is an excellent researcher in the field of Swarm Intelligence at the National and International Level, having several research papers in journals of national and international repute.

Prof. Atulya Nagar holds the Foundation Chair as Professor of Mathematical Sciences and is the Dean of Faculty of Science, at Liverpool Hope University, Liverpool, UK. Prof. Nagar is an internationally recognised scholar working at the cutting edge of theoretical computer science, applied mathematical analysis, operations research, and systems engineering and his work is underpinned by strong complexity-theoretic foundations.

Dr. Kedar Nath Das is now working as Assistant Professor in the Department of Mathematics, National Institute of Technology Silchar, Assam, India. Over the last 10 years, he has a good contribution towards to research in 'soft computing'. He has many papers to his credit in many journal in national and international level of repute. His area of interest is on Evolutionary and Bio-inspired algorithms for optimisation.

About the Book

The proceedings of SocProS 2015 will serve as an academic bonanza for scientists and researchers working in the field of Soft Computing. This book contains theoretical as well as practical aspects using fuzzy logic, neural networks, evolutionary algorithms, swarm intelligence algorithms, etc., with many applications under the umbrella of 'Soft Computing'. The book will be beneficial for young as well as experienced researchers dealing across complex and intricate real-world problems for which finding a solution by traditional methods is a difficult task.

The different application areas covered in the proceedings are: Image Processing, Cryptanalysis, Industrial Optimisation, Supply Chain Management, Newly Proposed Nature-Inspired Algorithms, Signal Processing, Problems related to Medical and Health Care, Networking Optimisation Problems, etc.

A Survey: Artificial Neural Network for Character Recognition

Mrudang D. Pandya and R. Patel Jay

Abstract Due to advancement in technology many recognition task have been automated. Optical Character Recognition (OCR) aims to convert the images of handwritten or printed text into a format that is capable for a machine to understand and process it. For the recognition to be precise various properties are calculated, on the basis of which characters are classified and recognized. Character recognition has been an attractive area for researchers using the Artificial Intelligence. Recognition is easy for humans, but what about machines? Advancement in Artificial Intelligence has led to the developments of various devices. The open issue is to recognize documents both in printed and written format. Character recognition is widely used for authentication of person as well as document. OCR is a technique where digital image that contains machine printed or handwritten input into software and translating it into a machine readable digital format. A Neural network can be designed the way in which the brain performs a particular task or function of interest. In this paper we present the survey of how efficient an Artificial Neural network can be utilized for character recognition process.

Keywords OCR · Artificial neural network · Neuron · Classifier · K-means · Epoch · Clustering

1 Introduction

Character recognition is the phenomenon to identify the character which may be in the form of scanned document or typed text in different fonts and effects. Classical methods for recognition face the problems due to [1]: (1) the characters that are

M.D. Pandya (✉) · R. Patel Jay
Department of Information Technology, CSPIT, Charotar University of Science and Technology, Changa 388421, India
e-mail: mrudangpandya.it@charusat.ac.in

R. Patel Jay
e-mail: engjaypatel@gmail.com

M. Pant et al. (eds.), *Proceedings of Fifth International Conference on Soft Computing for Problem Solving*, Advances in Intelligent Systems and Computing 436, DOI 10.1007/978-981-10-0448-3_33

Proceedings of the

2016 IEEE Region 10 Conference (TENCON)

November 22 – 25, 2016
Marina Bay Sands, Singapore

IEEE Part Number: CFP16TEN-USB
ISBN: 978-1-5090-2596-1

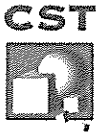
Technical support & inquiries

Research Publishing Services
t:+65-6492 1137; f:+65-6747 4355
e:enquiries@rpsonline.com.sg

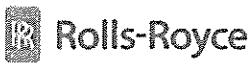
Sponsors

Gold

Silver



Bronze



Partners

Session	**IEEE HardTech Summit 2016**
Date/Time	26 November 2016 / 9.00 am – 5.00 pm
Venue/Room	School of Humanities And Social Science (HSS) Auditorium, HSS-B1-14, 14 Nanyang Drive, Nanyang Technological University, Singapore 637332.

Time	Activity
9:00 AM	Welcome Note – IEEE HardTech Summit 2016 *Nivas Ravichandran – IEEE Region 10 Young Professionals Coordinator*
9:10 AM	Creating a Driverless World – Opportunities & Challenges *Han Boon Siew – A*STAR Driverless Vehicle Program*
9:40 AM	Trends in Power Engineering : Innovation Challenges *Amit K Gupta & Rejeki Simanjorang – Electrical Capability Group | Rolls-Royce*
10:10 AM	Refreshments & Networking Break
10:40 AM	Breathe Easier with an Indoor Air Monitor *Dustin Jefferson – Co-Founder uHoo Air Monitor*
11:10 AM	Scaling your Hardware Technology & Expectations of an HardTech investor *Fireside Chat with Alex Toh – Angel Investor & Entrepreneur*
11:40 AM	Panel Discussion – Hardware Technology Opportunities & Challenges *Alexa Zotova | Tan Eng Tong | Sydney Shi | TBD*
12:25 PM	Lunch & Networking Break
1:25 PM	Sustainable Alternative Lighting – SALT *Aisa Mijeno – Co-Founder & CEO | SALT*
1:55 PM	EPICS in IEEE – Funding for Hardware Technology Products *Supavadee Aramvith – EPICS in IEEE Program & IEEE R10 EA Coordinator*
2:10 PM	Managing Energy for the Better *William Temple | Director – Ampotech*
2:30 PM	Challenges of Indoor Navigation *Alejandro | Co-Founder & CTO Infinium Robotics*
3:00 PM	Refreshments & Networking Break
3:30 PM	How to pitch your Hardware Technology Product? Expectations & Reality *Professional Activities Session*
4:00 PM	Cracking communication across devices with an Egg *Sydney Shi – CEO & Co-Founder | SmartEgg*
4:30 PM	Product Battlefield – Product Pitch Competition *7 Startups Demo their Products*

1134 **Anti-Packet Counterfeiting Attacks in Intermittently Connected Mobile Ad Hoc Networks**
Tomotaka Kimura and Masahiro Muraguchi

1155 **Optimal Frame Size Analysis for Fragmentation and Aggregation Algorithm**
Eunbi Ku, Chulho Chung, Byungcheol Kang and Jaeseok Kim

1162 **Forest Fire Monitoring and Detection of Faulty Nodes using Wireless Sensor Network**
Santoshinee Mohapatra and Pabitra Mohan Khilar

1173 **Low-Complexity Lattice Reduction Aided MIMO Detection for Hardware Implementation**
Jihye Koo, Hyunsub Kim, Hyukyeon Lee, Hanjun Kim and Jaeseok Kim

Session	[FR5D.EDM2] DMP: Electronic Devices and Materials Processing
Date / Time	25 November 2016, Friday / 4.00 pm – 5.30 pm
Venue	Orchid Junior Ballroom 4211
Chair(s)	Ran Ding, *Nanyang Technological University, Singapore* Y. Z. Yap, *Newcastle University International Singapore, Singapore*

549 **Thermoelectric Energy Harvesting for Mobile Phone Charging Application**
Y. Z. Yap, R. T. Naayagi and W. L. Woo

603 **Study the Effect of Inhomogeneous Broadening in Quantum Dots for Application in Medical Imaging**
Shampa Guin and Nikhil Ranjan Das

604 **FPGA based Temperature Control and Monitoring System for X-ray Measurement Instrument**
Keyur K. Mahant, Amit V. Patel, Alpesh Vala and Riddhi Goswami

617 **Effect of AlN Spacer Thickness on Device Characteristics of AlInN/AlN/GaN MOSHEMT**
Kanjalochan Jena and Trupti Ranjan Lenka

861 **High-performance Hybrid Organic-inorganic Perovskite Nanoparticles based Piezoelectric Energy Harvester**
Ran Ding, Fei Gao, Xiaohua Feng, Rahul Kishor, Huaxi Sun, Ruochong Zhang, Siyu Liu, Chuanshi Yang and Yuanjin Zheng

1050 **Effect of Mobility Degradation on the Device Performance of Organic thin-film Transistors**
Farkhanda Ana and Najeeb-ud-Din

Session	[FR6D.SS31] OT: Humanitarian Technologies
Date / Time	25 November 2016, Friday / 4.00 pm – 5.30 pm
Venue	Orchid Junior Ballroom 4212
Organizer(s) / Chair(s)	Parkash Lohana; Irawan Yoke Saadia, *Institut Teknologi Bandung, Indonesia* Felan Carlo C. Garcia, *DOST, Philippines*

716 **Health Source: A Web based Public Health Awareness with Heat Map on Common Illnesses using Social Media Stream**
Arlene O. Trillanes, Ma. Corazon G. Fernando, Bernie S. Fabito, Maria Rizza L. Armildez and Maria Rosario D. Rodavia

FPGA based Temperature Control and Monitoring System for X-ray Measurement Instrument

Keyur K. Mahant, Amit V. Patel, Alpesh Vala, Riddhi Goswami
CHARUSAT Space Research and Technology Center, CHARUSAT University
Changa, India
keyurmahant.ec@charusat.ac.in, amitvpatel.ec@charusat.ac.in

***Abstract*: This paper describes a Pulse width modulation technique implemented in a Field Programmable Gate Array (FPGA) to control the temperature of the Silicon Drift Detector (SDD) used in Spectrometer. Moreover, LabVIEW based Graphical User Interface (GUI) is developed for monitoring the temperature of DC-DC convertors and SDD. Here, Pulse width modulation (PWM) is used for the controlling the temperature of the SDD by controlling the voltage across the Thermo-Electric Cooler (TEC) or Peltier plate while temperature is measured by the temperature sensor available inside the SDD module. The paper also describes the usage of digital clock manager (DCM) for increasing the timer clock frequency of the PWM signal. LabVIEW based simulator is developed for monitoring and post processing the temperature and health parameter.**

***Index Terms*: Peltier Plate, Field Programmable Gate Array (FPGA), Digital Clock Manager (DCM), LabVIEW**

I. INTRODUCTION

Spectrometer is general used to determine the composite elements of rocks, minerals etc. Like other solid state X-ray detectors, silicon drift detectors measure the energy of an incoming photon by the amount of ionization it produces in the detector material.

Silicon drift detector (SDD) has outstanding property of extremely small value of the anode capacitance, which is practically independent of the active area. This feature allows to gain higher energy resolution at shorter shaping times compared to conventional photodiodes and Si(Li) detectors, recommending the SDD for high count rate applications [1]. Low detector capacitance, Low leakage current and Noise reduction by integrating FET with SDD in the first stage of signal processing are the salient features of the SDD. Also, the detector can handle much higher input count rates, allowing throughput count rates of up to 100 Kcps. SDD from KETEK has temperature sensor to readout the chip temperature and Thermo-Electric Cooler (TEC) or Peltier to maintain the chip temperature mounted on the same chip or on a ceramic[2]. We have used TI ADC128S102 Analog to Digital Converter (ADC) for monitoring the temperature of SDD and Temperature of DC-DC Converters.

In this paper, we have used FPGA for monitoring and maintain the temperature of the SDD because it has a capability of executing the concurrent operations and allowing parallel architectural design. Here, we have used PWM technique to control the voltage across the Thermo-Electric Cooler (TEC) or Peltier. Same FPGA is also utilized for the acquisition of the X-ray data from SDD and to monitor the temperature of the SDD and DC-DC converters. LabVIEW based simulator is also developed for the monitoring the temperature of SDD and health parameters of the instrument, in which data is acquired using UART protocol.

II. THERMOELECTRIC BASIC PRINCIPLE

TECs are based on the Peltier Effect, when the current flows through the TECs conductor depending on the polarity of the current flow, the junction of two conductors will either release or absorb heat. The Peltier Effect is one of the three thermoelectric effects, the other two are known as the Seebeck Effect and Thomson Effect. TEC modules are used in applications where temperature stabilization, temperature cycling, or cooling below ambient is required. There are many products using TECs, including CCD cameras (charge coupled device), laser diodes, microprocessors and silicon drift detectors [3].

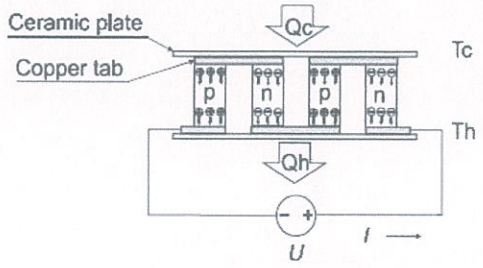


Fig. 1. Thermoelectric device [4]

The typical thermoelectric module is manufactured using two thin ceramic wafers with a series of P and N doped bismuth-telluride semiconductor materials sandwiched between them. The ceramic material on both sides of the thermoelectric adds rigidity and the necessary electrical insulation. The thermoelectric couples are electrically in series and thermally in parallel. A thermoelectric module can contain one to several hundred couples. As the electrons move from the P type material to the N type material, the electrons jump to a higher energy state absorbing thermal energy (cold side). Continuing through the lattice of material, the electrons flow from the N type material to the P type material dropping to a lower energy state and releasing energy as heat to the heat sink (hot side), as shown in figure 1.

978-1-5090-2597-8/16/$31.00 ©2016 IEEE

Dr. Babasaheb Ambedkar Marathwada University

Aurangabad, Maharashtra

NAAC 'A' Re-accredited

COGNITIVE KNOWLEDGE ENGINEERING

Organized by —

Department of Computer Science and Information Technology

Dr. Babasaheb Ambedkar Marathwada University,

Aurangabad - 431 004 (MS), INDIA

www.bamu.ac.in

Editors —

Prof. S. C. Mehrotra

Prof. R. R. Deshmukh

Prof. S. N. Deshmukh

Dr. C. Namrata Mahender

Dr. Pravin L. Yannawar

32. Performance Evaluation on KVKR- Face Database using Multi Algorithmic Multi Sensor Approach 156
Siddharth B. Dabhade, Nagsen S. Bansod, K. V. Kale, M. M. Kazi, Yogesh S. Rode

33. Palmprint Spectral Biometric Authentication System by using ASD FieldSpec 4 Spectroradiometer 163
Anita G.Khandizod, Ratndeep R. Deshmukh, Vandana L. JadhavPatil

34. Novel Approach for Person Identification Based on Iris Statistical Features and Retinal Blood Vessels Bifurcation Points 168
Yogesh Rajput, Ramesh Manza, AnupriyaKamble, Sushil Gawhale, Abdul Hannan Abdul Mannan

35. Survey on Data Hiding Techniques 174
Vaishali N. Ingle, A.M.Patil, K.S.Bhagat, J.P.Chaudhari

36. Analysis of Prostate Cancer in MRI using Support Vector Classifiers and Non Distance based Clustering 181
RiteshAnilkumarGangwal, Ratnadeep R. Deshmukh, Emmanuel M.

37. Leaf Venation Extraction from Leaf Images: A review 185
Pradip Salve, Milind Sardesai, Pravin Yannawar

38. A Conceptual Model for Automated Attendance System Using Principal Component Analysis (PCA) 190
Sarika Ashok Sovitkar, Seema S.Kawathekar

39. Comparative analysis of edge detection techniques for analyze Diabetic Nephropathy using renal Biopsies images 194
Yogini B. Patil, Seema Kavatekar

40. Review on Image processing Techniques for Glaucoma Detection 198
Gangadevi C.Bedke, MuktiJadhav, Ramesh R.Manza, SwapnaliMallade

41. Prediction of Human Activity in Video 203
Ashwini S.Gavali, S.N.Kakarwal, U. B. Shinde

42. Computer Assisted Analysis and Systemization of Knee Osteoarthritis using Digital X-ray Images 207
Shivanand S. Gornale, Pooja U.Patravali, Ramesh R. Manza

43. Association Detection of Regular Insulin and NPH Insulin Using Statistical Features 213
Anupriya K. Kamble, Shaikh Abdul Hannan, Yogesh M. Rajput, Dnyaneshwari D. Patil

44. Home Energy Management System with Renewable Energy Sources Based On ZIGBEE 217
Chetan D. Pande, Ganesh S. Sable

45. Review: Unified Approach to Visual Speech and Speaker Recognition 219
Ritesh A. Magre, Ajit S. Ghodke

46. Review –Computer Based Lip Reading System for Marathi Language 223
Bhushan S. Kulkarni, Ajit S. Ghodke

47. Data Recover from Secondary Storage Device After Multiple Times Deleting Formatting and Wiping 227
Manisha M. Phopse, Charansing N. Kayte

Chapter 35
Survey on Data Hiding Techniques

Vaishali N. Ingle
JTMCOE, Faizpur,NMU University, Maharashtra, India
inglevaishali87@gmail.com

A. M. Patil
E&TC,JTMCOE Faizpur,NMU University Maharashtra, India
patil.abamadhukar@gmail.com

K. S. Bhagat
JTMCOE, Faizpur, NMU University Maharashtra,India
ksbhagat@rediffmail.com

J. P. Chaudhari
charusat space, research and technology center, charotar university of science & technology, Gujarat, India
jitendrachaudhari.ec@charusat.ac.in

ABSTRACT
To protect your secret information from the intruders it is necessary to convert information into unidentified form. So it is impossible to get your original information for intruders. So security is most challenging aspects for all users who want to share their secret information. With the wild growth of internet and the fast communication techniques in recent years the security and the confidentiality of the sensitive information has become of prime and first importance and concern. Information hiding is an art that involves communication of secret information in an appropriate carrier, e.g., image, video, audio etc. To protect information from unauthorized access various methods for information hiding like cryptography, stegnography, hashing, and authentication have been developed and are in practice today. In this paper we will be discussing a New types of computer art, called line-based Cubism-like image, and a technique to create it automatically from a source image have been proposed. The idea of the proposed art image creation technique is inspired by the concept of the Cubism art. Specifically, there are two major stages in the proposed line based Cubism-like image generation process—prominent line extraction and region recoloring. In the first stage, at first we extract line segments from a given source image by edge detection and the Hough transform. Then, we conduct short line segment filtering and nearby line merging. In the second stage, at first we create regions in the image by extending the line segments to the image boundary to partition the image space. Then, we recolor the regions by the average region colors. Data hiding is the method of hiding secret messages in cover art image. In this paper we have proposed a new technique of image stegnography i.e Hash-LSB with RSA algorithm for providing more security to data as well as our data hiding method. The proposed technique uses a hash function to find the position into LSB of RGB pixel values of the cover image for hiding data. This technique makes sure that the message has been encrypted before hiding it into a cover image. If in any case the cipher text got revealed from the cover image, the intermediate person other than receiver can't access the message as it is in encrypted form.

Keywords
Computer art image,Hash LSB,RSA Encryption and decryption,cubism-Art image.

1. INTRODUCTION
In current age most of user use internet in computer, mobile, laptop, tablets etc. in their daily use like as user do their work at any place and send to receiver by using internet. Some time user sends their secret information to other user by using communication network. In this information age there are so many intruders are eagerly waiting for snatching the secret information, so it is our first goal to protect our secret information. In this paper we have to proposed a new method of data hiding by using art image generation algorithm enhances the camouflage effect for various information-hiding application is proposed. An art image created by source image based on cubism properties is called line-based cubism art image. Cubism artists transform a natural scene into geometric forms in paintings by breaking up, analyzing and reassembling objects in the scene from multiple viewpoints. In addition, with the scene objects rearranged to intersect at random angles, each Cubism painting seems to be composed of intersecting lines and fragmented regions in an abstract style. The idea of the proposed art image creation technique is inspired by these concepts of the Cubism art. Specifically, there are two major stages in the proposed line based Cubism-like image generation process—prominent line extraction and region recoloring. In the first stage, at first we extract line segments from a given source image by edge detection and the Hough transform. Then, we conduct short line segment filtering and nearby line merging. In the second stage, at first we create regions in the image by extending the line segments to the image boundary to partition the image space. Then, we recolor the regions by the average region colors. There are various techniques are available for secure information like as cryptography, steganography, hasing etc in cryptography user can convert their original data into unreadable form so intruders cannot find original data. Hash Functions uses a mathematical transformation to irreversibly "encrypt" information. steganography involves hiding information so it appears that no information is hidden at all. If a person or process views the file where information is hidden, he or she will have no idea that there is hidden information, therefore the person will not attempt to decrypt the information. Steganography can be achieved in three ways by using various types of carriers. Those are: Steganography in image, in audio and in video. There are many methods which used to hide information inside image, audio and video files.

2. EVOLUTION OF STEGNOGRAPHY
For understanding the term steganography, its predecessor i.e. cryptography, has to understand first. An art of protecting information by transforming it into an unreadable format, called cipher text is known as cryptography. To decipher this unreadable format, a secret key is required. Cryptography has followed man through many stages of evolution. Cryptography can be found as far back as 1900 B.C. in ancient Egyptian scribe using non-standard hieroglyphics in an inscription. From 500 – 600 B.C. Hebrew scribes used ATBASH, a reversed alphabet simple solution cipher. From 50 - 60 B.C. Julius Caesar used a simple substitution with the normal alphabet in government communications. Cryptography continued through history with many variations. Today cryptography has evolved as quantum cryptography. Quantum cryptography combines physics and cryptography to produce a new cryptosystem that cannot be defeated without the sender and receiver having the knowledge of the attempted and failed intrusion. Through the long history of cryptography. The field of cryptography has a rich and important history, ranging from pen and paper methods, to specially built machines, to the mathematical functions that are used today. In this paper only brief discussion that is essential for knowledge transfer has been presented. Cryptology is the science of coding and decoding secret messages. (Cryptology is the Greek root for

2016 International Conference on Computer Communication and Informatics (ICCCI 2016)

Coimbatore, India
7 – 9 January 2016

IEEE

IEEE Catalog Number: CFP1608R-POD
ISBN: 978-1-4673-6681-6

Sl.No	Paper ID	Title
1.	CS127	Improving NSGA-II For Solving Multi Objective Function Optimization Problems....1 *Vimal L. Vachhani , Vipul K. Dabhi and Harshadkumar B. Prajapati*
2.	CS152	Student Information Report System with SMS (SIRS)....7 *Isbudeen Noor Mohamed, Ahmad Tasnim Siddiqui, Syed Ajaz and S. Mohamed Idhris*
3.	CS177	A Comparative Study of K-Means, DBSCAN and Optics....11 *Hari Krishna Kanagala and V.V. Jaya Rama Krishnaiah*
4.	CS178	Data Linearity using Kernel PCA with Performance Evaluation of Random Forest for Training Data: A Machine Learning approach....17 *Vinai George Biju and Prashant C M*
5.	CS179	Discrimination of snow/ice and cloud against various ecological region using DWT and color models....22 *Rachana Gupta and Pradip Panchal*
6.	CS181	Telemedicine using computer communication network and make 3G/4G USB internet modem Antenna and Mobile satellite Antenna to improve internet speed for downloading and uploading patient details....27 *S.Saravanan*
7.	CS182	Investigation of drying paint by laser speckle image processsing....32 *Balamurugan Rajamanickam and Muruganand Shanmugam*
8.	CS191	New Generation ATM Terminal Services....35 *Srivatsan Sridharan and Kausal Malladi*
9.	CS195	Gold Price Prediction using Support Vector Regression and ANFIS models....41 *Akash Dutt Dubey*
10.	CS204	Implementation of DNA cryptography in cloud computing and Using Socket Programming....47 *Prajapati Barkha and Prajapati Ashish Bharatbhai*
11.	CS218	Cancellable Multimodal Biometric User Authentication System with Fuzzy Vault....53 *S.R.Soruba Sree and N. Radha*
12.	CS221	Analysis and Comparison of EEEMR Protocol with the Flat Routing Protocols of Wireless Sensor Networks....59 *D. Antony Arul Raj and Dr.P.Sumathi*
13.	CS223	Secure and Energy Efficient MANET Routing Incorporating Trust Values using Hybrid ACO....64 *S. Beski Prabaharan and R. Ponnusamy*
14.	CS228	Query Optimization using Clustering and Genetic Algorithm for Distributed Databases....72 *S.Venkata Lakshmi and Valli Kumari Vatsavayi*

2016 International conference on computer communication and informatics (ICCCI-2016), Jan. 07-09,2016, Coimbatore, INDIA

DISCRIMINATION OF SNOW/ICE AND CLOUD AGAINST VARIOUS ECOLOGICAL REGION USING DWT AND COLOR MODELS

[1]*Rachana Gupta*

[1]PG Student
roboscience92@gmail.com
C.S. Patel Institute of Technology, Changa.

[2]*Pradip Panchal*

[2]Associate Professor
pradippanchal.ec@charusat.ac.in
C.S. Patel Institute of Technology, Changa.

ABSTRACT

The cloud detection algorithm is important to raise the accuracy of parameters which is used in the research field related to the energy budget of earth and much more. Thus algorithm should be strong enough so that it can differentiate clouds against various surfaces (i.e. Ocean, Vegetation, Soil, and Snow). This paper covers the description of discrete wavelet transform (DWT) and HSV color model and results based on the same is realized over NOAA, VIRR and MODIS datasets in visible band. After realizing the merits and demerits of proposed algorithm over around 920 images, it is found that proposed algorithm gives better results approximately 90%, compare to existing techniques in differentiating cloudy pixels and snow/ice contaminated pixels of satellites images.

***Index Terms*—** Snow/Ice, DWT, Cloud detection, HSV Color model

I. INTRODUCTION

As per Glossary of Meteorology of American Meteorological society, the presence of totality of ice particle or water droplets in the atmosphere which can be seen is termed as a cloud [1]. Different cloud related observations are used to determine various weather patterns of high latitude. The mid - latitude weather is affected by the polar atmosphere. Hence various techniques are designed for detecting and differentiating cloud in the visible and infrared region of electromagnetic spectrum based on reflectance and radiance [2]. Also, techniques involved radiative transfer method and threshold method using different color models [3, 4, 5, 6]. After a performance analysis and verification of these techniques, it is found that in the polar region, these techniques fail in the small visible and thermal region of the electromagnetic spectrum.

The brightness of snow/ice and cloud is almost similar in the visible band while the reflection of both is different in the infrared region. But near-infrared region is not used frequently, although it is very useful to differentiate cloud against various ecological types (i.e. Ocean, Vegetation, Soil) [7, 8, 9]. Generally for satellite images, the differentiation of cloud against the ice/snow is done for the extraction of cloud tops, to differentiate cloud shadows over snow, identification of cracks in the sea, and many more [10, 11]. For differentiating clouds, pattern recognition techniques give better performance as they utilize reflectance and radiance information for cloud detection. Many studies have been made for pattern recognition techniques for the classification of clouds in the satellite images in which existing methods cut the image into regions and based on that region, clouds have been classified [2]. For the differentiation of three different types of clouds, two features of texture and one feature of spectral are used in a linear discrimination function [12]. J. A. Parikh analyzed different features based on texture and spectral features for the discrimination of four different types of clouds [13]. Algorithm is designed to calculate rainfall rates from different classes of clouds using 48 different textural and spectral features [14]. For the classification of eight different types of clouds and clear sky, U.S. air force Geophysical laboratory used power spectral to get features related spectra [15]. Algorithm demonstrates thirteen features which show height of the presence of clouds, different shapes of clouds, different multilayer characteristics of clouds and many more where it is used to identify 20 different types of cloud patterns. This algorithm gives more than 70% accuracy of the same [16]. To classify different types of clouds, maximum likelihood in which probability distribution function is used [2]. Algorithm describes the LUV values in which discrete wavelet transform of L component is done to extract the required region [17].

The uneven appearance of the clouds in visible imagery demonstrates that clouds are type of cumulus or strato cumulus as indicated in Table 1, if the cloud is brighter in the infrared region which is shown by 'Y' then clouds come under the condition of the top cloud of the troposphere. If the cloud is splendid white invisible region when there is a thick layer of haze, but not in the infrared region which is shown in Table 1 by 'Y' & 'X' respectively, then it is suggested that such clouds are near the surface of earth. Thunderstorms will indicate splendid white on both visible and infrared imagery. A thick cloud will be splendid white in the visible region and

2016 International Conference on Microelectronics, Computing and Communications (MicroCom 2016)

Durgapur, India
23-25 January 2016

Pages 503-1008

IEEE Catalog Number: CFP16SHC-POD
ISBN: 978-1-4673-6622-9

Table of Contents

Page	Paper ID	Title	Author
1	Paper_1	Design of Very Low Power Time – domain Analog – to – Digital Converter	Chandrima Choudhury, Subhankar Majhi and Ashis Kumar Mal
7	Paper_9	FPGA Implementation of Digital Pulse Processing Techniques for Radiation Measurement	Mohindar Vaghela, Rachna jani, Keyur Mahant
13	Paper_11	Biquadratic Universal Filter Based On CCDDCCTA	Sajal K. Paul, Ajay Kumar Kushwaha
17	Paper_15	Design of DNG Material-based Photonic Bandpass Filter at 1.55 μm with Oblique Incidences of Electromagnetic Wave	Arpan Deyasi, Abhishek Majumder
22	Paper_20	*Gallium Phosphide Nanowires for Optoelectronic devices*	Umesh Rizal, Bibhu P. Swain, Bhabani S. Swain
26	Paper_36	Performance Analysis of Power Controlled Cognitive Radio with Imperfect Nakagami-*m* Fading CSI	Rajat Sanyal, Binod Prasad, Sanjay Dhar Roy and Sumit Kundu
31	Paper_37	Detection of Faces from Video Files with Different File Formats	Pranti Dutta, Dr. Nachamai M
37	Paper_39	0.8 V 450 μW 2.4 GHz PLL using Back-Gate QVCO for ZigBee/ BLE standard in 0.18 μm CMOS	Purushothama Chary P, Rizwan Shaik Peerla, Sesha Sairam Regulagadda, Mohd Abdul Naseeb, Amit Acharyya, Rajalaksmi P, Debashis Mandal and Ashudeb Dutta
41	Paper_42	Achievement of Various Bands at the UltraWideband Range : Design of an UltraWideband Antenna using the concept of Band-Notching	Anuj Patro, Priyadarshi Suraj, Bikash Ranjan Behera
46	paper_50	Optimization of Resonant Frequency of A Sierpinski Triangular CMPA Using Genetic Algorithm	B. Roy, A. Bhattacharya, S.K.Chowdhury, A.K. Bhattacharjee
51	Paper_57	A Harmonic Elimination Technique for Voltage Source Inverter Using Embedded Controller	M. Prasad, P. K. Gayen, D.Chatterjee
57	paper_59	Voltage Mode First Order All Pass Filter Design Using Differential Difference Current Conveyor	Rupam Das, Sajal.K.Paul
61	paper_60	Design of a Shorted Planar Meander-Line Metal Antenna	S. Mondal, K. Mandal and P. P. Sarkar
65	Paper_61	Characterisation of Field Plated High Electron Mobility Transistor	Saurav Kumar, Vikash Kumar, Aminul Islam
68	Paper_62	A Comparative Analysis of Various Programmable Delay Elements using Predictive Technology Model	Agnish Mal, Amit Krishna Dwivedi, Aminul Islam
73	Paper_63	*Implementation of HASPA Algorithm for Multiple Antenna based RADAR Signal Processing*	Jagabandhu Das, Prof. P. Venkateswaran
77	Paper_70	Characterization of Bimorph Piezoelectric Actuator by Controlling Voltage Signal for Robotic Assembly	Bhaskar Ghosh, R. K. Jain, S. Majumder, S. S. Roy and S. Mukhopadhyay
83	Paper_71	Position degradation during intense scintillation observed by GNSS receiver from Calcutta	Aditi Das, Ashik Paul
87	Paper_73	RFID Based Real Time System for Early Detection of Avian Influenza for Poultry Based Industry	Subhashis Roy, Subir Kumar Sarkar
93	Paper_80	*Block based Imperceptible Data Hiding using Wavelets in Wireless Communication*	Anirban Goswami, Nabin Ghoshal
99	Paper_81	Negative Inductance and Immittance Simulators Employing Differential Voltage Current Conveyor	Khushi Banerjee, Sajal K. Paul
103	Paper_85	Design of Substantial Delay Block using Voltage Scaled CMOS Inverter and Transmission Gate blend	R S S M R Krishna, Madhumati G L and Ashis Kumar Mal

FPGA Implementation of Digital Pulse Processing Techniques for Radiation Measurement

[1]Mohindar Vaghela, [2]Rachna jani, [3]Keyur Mahant
[1]Post graduate, [2]Associate professor, [3]Assistant professor, Charotar University of science and technology, Changa, Gujarat, India

***Abstract*—Digital pulse processing in radiation measurement application has found great advantage over traditional analog pulse processing. In this paper digital pulse processing for radiation energy measurement is discussed and implemented using Field Programmable Gate Array (FPGA) which includes shaping algorithm, trigger generation for radiation event, pile-up detection and rejection of pile-up events and baseline restoration method. Trapezoidal shaping algorithm is explained and implemented into FPGA using VHDL. To test implemented algorithm, simulated input signal is generated and applied using LABVIEW. Simulation and hardware implemented results are presented in result and analysis section. Better power utilization can be achieved using the presented method.**

Keywords—digital pulse processing, trapezoidal shaping, radiation measurement, front-end electronics, Spectroscopy

I. INTRODUCTION

Radiation measurement detector generates charge pulse at its electrodes whenever any radiation is applied on active region. The energy deposited into detector by the radiation source and the timing of event occurrence are the two main parameters of interest in radiation measurement application. There are many applications where only presence of radiation is detected, so no energy measurement is carried out. The main goal of front end electronics of radiation measurement system is to collect charge from detector and convert it into digital data, so that required information can be extracted from digital data. In traditional way such a measurement system is made of fully analog devices which includes charge sensitive preamplifier, shaping circuit, peak measurement circuit and analog to digital converter [1]. Charge sensitive preamplifier is the bridge between detector and pulse processing electronics. Generally output signal of preamplifier has large exponentially decay time constant. This large time constant leads to combine two or more consecutive radiation events. This phenomena is called as pileup. Due to pile up accurate energy measurement is not possible directly. Shaping circuits are used after preamplifier to reduce pileup events. Many analog circuits has been developed to get high performance in terms of high spectral resolution, high count rate, pile-up rejection, baseline restoration and better ballistic effect removal[1].

After introduction of high speed fast analog to digital converter (ADC) it is possible to replace analog processing part of radiation measurement system with digital components. The main problem with analog component is that they add noise to the detector signal and the parameters and characteristics of analog electronics change with temperature variation [2]. Due to directly digitizing the preamplifier output signal in digital pulse processing method noise immunity and linearity of pulse processing is greatly improved as compared to analog processing electronics. Number of events recorded and analyzed in real time is increased greatly as compared to transferring digital data into external storage for offline processing [3]. Digital signal processing has been implemented and higher count rate up to 10 KHz in [4] is achieved. Both DSP and FPGA are used in [4] to get benefit of complex mathematical calculation capability of DSP and parallel processing capability of FPGA. Various pulse shaping algorithms like trapezoidal, triangle, Gaussian and cusp shape has been developed and discussed in [5]. Implementation of trapezoidal shaping algorithm is performed in [6] using z-transform approach.

Mathematical analysis and implementation of various shaping filters are performed and it is shown that Trapezoidal shaping algorithm achieves highest SNR and simple to implement compared to all other shaping algorithms [7]. In present paper trapezoidal shaping algorithm is implemented along with triggering generation, baseline fluctuation and ballistic deficit removal method into Xilinx Spartan 3E FPGA using VHDL. Charge sensitive preamplifier output signal is simulated and given as an input to test implemented algorithms. LABVIEW environment is used to visualize input and output signal of overall module. Steps to be performed by digital pulse processing unit in digital spectroscopy includes generation of valid triggering pulse which indicates occurrence of incoming radiation event, pulse shaping (trapezoidal shaping algorithm) , base line fluctuation restoration and detection of pile-up and also removal of piled-up events.

II. DIGITAL PULSE PROCESSING

A. *Synthesis of trapezoidal shape*

Trapezoidal shape can be synthesized by using equations defined in [3]. Here input is discrete samples, so trapezoidal shaping algorithm can be represented in discrete format. Trapezoidal shape can be achieved from exponentially decaying signal by using these three blocks 1. Deconvolution block 2. Delay differential block 3. Accumulation block

1. Deconvolution block

Deconvolution block removes exponential decaying time constant effect from input signal and gives stair case step signal. Deconvolution block output Y(n) is defined as

$$Y(n) = Y(n-1) + X(n) - X(n-1) * \alpha \qquad (1)$$

where X(n) is exponentially decaying input signal, α is scaling factor according to RC time constant of Preamplifier defined as $\alpha = e^{-1/T}$, T= decaying time constant of charge sensitive preamplifier output signal equals to RC time constant of preamplifier feedback network[8].

978-1-4673-6621-2/16/$31.00 © 2016 IEEE

icaccs 2016

Association with

IEEE | IEEE Madras Section | IEEE computer society

3rd International Conference on Advanced Computing & Communication Systems

January 22 - 23, 2016
'Sri Eshwar College of Engineering' Campus

BRINGING TO THE TABLE,
FUTURISTIC TECHNOLOGIES FROM
AROUND THE GLOBE.

Sri Eshwar College of Engineering
Leadership & Excellence

Sri Eshwar™ College of Engineering

(Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai)

TÜV SÜD ISO 9001

Structured by

Departments of **CSE, IT, ECE, EEE**

183	Measurement of E-Learning Quality	Chandrima Chatterjee
184	Optimal Strategies for Searching a Mobile Object Using Mobile Sensors in a Grid Environment	Tanmoy Hazra
186	Diagnosis Of Stator Fault Of Medium Voltage Induction Motors Using Motor Stator Current Envelope Analysis (MSCEA)	Rajan Babu
187	A Review of Passive Forensic Techniques for Detection of Copy-Move Attacks on Digital Videos	Shashank Sharma
190	A Survey On Duplicate Record Detection In Real World Data	Dhivyabharathi
191	An Internet of Things based Approach to Thermal Comfort Measurement and Monitoring	Partha Pratim Ray
194	Robust Sybil Attack Detection Mechanism For Social Networks- A Survey	Valarmathi
195	A Survey on Node Discovery in Mobile Internet of Things(IoT) Scenarios	Valarmathi
196	Wireless Energy Management and Analysis System(WEMAS)	Gardhariya Smit Rajeshbhai
199	Aggregation Of Blurred Images Through Weighted FBA To Remove Camera Shake	Gayathri
202	Open Circuit Switch Fault Diagnosis Methods for VSI fed Induction Motor Drive	Anupama
207	Program Length Based Estimated Facts Assembly with minimal Information Loss in Wireless Sensor Networks	Lalitha
208	Certain Investigation on Web Application Security: Phishing Detection and Phishing Target Discovery	Aravindhan
209	A Comparative Analysis on Efficiency of Contemporary Association Rule Mining Algorithm	Bharathi

Wireless Energy Management and Analysis System(WEMAS)

Smit Gardhariya, *M.Tech (Embedded and VLSI Design), CSPIT, CHARUSAT, India,*
Rachna Jani, *Faculty of Electronics and Communication, CSPIT, CHARUSAT, India,*
Jignesh Patoliya, *Faculty of Electronics and Communication, CSPIT, CHARUSAT, India.*

***Abstract*— Wireless energy management and analysis is an embedded system implemented for smart metering. In Country like India energy management is done mostly with door-to-door billing system or User have to pay online at only Gram-Panchayat or municipality where authorized person will do payment procedure for User and take the amount. Here pre-Paid scheme is implemented for the user-end. User will get the electricity equivalent to balance in his account. All the activity done by the server implemented over here and some illegal activity at the user-end like stealing of electricity, meter-box's lock broken can be determined etc. Online recharge also can be done as per your need. For security purpose 3AES encryption algorithm is implemented on TCP/IP as well as Xbee communication. 3AES is mixture of AES and 3DES algorithm used in networking for encryption of data.**

Keywords- Wireless Energy management, Energy management, energy management and analysis, server based energy monitoring.

I. INTRODUCTION

NECESSITY is mother of invention. This is the first step of creation. Now a day in country like India, electrical energy management and billing is so tedious. Door-to-door billing is done or you need to go to Gram-Panchayat or municipality for online payment of bill. This will again have done by authenticate personnel only. WEMAS is an embedded system that will offer pre-paid energy management just like for SIM cards in mobiles. User will get amount of energy equivalent to balance present in their accounts. It is so user friendly because of online payment feature in WEMAS similar to recharge of your SIM cards. To maintain all these a highly secure server can be established. Several illegal activities can also be prevented like stealing of electricity by sending predetermined frame to server with identity of user. We can also summarize the consumption of electricity used by the different regions. Database will store all the data of analysis and we also can plot it for graphical presentation for human readability.

II. SYSTEM COMPONENT

WEMAS includes (1) User-end hardware (2) iNode with internet connectivity (3) Server (4) Online payment and Mobile applications (5) Database.

III. SYSTEM ARCHITECTURE

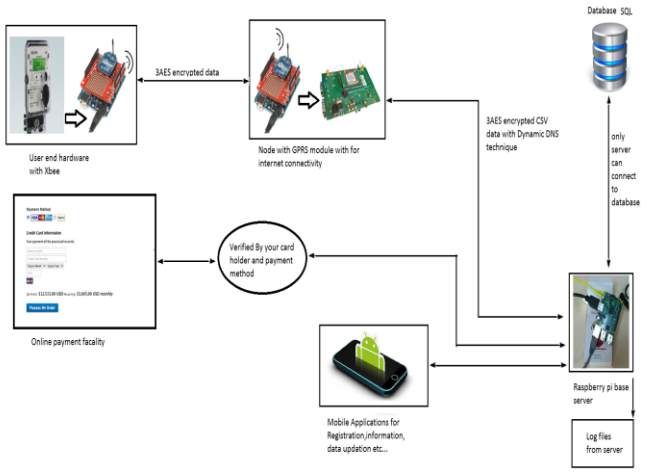


Figure: http://postimg.org/image/di94jy3pb/

IV. SYSTEM MECHANISM

User-end hardware: This device is responsible for performing of User-end algorithm. This hardware is used to read the data from energy meter to determine how much energy consumption is done. This hardware is also responsible for accounting of balance and deduction of charge from it according to power consumption, to determine illegal activity at end user and reporting of it to server. This hardware will have EEPROM to store the balance inside it. Lock provided to meter's box is whether broken or not also can be checked by this device too for reporting thread to server. All the data will be encrypted by encryption algorithm 3AES implemented within the device for security purpose. 3AES is mixture of advantages of AES and 3DES.This if 256-bit patterned encryption algorithm. Xbee is attached to the hardware to communicate with Node which has internet connectivity. This device will fit within in the meter box.

iNode with Internet connectivity: This hardware has an GPRS module for internet connectivity. we are using GPRS module SIM908 because it is most convenient because of its mobility and can be used in remote area too. This hardware will get the data from every User-end hardware. Several User end hardware is connected with iNode. iNode will get the

2016 2nd International Conference on Advances in Electrical, Electronics, Information, Communication and Bio-Informatics (AEEICB 2016)

Chennai, India
27-28 February 2016

IEEE Catalog Number: CFP16E54-POD
ISBN: 978-1-4673-9746-9

Real-Time Area Efficient and High Speed Architecture Design of Viterbi Decoder 246
Amitava Middya and Anindya Sundar Dhar

Requirements and Challenges of 5G Cellular Systems 251
Benisha M and Thandaiah Prabu R

An Architecture for Victim Cache 255
S. Subha

A Review On Hierarchical Routing Methods in Sink Based Wireless Sensor Networks 259
Niraj Nake and Dr. Prashant Chatur

Voltage Stability Enhancement and Voltage Deviation Minimization Using Ant-Lion Optimizer Algorithm 263
Indrajit N.Trivedi, R. H. Bhesdadiya, Pradeep Jangir and Siddharth A. Parmar

Design and Implementation of hybrid phase based ensemble technique for defect discovery using SDLC software metrics 268
Nageswara Rao Moparthi and Dr. N. Geethanjali

Design of UWB Circular Monopole Antenna with enhanced Bandwidth 275
Ashwin Gour, Himanshu Barapatre, Pratik Gadkari and Kartik Solanki

A New Statistical Distance useful for Analyzing Exons and Introns of Eukaryotic Genes .. 278
Balaram Bhattacharyya and Uddalak Mitra

A hybrid singal feature based MAC improvement to Zigbee Network Optimization 282
Tushar Deswal

A modified approach to solution of Unit Commitment problem using Mendel's GA method 287
Vinay Arora and Saurabh Chanana

Thermo-Optic Switch: Device Structure and Design 292
Amit Pisal and Rabinder Henry

An Interactive Fine Motor Movements Screening eTool for for Dyslexia Based on Kinesthetic Perception 296
Dr V.Thulasibai, Dr P.M.Beulah Devamalar, Mr.M Arun Marx and Dr G.Kavya

Development of a DNA Computing Model for Boolean Circuit 301
Kuntala Boruah

Clean Room Indicator for Pharmaceutical Production 305
Nikunjkumar Mehta, Vijay Patel, Hitesh Patel and Jignesh Patoliya

Capacity and Coverage Enhancement of Wireless Communication using Smart Antenna System 310
Mayank Jain and R.P Agarwal

Detection and Analysis of Diabetic Myonecrosis Using an Improved Hybrid Image Processing Model 314
Fahimuddin Shaik, Anil Kumar Sharma and Syed Musthak Ahmed

CPLD Based FSK Modem for Narrowband Power Line Communication 318
Deepak Kumar Mishra and Lalit Mohan Saini

Clean Room Indicator for Pharmaceutical Production

Nikunj Mehta
M.Tech (Embedded & VLSI Design)
c.s.p.i.t, Charusat University
Changa, Gujarat, India
Email: nikunjsmehta@gmail.com

Vijay Patel
MASIBUS Automation and Instrumentation
Gandhinagar, Gujarat, India
Email: vijay@masibus.com

Hitesh Patel
Faculty of Electronics & Communication
c.s.p.i.t, Charusat University
Changa, Gujarat, India
Email: hiteshpatel.ec@charusat.ac.in

Jignesh Patoliya
Faculty of Electronics & Communication
c.s.p.i.t, Charusat University
Changa, Gujarat, India
Email: jigneshpatoliya@charusat.ac.in

***Abstract*—Clean Room Indicator is designed to measure the essential parameter of Temperature, Humidity, Dew Point and Differential Pressure according to that monitor Pharmaceutical production clean room Parameter Standards. Using Temperature Sensor and Humidity Sensor Dew Point will be calculated and estimate the Risk/good condition of Production Room. Differ-ential pressure measure 100mmWC range Pressure. All Three parameter are display on 3 channel 4 digit 7 Segment. Dew point and other parameter are available on Modbus Protocol (Holding Register).Inbuilt Buzzer Audio Sound indicate Critical Situation in Room. This instrument can communicate with PLC and SCADA controlling system with Modbus protocol or Feed as analog input in PLC (Retransmission of Two sensor signal in 4-20mA is provide in this device).**

***Index Terms*—Controller; Sensors; Transmitter; Modbus Protocol; SMPS**

I. INTRODUCTION

The clean room is a manufacturing tool enabling industry to economically produce, inspect a clean end product by controlling pressure, temperature and Humidity. For that Clean Room Indicator monitor Temperature (Thermocouple and RTD sensor supported), Humidity and Differential Pressure sensor In-Built Configurable. Dew-Point will be calculated from Tem-perature and %RH. Dew-Point is very useful in pharmaceutical industry, such as raw material transport, processing equipment and cleaning. For example, bulk solid and powder conveners used for moving product rely on sufficiently dried and filtered air in order to perform their function properly and prevent product contamination [1].Continuous monitoring and control of dew point is often required for instrument air, drying processes and packaging. The risks associated with letting dew point levels go unchecked can include equipment failure, condensation in process lines and on finished product, and the potential for bacterial formation.

As shown in Figure 1 for Input Sensors data read, there are 3 channels input available. 1st channel (3 pin) input for Universal Temperature (3 wires RTD, 2 wires Thermocouple)

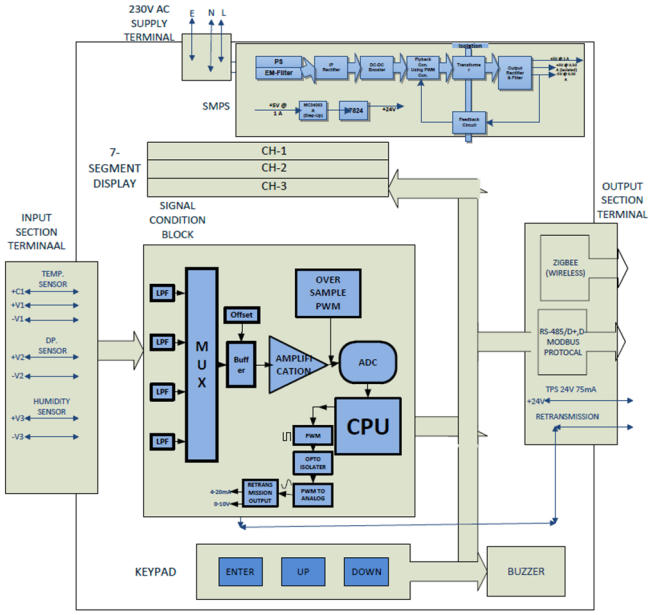


Fig. 1: Clean Room Indicator Block Diagram

and 2nd and 3rd channel (2 pin input) for Differential Pressure and Humidity sensor (Linear Input). To cancel out power frequency and outer high frequency noise Low pass filter applied to all input section. input channels are switched one by one (interval of 2 second) using multiplexer and applied to amplification section, then to ADC. For higher resolution and accurate reading over sampling technique is used for amplified signal. This over sampled signal applied to ADC (Using oversampling 12-bit ADC give accurate reading up to 14-bit). Input data converted into relative Output unit using standard mV to Unit conversion Algorithm as per Sensor Datasheet.

Temperature, humidity, differential pressure and dew point value are update every 6-7 sec. Dew point equation is [2]

$$B = \frac{(\ln(\frac{RH}{100}) + (\frac{(17.27 * T)}{(237.3 + T)}))}{17.27}$$

$$D = (237.3 * B) / (1 - B)$$

978-1-4673-9745-2 ©2016 IEEE

2016 2nd International Conference on Advances in Electrical, Electronics, Information, Communication and Bio-Informatics (AEEICB 2016)

Chennai, India
27-28 February 2016

IEEE Catalog Number: CFP16E54-POD
ISBN: 978-1-4673-9746-9

Facial Periocular Region based Unique ID Generation and One to One Verification for Security Documents 558
Sajan Ambadiyil, Haritha Sree G S and Mahadevan Pillai V P

Computer Vision Based Semi-Intuitive Robotic Arm 563
Ashwin Srinivas Badrinath, Vinay Pathi Balaji and Pradyoth Hegde

Comparative analysis of fixed and adaptive dc-link voltage control 568
Meera S Nair and Deepa Sankar

Design and Analysis of Synchronous Buck converter for UPS Application 573
Sridhar Annamacharya

Analysis of various switch faults of the Three Level Neutral Point Clamped Inverter Feeding Induction Motor Drive 580
Krishna Priya and Vijay Kumar

Control of Parallel DC-DC Converters in a DC Microgrid Using Virtual Output Impedance Method 587
Vinu Thomas, Kumaravel S and Ashok S

A Generalized Password Authentication Scheme Based on Geometric Properties 592
Suvadip Hazra and Hari Om

An Approach to Control Interference in Multi-Carrier Mobile Communication Systems 597
Srinivas Karedla and Santhi Rani Chava

Design Aspects and Performance Analysis of Inner and Outer Rotor Permanent Magnet Alternator for Direct Driven Low-Speed Wind Turbine 604
Md. Yeasin Arafat, Mahtab Murshed, Md. Mahamudul Hasan and M. Abdur Razzak

Fuzzy based vector pi controller to mitigate the harmonic issue of a distribution system using three phase hybrid power filter 610
Subhra Chandan Behera, Girish Kumar Choudhary and Rajib Kumar Mandal

Green Initiatives in 5G 617
Sudhir Routray and Sharmila Kp

Rectangular slot cut Circular Microstrip Antenna 622
Amit Deshmukh, Priyanka Verma and Divya Singh

Analysis and Design of Circular slot cut Corner Truncated Rectangular Microstrip Antenna 627
Amit Deshmukh, Divya Singh and Priyanka Verma

Large Scale Ontology for Semantic Web Using Clustering Method over Hadoop 632
Surbhi Atal and Prashant Chatur

Optimized Multi-Sensor Multi-Target Tracking Algorithm for Air Surveillance System 637
Anita Thite and Arun Mishra

Cost effective digitization of Home Appliances for Home Automation with low-power WiFi devices 643
Ashutosh Bhatt and Jignesh Patoliya

Cost effective digitization of Home Appliances for Home Automation with low-power WiFi devices

Ashutosh Bhatt
C.S.P.I.T, CHARUSAT University
Changa, Gujarat, India
Email: ashubhatt.ec@gmail.com

Jignesh Patoliya
C.S.P.I.T, CHARUSAT University
Changa, Gujarat, India
Email: jigneshpatoliya@charusat.ac.in

***Abstract*—The notion of a smart home with integrated sensors, actuators, wireless network and a graphical user interface is very enticing. This paper presents the design and implementation of reliable, flexible, secure and economical sensor network for transforming traditional home into a smart home. The heterogeneous sensor and actuator nodes based on wireless networking technologies are deployed in the home environment. These nodes communicate to a middleware which runs home automation server and which operates as broker to facilitate the MQTT connectivity protocol. The middleware facilitates controlling of wireless nodes over local as well as remote network. The proposed system is designed to be low cost and scalable to accommodate variety of devices to be controlled.**

***Index Terms*—Home Automation, WiFi, OpenHAB, IOT, Raspberry Pi, ESP8266**

I. Introduction

TWENTY First century is an era of digital revolution. A revolution which introduced human society with advancement in technologies. With this advent in technology, cost effective and reliable wireless technologies came into existence. The improvements offered by the wireless technologies now significantly reduces the complexity of harnessing wired transmission and facilitates the communication for internet-of-things (IOT). Utilization of such low cost wireless technologies can be made to introduce digitization in traditional homes and effectively build a Smart Home System.

A. Home Automation

A Smart Home is usually a freshly constructed home/building that is furnished with special structured wired or wireless system that enables inhabitants to operate home appliances remotely. Smart home incorporates home automation technologies to provide occupants with information and intelligent feedback by monitoring various aspects of home.

The concept of IOT is closely integrated with the popularization of home automation. By employing the network infrastructure of IOT and utilizing standard IOT protocols, the household appliances can be monitored and controlled remotely over internet. A home that is equipped with such a wireless system can be called Smart Home in context of IOT. The Smart Home concept fundamentally brings several new features to a regular home like interoperability, remote access and flexibility of expansion [1].

Home Automation is the introduction of technology within the home to enhance the quality of life of its occupants, through the provision of different services such as telehealth, multimedia entertainment and energy conservation [2]. In a Home Automation System, several home appliances are connected to each other in an existing or dedicated network and can be controlled, monitored and automated through a central application.

B. Proposed System

The popular notion that retro-fitting (adding smart home technologies to an existing property) a house to make it a smart home is significantly costly, is no more acceptable in the modern era. The development and innovations in wireless technologies has certainly brought reduction in cost of Wireless Systems. The wireless technologies have evolved and its progress can be observed in latest technologies being not only cost-effective but also reliable and power efficient. These technologies can be deployed in a traditional home environment and the regular home appliances can be digitized after which they can be controlled and monitored effectively using the Smart Home concept. The proposed system essentially converts traditional homes into smart homes.

Features of Proposed System:

- The system can be integrated in traditional homes.
- The system has scalable architecture. Any number of home appliances can be controlled and monitored with the proposed system.
- The system proposes cost-effective home automation solution.
- The system can integrate existing wireless home appliances to effectively present a single interface to the user to control and monitor almost all home appliances.
- The system can efficiently utilize existing wireless network architecture for communication.
- The system can be customized to automate only user picked appliances; in which case rest of the appliances will work with their inherent functionality.
- The system handles and manages all home resources through a central server, which makes debugging and reconfiguration of system easy for user.

978-1-4673-6725-2

IRAJ Research Forum

ISBN: 978-93-85973-46-8

PROCEEDINGS OF

49th IRF INTERNATIONAL CONFERENCE

Date: 21st February, 2016
Venue: Pune, India

Association With

TABLE OF CONTENTS

Sl No	TITLES AND AUTHORS	Page No.
1.	**Sustainable Environment: Laterite as Sustainable Building Materials in Construction Industry** ➢ *Muntari Mudi Yar' adua, Abbas Usman Kakale*	**1-4**
2.	**Desing & Simulation of Shunt Active Power filter Using P-Q Theory For Power Quality Improvement** ➢ *Amaraja Joshi, Mulla Anwar Mubarak, Aniket Dhmangaonkar*	**5-10**
3.	**Fruit Quality Evaluation Using K-Means Clustering Approach** ➢ *Suraj Khade, Padmini Pandhare, Sneha Navale, Kuldeep Patil, Vijay Gaikwad*	**11-15**
4.	**Real Time Traffic Monitoring System Based on Arm** ➢ *Swapnali Suryawanshi, Savita Pawar*	**16-19**
5.	**An Innovative Idea For Spam Zombie Detection and Blocking Mechnism** ➢ *Shubhangi Nalawade, Umesh Kulkarni*	**20-23**
6.	**Rapid Prototyping Technology - Study of Fused Deposition Modeling Technique** ➢ *Ojas Dandgaval, Pranita Bichkar*	**24-27**
7.	**Diagnosis of Incipient Faults Using Wavelet Packet Decomposition in Synchronous Generators** ➢ *B.Vidyasagar, SS.Tulasiram*	**28-35**
8.	**IOT Based Water Quality Monitoring System** ➢ *Jayti Bhatt, Jignesh Patoliya*	**36-40**
9.	**An Ingenious Page Replacement Technique** ➢ *Ashutosh Ghildiyal, Kanchan Bisht, H.L. Mandoria, Rajesh Singh*	**41-43**
10.	**Analysis and Testing of Different Time Quantum For Round Robin Algorithm** ➢ *Km. Archana Patel*	**44-48**
11.	**A Study of the Concentration and Imbalance of Microfinance Institutions in North-East India** ➢ *Shreyasi Kanjilal*	**49-52**
12.	**Make in India** ➢ *K.Narayanaswamy, S.Sai Sireesha, S.Rajababu, B.Varalakshmi, A.Md.Ferman Ulla*	**53-54**

IOT BASED WATER QUALITY MONITORING SYSTEM

[1]JAYTI BHATT, [2]JIGNESH PATOLIYA

[1]M.Tech (Embedded & VLSI Design) CSPIT CHARUSAT India
[2]Faculty of Electronics & Communication CSPIT CHARUSAT India
E-mail: [1]jayti4476@gmail.com, [2]jigneshpatoliya@charusat.ac.in

Abstract— To ensure the safe supply of drinking water the quality should be monitored in real time for that purpose new approach IOT (Internet of Things) based water quality monitoring has been proposed. In this paper, we present the design of IOT based water quality monitoring system that monitor the quality of water in real time. This system consists some sensors which measure the water quality parameter such as pH, turbidity, conductivity, dissolved oxygen, temperature. The measured values from the sensors are processed by microcontroller and this processed values are transmitted remotely to the core controller that is raspberry pi using Zigbee protocol. Finally, sensors data can view on internet browser application using cloud computing.

Keywords— Water Quality Monitoring, IOT, Zigbee, Cloud Computing.

I. INTRODUCTION

Over the past decade, online water quality monitoring has been widely used in many countries known to have serious issues related to environmental pollution [2]. The water is limited and essential resource for industry, agriculture, and all the creatures existing on the earth including human being. Any imbalance in water quality would severely affect the health of the humans, animals and also affect the ecological balance among species [5]. In the 21st century there were lots of inventions, but at that time were pollutions, global warming and so on are also being formed, because of this there is no safe drinking water for the world's population [1]. The drinking water is more precious and valuable for all the human beings so the quality of water should be monitored in real time. Nowadays water quality monitoring in real time faces challenges because of global warming, limited water resources, growing population, etc. Hence, there is a need of developing better methodologies to monitor the water quality parameters in real time.

The WHO (world health organization) estimated, in India among 77 million people is suffering due to not having safe water. WHO also estimates that 21% of diseases are related to unsafe water in India. Also, more than 1600 deaths alone cause due to diarrhea in India daily. Therefore, various water quality parameters such as dissolved oxygen (DO), conductivity, pH, turbidity and temperature should be monitored in real time.

The water quality parameter pH show water is acidic or basic. Pure water has 7 pH value, less than 7 values indicate acidity and more than 7 indicate alkalinity. The normal range of pH is 6 to 8.5. In drinking water if the normal range of pH doesn't maintain it causes the irritation to the eyes, skin and mucous membranes. Also, it causes the skin disorders. The dissolved oxygen (DO) is indicated the oxygen that dissolved in water. It makes the drinking water taste better. The conductivity indicates the ability of water to pass an electrical current. In water it is affected by various dissolved solids such as chloride, nitrate, sulfate, sodium, calcium, etc. Turbidity has indicated the degree at which the water loses its transparency. It is considered as a good measure of the quality of water. Water temperature, indicates how water is hot or cold.

The deterioration of water resources becomes a common human problem [3]. The traditional methods of water quality monitor involve the manual collection of water sample from different locations. These water samples tested in the laboratory using the analytical technologies. Such approaches are time consuming and no longer to be considered efficient. Moreover, the current methodologies include analysis of various kinds of parameters of water quality such as physical and chemical. Traditional methods of the water quality detection have the disadvantages like complicated methodology, long waiting time for results, low measurement precision and high cost [4]. Therefore, there is a need for continuous monitoring of water quality parameters in real time.

By focusing the above issues, we have to develop and design a low cost water quality monitoring system that can monitor water quality in real time using IOT environment. In our proposed system water quality parameters are measured by the different water quality monitoring sensors such as pH, turbidity, conductivity, dissolved oxygen and temperature. These sensor-values are processed by the microcontroller and theses processed values are sent to the core controller remotely using Zigbee IEEE 802.15.4 protocol. In the proposed system, IOT module is used to access processed data from the core controller to the cloud. The processed data can be monitored through a browser application using a special IP address. Furthermore, with the help of IOT environment, we can provide facility to access data remotely from all over the world.

The overview of the following sections of this paper is as provided here: Section II provides the Zigbee protocol, Section III provides Internet of Thing, Section IV provides a literature review of existing

2016 International Conference on Electrical, Electronics, and Optimization Techniques (ICEEOT 2016)

Chennai, India
3-5 March 2016

Pages 1-770

IEEE

IEEE Catalog Number: CFP16E71-POD
ISBN: 978-1-4673-9940-1

88. Stress Detection and Reduction using EEG Signals 471-475
89. Highly efficient discontinuous mode interleaved dc-dc converter 476-481
90. Optimal Placement of Multi-Type Facts Controllers Using Real Coded Genetic Algorithm 482-487
91. Design of Embedded Web Server Based on NIOS-II Soft Core Processor 488-492
92. Double Integrated Buck Offline Power Supply for Solid-State Lighting Applications 493-498
93. Industrial WSN using IOT:A Survey 499-504
94. A Survey on Software based Effort Estimation 505-509
95. Novel Text Independent Speaker Recognition Using LPC Based Formants 510-513
96. Novel Approach for Classification and Prediction of Non Linear Chaotic Databases 514-518
97. Fiber-Wireless (Fi-Wi) Architectural Technologies: A Survey 519-524
98. A Semiautomated Approach using GUI for the Detection of Red Blood Cells 525-529
99. MSFL Based Determination of Optimal Size and Location of Distributed Generation in Radial Distribution System 530-535
100. Parametric study in Element Free Galerkin method for an Elastic bar 536-543
101. Functional Realization of Electronic Elements in Liquid State: A Review 544-548
102. Proposed Inverter Topology and Control Circuit for the Proposed Grid Connected Photovoltaic System: Description and Design Specification 549-554
103. Model identification and dynamic matrix control of ethane-ethylene distillation column 555-560
104. Common-Mode Voltage Eliminated 2-level PWM Inverter Based on a Cascaded 3-level Inverter 561-566
105. Exporation of Voltage Sag and Its Mitigation Techniques 567-572
106. Hexapod: A Spider for Terrain and Obstacle Shunning by Arduino 573-578
107. An Active Load Single-ended Double Flipped Voltage Follower Amplifier and its Application 579-583
108. A Fuzzy-ACO Algorithm to enhance Reliability Optimization through Energy Harvesting in WSN 584-589
109. FPGA Implementation of Secondary Synchronization Channel Detector for WCDMA Systems 590-595
110. Detection of Blood Cancer in Microscopic Images of Human Blood Samples: A Review 596-600
111. An Efficient Islanding Detection Method In Microgrids Using Hybrid SVM Based Decision Tree 601-607
112. Analyzing the impact of TFETs for ultra-low power design applications 608-612
113. Design and Implementation of Neuro Fuzzy Based STATCOM Controller for Improving Power Quality 613-618
114. Design and Implementation of Microwave Integrated Ultra Low Noise Amplifier for Receiver Application 619-624
115. Load Balancing and Voltage Regulation for Two Leg VSC Based Islanded DG Set Supply System 625-630

Functional Realization of Electronic Elements in Liquid State: A Review

Introducing Electronic Characteristics in Liquid State

Shivansh Dave[1] and Manthan Manavadaria[2]
Department of Electronics and Communication Engineering,
C. S. Patel Institute of Technology, CHARUSAT,
Gujarat, INDIA
[1] 12ec023@charusat.edu.in, [2] manthan_genious@yahoo.co.in

***Abstract*—Scientific literature and lab experiments on different aqueous liquid samples, are showing important and significant role of liquid state properties for getting few characteristics similar to electronics in solid state. Such studies show possibility of applying the development in field of advanced biological study and therapies involving health monitoring system, quick disease detection, man-machine interface (cyborg-implant), various implants and even in physical phenomenon about liquids and their electronic characteristics. However, these studies are limited and yet to reach the state of the art mark, yet possible future outcomes are attracting attention of many scientists and researchers now days, from both academia and industries. This informative review article shows cumulative results of few experiments in this direction. Summary of concepts of realization of electronic elements in liquid state is included along with discussion and few original verification works. Referred articles are showing concept and electronic-like characteristics development of diode, transistor, memristor and amplifier developed using aqueous liquid samples including human blood serum.**

Keywords— Liquid circuits; Memristor; Liquid state electronic compounds; Resistivity Analysis; Diode; Transistor; Amplifier; Blood serum.

I. INTRODUCTION

Electronic components can be classified, based on state of material used for making, in following three basic categories, based on fundamental state of matter. Characteristics of all of them are important in development of electronic components we use now days. [1-2]

A. Gaseous State

Vacuum Tubes and Gas-Filled Tubes fall in such category of the electronics devices. Vacuum tubes and gas-filled tubes rely on the thermionic emission of electrons and properties of discharge through an Ionized Gas respectively. New era of non-mechanical calculators and computers, showed ability to the replacement and left people amused and puzzled by their working, brought with invention of these devices.[3]

Major role in development of modern day electronics has been played by such inventions. Gaseous state technology was widely used during year 1910-1960, until solid, silicon-based transistors have replaced them. [1]

B. Solid State

Solid state devices are widely used in present day devices. Semiconductor i.e. Silicon and Germanium, based circuits belong to the category, which rely on doping of *tri-valent* and *penta-valent* impurities. They are known for showing characteristics of *partially conductive* material, thus called “semiconductors”.

Majorly silicon material is used as base substance for making circuits and electronic components. Based on doping of specific impurities on the substrate, N-type and P-type materials are developed, through which components and Integrated Circuits (IC) are developed for making electronic applications.[4]

C. Liquid State

Selecting liquid materials are uncommon and innovative approach for deciding base material for making electronic components applications[5-6]. The material, which is in liquid form and play basic role in working or developing electronics characteristics, fall under this category. Commonly salt-water based materials (aqueous liquids) are used for it.

Based on concentration of free ions in the aqueous material, we could get drastic change in electronic conductivity from insulator to partial conductor. Connectors (electrodes) also play some role here. Such systems are having combination of electronics between liquid state and solid state which can be explained through chemical properties.[7] Now days, researchers started working on purely liquid based circuits which do not even have solid i.e. copper, connectors. Each parts of the circuit are being replaced with liquid elements. Though it is an open puzzle to find and solve equations and calculations for such systems.

Next few topics are in focusing on the experimental results and observations of systems in liquid states. We have also tried to reproduce few of setups to check the results.

978-1-4673-9939-5/16/$31.00 ©2016 IEEE

2016 International Conference on Communication and Signal Processing (ICCSP 2016)

Melmaruvathur, Tamilnadu, India
6-8 April 2016

Pages 1-774

IEEE Catalog Number: CFP1689M-POD
ISBN: 978-1-4673-8549-7

Ann Treasa John, Anukraga Evangelin G.S and E. Rajinikanth	
Connection Setup of Openvibe T ool with EEG Headset, Parsing and Processing of EEG signals *Kavita V. Singala, Kiran R. Trivedi*	**0902**
Throughput Analysis for Multimedia Transmission in Mobile AdHoc Networks using AMC *Sharada U Shenoy, SharmilaKumari M, Udaya Kumar K Shenoy*	**0907**
Design of Liquid Crystal Polymer based Flexible Dual-band Microstrip Patch Antenna *Dipal Sindha, Falguni Raval, Brijesh Shah*	**0912**
Applicability of MIMO and OFDM Technology to SATCOM *Suganya M, Gandhiraj R*	**0916**
Design of 8T ROM Embedded SRAM using Double Wordline for Low Power High Speed Application *M. Ramakrishnan, J. Harirajkumar*	**0921**
Efficient Multiple Secret Visual Cryptography via CA-Rule 30 *Mainejar Yadav, Ranvijay*	**0926**
Extraction of Brain from MRI Images by Skull Stripping using Histogram Partitioning with Maximum Entropy Divergence *Asit Subudhi, Jitendra Jena, Sukanta Sabut*	**0931**
Design of Higher order FIR Low Pass filter using Cuckoo Search Algorithm *Supriya Dhabal, Niloy Chakraborty, Adrika Mukherjee, Jayeta Biswas*	**0936**
Performance Analysis of Image Segmentation methods for Noisy MRI images *Ravi Boda, Sudheer Kumar Yezerla, B. Rajendra Naik*	**0942**
A Review on Detecting and Transmitting Events with Wireless Sensor Networks in Logistics *Neha Pareek, R D Daruwala, Ankur Agrawal*	**0947**
Multidisciplinary Real Time Data Management of GPRS Based Coastal Drifter and INSAT Based Automatic Weather Station *P.Thangarasu, R.Srinivasan, S.Muthukumaravel, Tata Sudhakar*	**0950**
Performance Comparison of Different OFDM Transmission Schemes: Exploiting Compressed Sensing for Channel Estimation *Girish Pavithran, Aswathi C. and Renu Jose*	**0956**
Deployment of Sensor nodes for Enhancement of Lifetime in Event driven Wireless Sensor Network *Ganesh Prasad, Vishal Kumar and Ashraf Hossain*	**0961**
Online and Offline Character Recognition: A Survey *Anisha Priya, Surbhi Mishra, Saloni Raj, Sudarshan Mandal and Sujoy Datta*	**0967**
Implementation of V ANET Routing using Computational Intelligence *Nayana Hegde, Sunilkumar S.Manvi*	**0971**
IOT-BEAT: An Intelligent Nurse for the cardiac Patient *Kinshuk U. Nigam, Abhinee A. Chavan, Sumit S. Ghatule, Vaishali M. Barkade*	**0976**
Object Recognition Using Horizontal Array of Ultrasonic Sensors *Apurva Rajendra patkar, Pankaj P. Tasgaonkar*	**0983**
Mixed CNT Bundles as VLSI Interconnects *Karthikeyan and P.S. Mallick*	**0987**
Performance Analysis of Junctionless Double Gate MOSFET using Silicon and	**0991**

Design of Liquid Crystal Polymer based Flexible Dual-band Microstrip Patch Antenna

Dipal Sindha, Falguni Raval, Brijesh Shah

***Abstract*—A dual band microstrip patch antenna is designed using liquid crystal polymer (LCP) as substrate material is presented in this paper. The design of microstrip patch antenna with and without complementary split ring resonator (CSRR) is present for comparison sake. The Microstrip patch antenna without complementary split ring resonator resonates at 5.5GHz. The dual band Microstrip patch antenna resonates at 2.13GHz and 5.4GHz. The new band achieved with help of complementary split ring resonator. Liquid crystal polymer is used as substrate of both antennas.**

***Index Terms*—Flexible antenna, Complementary Split Ring Resonator (CSRR),Liquid Crystal Polymer(LCP)**

I. INTRODUCTION

In recent era a great demand towards flexible electronics in various applications has been observed. Flexible antenna can be bent, twisted and rolled up. Liquid Crystal Polymer (LCP) is widely chosen as a substrate material for making flexible antenna having attractive properties for high performance microwave application [1]. Due to low permittivity, low loss tangent, low water absorption coefficient, environmental friendliness and low cost LCP become Virtue candidate for making flexible antenna [2]. Low coefficient of thermal expansion, Mechanical flexibility and low moisture absorption making it more supreme [2-3]. The coefficient of thermal expansion of LCP laminates and circuit boards can be matched to that of the silicon chip and chip packages providing higher reliability [4]. LCP is more suitable for microwave and millimetre wave application because of its low cost compares to that of low temperature co-fired ceramic (LTCC) and other RF materials [2, 5, 6]. LCP with superior electric performance up to millimetre wave frequency [7], has emerged as a conceivable candidate and its multilayer integration capabilities make it attractive for system-on-a-package (SOP) based RF application [4].

Dipal Sindha, Falguni Raval, Brijesh Shah, Charotar University of Science and Technology,Changa-388421. Sdipal95@gmail.com

In this paper, a simple microstrip patch antenna and dual band patch antenna designed with inclusion of CSRR in ground plane are designed and compared. LCP is used as substrate material for both antennas. Section II detail about antenna design. Section III describe about design of dual band microstrip patch antenna with CSRR. Section IV is explained in simulation and results. Section V Conclusion is discussed.

II. ANTENNA DESIGN

The rectangular microstrip patch antenna using LCP as its substrate material is designed for frequency of 5.5 GHz. The dielectric constant(ε_r) of LCP is 2.96 and dielectric loss tangent($tan\delta$) is 0.0025. [7]. For designing microstrip patch antenna calculation of its patch dimensions is very important.

Width of the Patch can be calculated by following design equation [9],

$$W = \frac{c}{2 f_r}\sqrt{\frac{2}{\varepsilon_r + 1}} \quad \text{.....(1)}$$

Where c is the speed of light in free space and
ε_r is the relative permittivity of material

Effective dielectric constant (ε_{reff})calculated by,

$$\varepsilon_{reff} = \frac{\varepsilon_r + 1}{2} + \frac{\varepsilon_r - 1}{2}\left[1 + 12\frac{h}{w}\right]^{-\frac{1}{2}} \quad \text{.....(2)}$$

Where h is the thickness of the substrate.

Length of the patch calculated by following,

$$L = \frac{v_0}{2 f_r \sqrt{\varepsilon_{reff}}} - 2\Delta L \quad \text{.....(3)}$$

$$\frac{\Delta L}{h} = 0.421\left[\frac{\left(\varepsilon_{reff} + 0.3\right)}{\left(\varepsilon_{reff} - 0.258\right)}\right]\left[\frac{\left(\frac{w}{h} + 0.264\right)}{\left(\frac{w}{h} + 0.8\right)}\right] \quad \text{.....(4)}$$

$$L_e = L + 2\Delta L \quad \text{.....(5)}$$

By considering calculated parameter shown in Table I, top view of design of patch antenna is shown in Fig. 1.

978-1-5090-0395-2/16/$31.00 ©2016 IEEE

2016 IEEE International Conference on Recent Trends in Electronics, Information & Communication Technology (RTEICT 2016)

Bangalore, India
20-21 May 2016

Pages 706-1428

IEEE Catalog Number: CFP16F77-POD
ISBN: 978-1-5090-0775-2

353.	Multi algorithm based Landmine Detection using Ground Penetration Radar	1691-1694
354.	Design and development of new apparatus in VANETs for safety and accident avoidance.	1695-1698
355.	Data Driven Prognosis Approach for Safety Critical Systems	1699-1703
356.	Face Recognition with CLNF for Uncontrolled Occlusion Faces	1704-1708
357.	Space-Fed Microstrip Array with Proximity-Fed Microstrip Antenna Feed Element	1709-1712
358.	Circularly Polarized Sequentially Rotated Gap – Coupled Elliptical Microstrip Antennas Array	1713-1717
359.	Angular Cut Circular Microstrip Antenna for Multi-band Dual Polarized Response	1718-1722
360.	Automatic Product Detection And Smart Billing For Shopping using Li-Fi	1723-1726
361.	Fractional-Order Filter Design for Ultra-Low Frequency Applications	1727-1730
362.	An Automated attendance system using video surveillance camera	1731-1735
363.	A MIMO Antenna : Study on Reducing Mutual Coupling and Improving Isolation	1736-1740
364.	Computer Aided Detection of Abnormal Red Blood Cells	1741-1746
365.	Anemia Detection using Ensemble Learning Techniques and Statistical Models	1747-1751
366.	Synchronous Reference Frame Based Transformer less Single Phase Grid Tie Inverter for DC Bus Power Evacuation	1752-1756
367.	FPGA based robots for industrial security and application	1757-1760
368.	Video based Action Detection and Recognition Human using Optical Flow and SVM Classifier	1761-1765
369.	Multi-Object Tracking using TLD framework	1766-1769
370.	Detection and Identification of Unattended/Removed Objects in Video Surveillance	1770-1773
371.	Design of High Gain Bulk-Driven Miller OTA Using 180nm CMOS Technology	1774-1777
372.	Preprocessing for Image Classification by Convolutional Neural Networks	1778-1781
373.	Reliable Security Policy in Mobile Distributed Network	1782-1786
374.	Impact of Gate Oxide Thickness and Aspect Ratio of Fin Height and Fin Width on Nanoscale Tapered FinFETs	1787-1791
375.	Volume Measurement of Object using Computer Vision	1792-1795
376.	Design and Performance Analysis of Low Frequency CMOS Ring Oscillator Using 90nm Technology.	1796-1801
377.	A Study on Robustness of Block Entropy Based Digital Image Watermarking Techniques with respect to Various Attacks	1802-1806
378.	Classification of Benign and Malignant Bone Lesions on CT Images using Random Forest	1807-1810
379.	Performance Evaluation PL330 DMA Controller for Bulk Data Transfer in ZynqSoC	1811-1815

Performance Evaluation PL330 DMA Controller for Bulk Data Transfer in Zynq SoC

Apurva Choudhary, Jaimin B Chavda , Amit P Ganatra, Rikin J Nayak

Abstract— **This paper provides performance evaluation of PL330 DMA in Zynq SoC based device. Direct Memory Access is the feature that allows computer hardware to access system memory for data movement in bulk without CPU intervention. The I/O devices operate at a slower speed than CPU, but using DMA the CPU can be available for performing other computing tasks while data is transferred, as CPU has to only initiate the read/write of data. The direction of transfer can be from device-to-memory, memory-to-device, memory-to-memory and device-to-device. This paper describes the hardware setup and sequence of operations for transfer of bulk volume data at high speed using PL330 DMA controller in Zynq SoC based system.**

Keywords—***Data Acquisition, PL330 DMA, Zynq SoC, Device driver.***

I. INTRODUCTION

Data Acquisition is the process of sampling signals that measure real world physical or electrical phenomenon such as voltage, current, temperature and converting the resulting samples into digital numeric values that can be manipulated by a computer [1]. It is an integral part of almost all application today. The Process is required even in a small application which just acquires a single bit to working in video and audio files. There must be tradeoff between the amount of data to be transferred and the total time required to transfer the data. The requirement is to develop a DAQ system that performs data transfer at a high speed using DMA and also minimizing utilization of available resources. The data must be acquired at a speed such that system performance and throughput increases. This paper discusses about the technique to employ high speed and high volume of data transfer using efficient mechanism.

A DAQ system combines many devices like peripheral I/O devices and CPU. For communication between devices they must be connected using a communication channel called system bus. CPU works as the master and controller of the system bus. The devices must first be registered with the CPU to perform required operation.

Apurva Choudhary, PG Student,(M.Tech CE), U & P U Patel Dept. of Computer Engineering, Faculty of Technology and Engineering, Charotar University of Science and Technology, Changa, Gujarat, India. (apurva.choudhary88@gmail.com)

Prof. Jaimin B Chavda, Assistant Professor, Dept. of Information Technology, Faculty of Technology And Engineering ,Charotar University of Science and Technology, Changa, Gujarat, India. (jaiminchavda.it@charusat.ac.in)

Amit P Ganatra, Dean and Head ,Professor, U & P U Patel Dept. of Computer Engineering, Faculty of Technology And Engineering ,Charotar University of Science and Technology, Changa, Gujarat, India. (amitganatra.ce@charusat.ac.in)

Rikin J Nayak, Assistant Professor, V.T.Patel Dept. of Electronics and Communication Engg, Faculty of Technology And Engineering ,Charotar University of Science and Technology, Changa, Gujarat, India. (rikinnayak.ec@charusat.ac.in)

II. DIRECT MEMORY ACCESS(DMA)

There are three major data transfer methods for computer-based data acquisition 1. Polling 2.Interrupts/Programmed I/O 3. Direct memory access (DMA).

A. Need for DMA:-

Movement of bulk data among system components (RAM, CPU, Storage, Controllers etc.) involve CPU for transfer which provides an overhead for CPU and system performance is hindered, so DMA provides CPU with less overhead of just assigning the work and continue with some other task while transfer is in progress and return to the previous task to free the resources once notification is received. DMA also minimizes latency in servicing a data acquisition device because the dedicated hardware responds more quickly than interrupts, and transfer time is short [2]. Direct memory access (DMA) allows devices to transfer data with less processor overhead, whereas without DMA processor has to transfer data continuously which would keep all the resources like bus busy the whole time, throttling the bandwidth.

For a device to use DMA, it must be assigned to a DMA channel. Each device comes under a broad category of ports, each type of port on a computer has a set of DMA channels that can be assigned to each connected device. The task of copy operation is performed by DMA controller (dmac).

Basic steps for transfer using DMA are [3]:

1) CPU programs the DMA controller.
2) DMA requests transfer.
3) Data transferred using DMA.
4) Once data transfer is complete an acknowledgement is received to dmac.
5) The dmac then interrupts the CPU that transfer is complete and to schedule the next job.

The CPU programs the DMA controller by allocating channel for dedicated transfer and setting the DMA capacity. The DMA transfer is then requested first by allocating DMAble buffers in memory that are visible to controller and channels for transferring the data. Once the buffers for allocated the data is transferred and acknowledged once transfer is complete for freeing the utilized resources.

III. XILINX ZYNQ SOC

Current generation of computing devices focus on SoC based systems for rapid prototyping and engineering. Zynq SoC (System on Chip) is an integration of processor and FPGA architectures into a single board. Melding the two technologies provides a variety of benefits including higher integrity, lower power, smaller board size, and higher bandwidth communication between the processor and FPGA.

Xilinx Zynq-7000 all programmable system on chip combines the dual Cortex-A9 processing system with

978-1-5090-0774-5/16/$31.00 © 2016 IEEE

Proceedings of

2016 IEEE International Conference on Distributed Computing, VLSI, Electrical Circuits and Robotics (DISCOVER)

August 13 - 14, NITK Surathkal, Mangalore, India

Financially Sponsored by IEEE Bangalore Section & Technically Sponsored by IEEE Robotics and Automation Society

Organized by:
IEEE Mangalore Sub-Section (R0011901)

Conference ID: 37824 and ISBN: 978-1-5090-1623-5

Session 4C: Electrical and Electronic Circuits

A Novel Approach to Precisely Control Linear Movement of Sensor by Motor using Microstepping……..242

Shashank Upadhyaya, Dippal Israni, Karan Jasani and Arpita Shah

Design and Simulation of NFC Printed Antenna in Near Field Wireless Communication for SDC…… 247

Sohel Rana Khan and Dr Sayyad Ajij

Modelling of Sleeve Monopole Antenna in a Coupling Medium for Breast Imaging Application……... 252

Savita Mahajan, Anand Mane and Bhaskara Naik S

Design and Development of an Athletic Health Monitoring System Using fNIRS……255

Meghna Madhusudan, Mekhala H.S. and Geetha K.S.

Session 1D: Distributed Computing

Sound Event Detection from Urban Soundscape using Two-level Classification……..…..259

Bibek Luitel, Srinivasa Murthy Y V and Shashidhar G. Koolagudi

Crowdsourcing for Disaster Relief : A Multi-platform Model……..……264

Smriti Murali, Vishnubhotla Krishnapriya and Aadhiya Thomas

Session 2D: Communications

Efficient location selection for computations of expensive Log-Gabor features using novel directional enhancement……...269

Pamir Ghimire and Siddrameshwar Kadagad

Improving Energy Efficiency Performance of ALOHA based Underwater Acoustic Sensor Networks……277

Geethu K S and Babu A V

Session 3D: VLSI

An Efficient FPGA Based Implementation of Forward Integer Transform and Quantization Algorithm of H.264……283

Rohan Mukherjee, Anupam Banerjee, Indrajit Chakrabarti, Pranab Kumar Dutta and Ajoy Kumar Ray

Implementation of Real time Moving Object Detection and Tracking on FPGA for Video Surveillance Applications……289

Shreekant Sajjanar, Suraj Krishna Mankani, Prasad R Dongrekar, Mohana Mohana, Ravish Aradhya and Naman S Kumar

A Novel Approach to Precisely Control Linear Movement of Sensor by Motor using Microstepping

Shashank V. Upadhyaya
U. & P. U Patel Dept. of Comp. Engg.,
CSPIT Charusat University, Changa
shashank51@live.com

Prof. Dippal Israni
U. & P. U Patel Dept. of Comp. Engg.,
CSPIT Charusat University, Changa
dippalisrani.ce@charusat.ac.in

Prof. Karan Jasani
V. & T. Patel Dept. of E & C Engg.,
CSPIT Charusat University, Changa
karanjasani.ec@charusat.ac.in

Prof. Arpita Shah
U. & P. U Patel Dept. of Comp. Engg.,
CSPIT Charusat University, Changa
arpitashah.ce@charusat.ac.in

***Abstract*— These days electrical motors are generally utilized as a part of our everyday life , no matter as small as in our laptop's hard disc till as large as in other electrical machines, for example, fan, refrigerator, washing machine and many more. Electric motors are the sources to drive or direct any equipment with mechanical perspective. This paper mainly focuses on the application of linear motion motors for the linear movement of image sensor. From the various electrical motors, stepper motor has advantage of micro stepping ability to manoeuvre it as per needed steps. Stepper motor miniaturized scale venturing is finished by pulse width modulation of a varying current. Considering the accuracy of every step is 3% to 5% and error inside the last step can't be collected into ensuing step, the stepper motor has higher position preciseness and sensible repetitive motion make them increasingly attractive for the image sensor applications. In this paper, diverse electric motors are examined and compared to see the benefits of each motor and identify the one that is more suitable to be utilized as a part of the movement of sensor/lens.**

***Keywords*—Linear Motion, Micro Stepping, Electric Motor**

I. INTRODUCTION

Revolutionary configurations of a motors, power semiconductor converter topologies and pc control procedures from the center of present's electric drive advances. Risk-free and effective electrical motors are the workhorse of cutting edge industrialized world and consequently ongoing markets for electric motors are assured.

Motors are widely used in cameras different applications such as focusing, zooming, image stabilization etc. Movement of lens is required for focusing. Due to the fact of the optical properties of photographic lenses, simply objects surrounded by using a restricted range of distance from the digital camera will be reproduced noticeably. The method of altering this extent is often called fluctuating the digicam's focal point [1]. The least complicated cameras have settled center and utilize just a little opening and broad-facet lens to make certain that the whole thing inside a certain scope of distance from the lens, most often around 3 meters (10 feet) to infinity, is in cheap focal point.

Zooming simply means enlarging picture as it is more visible and clear. It carried out in two different ways , one is preprocessing zoom and another is after image capture zoom[2].Preprocessing zoom requires hardware and mechanical movement while in after processing zoom requires different algorithms which manipulate pixels.

Image stabilization is a strategy used to lessen image blur caused by the camera not being held consistent. There are two sorts of image stabilization used in SLR and DSLR cameras and their lenses: In-body and In-lens[3]. In-body done by moving the entire image sensor while In-lens actualized in the lens itself.

Above applications done by using motor to get the required result. Mechanical movement is done by motor to get the higher accuracy and efficiency from the captured image. Motors are also used for movement of a camera lens linearly. To precisely control the movement of the motor, coarse and fine approach is used. Coarse movement is used to move detector nearer to focused position rapidly. Fine movement used to bring detector at exact focused position.

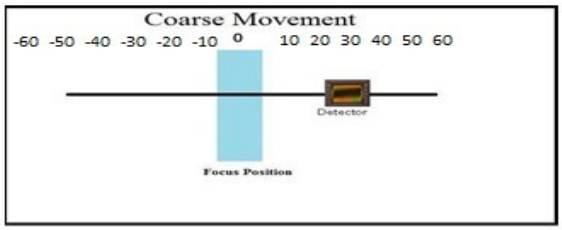


Figure 1: Coarse Movement

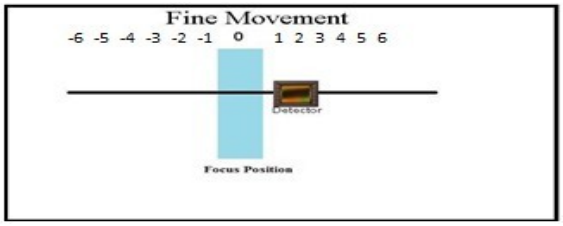


Figure 2: Fine Movement

978-1-5090-1623-5/16/$31.00 ©2016 IEEE

2016 2nd International Conference on Next Generation Computing Technologies (NGCT 2016)

Dehradun, India
14 – 16 October 2016

IEEE Catalog Number: CFP16C42-POD
ISBN: 978-1-5090-3258-7

434	Outage and Capacity Analysis of Cascaded Diamond Shaped Cooperative Relay Network *Divya Kumar and Arun Kumar*	463

Track 4: DATA SCIENCES

Paper ID	Title	Page No.
20	Comprehensive Analysis of Various Rough Set Tools for Data Mining *Swati Gupta and Sunita Garhwal*	468
48	Knowledge Discovery, Analysis And Prediction in Healthcare using Data Mining And Analytics *Akshay Raul, Atharva Patil, Prem Raheja and Rupali Sawant*	475
69	Recommender System - Making Lifestyle Healthy Using Information Retrieval *Neha Gaur and Archana Singh*	479
82	The Impact of Effectiveness of the Simulator Training Program on Different factors of Needs and Interest of the Training *Surender Kumar, Kirti Arekar and Rinku Jain*	485
85	An Empirical Analysis of Maternal Health Data: A Case Study of India *Shelly Gupta, Shailender Narayan Singh and Dharminder Kumar Gupta*	490
131	Visualization, Analysis and Structural Pattern Infusion of DBLP Co-Authorship Network using Gephi *Niyati Aggrawal and Anuja Arora*	494
178	Computer Aided Technique for Epilepsy Detection Using Crosswavelet Transform and RBF-Kernel Based Support Vector Machine *Sourya Sengupta, Debarshi Chanda, Anirjit Mitra and Saibal Dutta*	501
184	Stock Market Sentiment Analysis Based On Machine Learning *Vikash Singh Rajput and Shirish Mohan Dubey*	506
194	FPGA Realization of Novel Techniques for DDR based Data Acquisition System *Ravi Mehta, Karan Jasani, Dippal Israni and Arpita Shah*	511
208	Improved Email Spam Classification Method Using Integrated Particle Swarm Optimization and Decision Tree *Harpreet Kaur and Ajay Sharma*	516
239	A Novel Prime Numbers Based Hashing Technique for Minimizing Collisions *Rohit K. Bhullar,Lokesh Pawar, Vijay Kumar and Anjali*	522
252	Design Simulation and Performance Assessment of Yield and Loss Forecasting for 100 KWp Grid Connected Solar PV System *Ashish Raj, Manoj Gupta and Sampurna Panda*	528
255	Context Aware Restricted Domain Question Answering System *Swati Pathak and Nidhi Mishra*	534
281	Aspect based opinion mining for mobile phones *Sonal Singh and Nidhi Mishra*	540
284	Exploratory Data Analysis on Temperature Data of Indian States from 1800-2013 *Aditya Agrawal, Dharvi Verma and Shilpa Gupta*	547
305	Time series and Predictability analysis of Air Pollutants in Delhi *Rashmi Bhardwaj and Dimple Pruthi*	553
380	Multidimensional Attacks Classification Based on Genetic Algorithm and SVM *Ramandeep Kaur and Meenakshi Bansal*	561
386	Experimental Analysis of Traditional Classification Algorithms on Bio Medical Datasets *Shobha Aswal, Neelu Jyothi Ahuja and Ritika Arora*	566
397	An Efficient System using Item and User-based CF Techniques to improve Recommendation	569

2016 2nd International Conference on Next Generation Computing Technologies (NGCT-2016)
Dehradun, India 14-16 October 2016

FPGA Realization of Novel Techniques for DDR based Data Acquisition System

Ravi H. Mehta
U. & P. U Patel Department of Computer Engineering,
CSPIT, CHARUSAT University
14pgce018@charusat.edu.in

Prof. Karan Jasani
V. & T. Patel Department of Electronics & Comm. Engineering, CSPIT ,CHARUSAT University
karanjasani.ec@charusat.ac.in

Prof. Dippal Israni
U. & P. U Patel Department of Computer Engineering,
CSPIT , CHARUSAT University
dippalisrani.ce@charusat.ac.in

Prof. Arpita Shah
U. & P. U Patel Department of Computer Engineering,
CSPIT, CHARUSAT University
arpitashah.ce@charusat.ac.in

***Abstract*— A data acquisition system (DAQ) is an electronic system that collects, stores and distributes information for further processing. This paper put together various DDR techniques for synchronized digital data acquisition algorithms and realization with Field Programmable Gate Array (FPGA). The proposed techniques uses Double data rate for high speed data acquisition where data capturing device is source synchronized with data generation source. These techniques eliminates the high utilization of FPGA resources like IO blocks, LUT RAM and Multiplexers. This system is divided into two sections. First is used to acquire data from the Data source and other part is used to store data on high speed storage device. These techniques are simulated and evaluated in XILINX spartan 6 FPGA and static RAM (SRAM). Implemented techniques are compared in terms of resources utilized.**

***Keywords*— Double Data Rate, Data Acquisition System, FPGA, SRAM, VHDL**

I. INTRODUCTION

All the tangible things around us like hardware components, electrical machines, and other physical objects obeys the rules of physics. And all physical activity has quantifiable magnitudes to be measured. These quantity can be in electrical, acoustic, chemical or in radiation. And these days A/D converter are became so advanced that it can capture different magnitudes with very accuracy, and generates lots of data at very high speed[1]. That's where efficient Data acquisition system comes into the picture. The traditional Data Acquisition system are failed to achieve accuracy with high speed[1,2,3,4].

Data Acquisition systems can be classified according to what kind of processing tool is used. Data acquisition system is classified as computer based in which computer micro processor is utilized for processing, storing, and manipulating the acquired data. The another category of data acquisition system is based on embedded microcontroller system. This category has some advantage like low cost, high performance and mobility. But it has some disadvantages also like it has fixed architecture. Any minor change in logic may lead to replace whole system. Final category is consist of reconfigurable FPGA, as its name suggests it can be reconfigured while it is onboard. And its high performance and capacity makes it first choice of any developer. It also has all I/O, processing and storage capabilities required for data acquisition system[2].

Field Programmable Gate Arrays (FPGAs) have proved fastest growing device among the world of processing devices and controllers. They can be programmed for realization of complex hardware design[3]. The FPGA devices are made up of arrays of logical blocks wrapped around programmable IO blocks, interlinked with programmable interconnects[3,5].

High speed ICs can be used for existing data acquisition system but they proved very expensive and speed of ordinary chip is not enough for these tremendous data processing. Here FPGAs outperforms the speed, accuracy of dedicated ICs with its cost and reconfigurability [4].

The rest of the paper is organized as follow. Section II describes the each blocks of proposed diagram. Section III elaborates the working of data acquisition algorithm. Then In Section IV experimental results are discussed and performance is evaluated. Followed by the conclusion in section V.

II. SYSTEM DESIGN

The main aim of the data acquisition is to handle high data rate and efficient storage mechanism for future analysis[1]. Functional blocks of the proposed system is shown in Fig.1 . The details of each block have been discussed in the following subsections.

978-1-5090-3257-0/16/$31.00 ©2016 IEEE

Proceedings of the
5th International Conference on

System Modeling & Advancement in Research Trends

(25th-27th November, 2016)

SMART–2016

(IEEE Conference ID: 39669)
Technically Sponsored by IEEE Uttar Pradesh Section

ISBN: 978-1-5090-3543-4

Editor in Chief

Prof. Rakesh Kumar Dwivedi
Professor & Principal
CCSIT, Teerthanker Mahaveer University
Moradabad, India

Editors

Prof. Abu Bakar Abdul Hamid
Professor
PBS, University Putra Malaysia,
Malaysia.

Dr. Ashendra Kr. Saxena
Professor & HOD
CCSIT, Teerthanker Mahaveer University,
Moradabad, India.

Dr. Danish Ather
Associate Professor
CCSIT, Teerthanker Mahaveer University,
Moradabad, India.

Dr. Ambuj Kr. Agarwal
Associate Professor
CCSIT, Teerthanker Mahaveer University,
Moradabad, India.

Organized By

College of Computing Sciences & Information Technology
Teerthanker Mahaveer University, Moradabad, India
www.smartconference.co.in, www.tmu.ac.in, smartconf@tmu.ac.in

Contents

- ❖ Committees v
- ❖ Preface viii

TRACK 1: ALGORITHMS AND COMPUTATIONAL MATHEMATICS

1. **Agile Approach for Software Testing Process**
   Rijwan Khan and Akhilesh Kumar Srivastava 3
2. **Adaptive Apriori Algorithm for Frequent Itemset Mining**
   Shubhangi D. Patil, Ratnadeep R. Deshmukh and D.K. Kirange 7
3. **Novel Approach for Classification of Stress EEG Data using Statistical Techniques**
   Mangesh J. Patil, Anjum Shaikh and Mukta G. Dhopeshwarkar 14
4. **Medical Image Compression using Embedded Zerotree Wavelet (EZW) Coder**
   Ashwin Dhivakar M.R., Mohammed Gulam Ahamad and D. Ravichandran 17
5. **Optimal Test Sequence Generation using River Formation Dynamics**
   Yogita Khatri, Abhilasha Sharma and Akshi Kumar 24
6. **Proposing a New ANN Model for Solving XNOR Problem**
   Vaibhav Kant Singh 32
7. **A Performance based Comparison of Various Symmetric Cryptographic Algorithms in Run-time Scenario**
   Praveen Kumar, Seema Rawat, Tanupriya Choudhury and Saurabh Pradhan 37
8. **Shaping Flexible Software Development with Agent-Oriented Methodology**
   Shambhu Bharadwaj and Achal Kumar Goyal 42
9. **Role of Evolutionary Algorithms in Software Reliability Optimization**
   Neha Yadav, Vibhash Yadav and Prabhat Verma 45
10. **Vector Quantization with Codebook and Index Compression**
    Pradeep Kumar Shah, Rajendra Prashad Pandey and Rajeev Kumar 49
11. **DES: The Oldest Symmetric Block Key Encryption Algorithm**
    Mukta Sharma and R.B. Garg 53
12. **Association Redetection of Regular Insulin and NPH Insulin using Statistical Features**
    Anupriya K. Kamble, Ramesh R. Manza, Yogesh M. Rajput and Shaikh Abdul Hannan 59
13. **Blur Image Detection using Laplacian Operator and Open-CV**
    Raghav Bansal, Gaurav Raj and Tanupriya Choudhury 63
14. **Scheduling Algorithm with Plotter in Cloud Environment**
    Richa Dixit, Vibhash Yadav and Rahul Singhai 68
15. **A Literature Survey for Fuzzy based Soft Classification Techniques and Uncertainty Estimation**
    Ranjana Sharma, P.K. Garg and R.K. Dwivedi 71

TRACK 2: MACHINE LEARNING AND OPTIMIZATION

16. **Global LBP Features for Iris Recognition using Blood Vessel Segmentation**
    Kanchan S. Bhagat, Dr. Pramod B. Patil and Dr. Jitendra P Chaudhari 79

Proceedings of the SMART-2016; IEEE Conference ID: 39669
5th Fifth International Conference on System Modeling & Advancement in Research Trends, 25th -27th November, 2016.
College Of Computing Sciences & Information Technology, Teerthanker Mahaveer University, Moradabad, India.

Adaptive Apriori Algorithm for Frequent Itemset Mining

Shubhangi D. Patil.
Department of Information Technology,
Government Polytechnic,
Jalgaon. India.
sdkirange@gmail.com

Dr. Ratnaddep R. Deshmukh.
Head, Department of Computer Science and IT
Dr. Babasaheb Ambedkar Marathwada University,
Aurangabaad.

D. K Kirange.
Head, Department of Computer Engineering,
J T Mahajan College of Engineering, Faizpur,India
dkirange@rediffmail.com

Dr. Jitendra P. Chaudhari
Associate Professor,
Charusat Space Research and Technology Center,
Charotar University of Science and Technology,
At & Post- Changa,
(Gujarat), India

***Abstract*— Obtaining frequent itemsets from the dataset is one of the most promising area of data mining. The Apriori algorithm is one of the most important algorithm for obtaining frequent itemsets from the dataset. But the algorithm fails in terms of time required as well as number of database scans. Hence a new improved version of Apriori is proposed in this paper which is efficient in terms of time required as well as number of database scans than the Apriori algorithm. It is well known that the size of the database for defining candidates has great effect on running time and memory need. We presented experimental results, showing that the proposed algorithm always outperform Apriori. To evaluate the performance of the proposed algorithm, we have tested it on Turkey student's database as well as a real time dataset.**

Keywords—database scans; Apriori; Data Mining

I. INTRODUCTION

In Data Mining, for location and fascination of relations in variables in large databases, Association Rule Mining is a standard and well researched technique. Before applying various data mining techniques such as classification, clustering and prediction, for data analysis, association rule mining is used. The association rule mining was first proposed by Agrawal et al. [1]. It is one of the most recommended research area which is applicable in most of the fields like analysis of market trends, forecasting and detection of faults. While analysis of the market trends, association rule mining is used to obtain all association rules like "Items X and Y are bought by the customer at the same time". Such rules are represented like *X->Y* where *X* and *Y* are sets of items that from a transactional database. The percentages of transactions in the database containing X U Y define the support of association rule *X ->Y*. A database can be analysed by finding interesting relationships and patterns among items in the database by using association rule mining. The process of association rule mining is divided in two steps; first find all frequent items from the dataset and then discovering the relationships among the items in the database. Itemset denotes a set of items. Itemsets with support count more than the minimum support threshold are referred as frequent itemsets. Mostly the performance of the association rule mining is affected by the first step, as next step of association rule mining is simple [2]. Hence mostly association rule mining is mostly called as frequent itemset mining also.

The two most frequently used algorithms of association rule mining are Apriori and FP-Growth [3, 4]. Both of these algorithms are having different approaches for finding frequent itemsets. The Apriori Algorithm generates the frequent itemsets level wise using the apriori property. But the major drawback of the apriori algorithm is that more execution time is needed for generating the candidate itemsets. Also the number of database sand required is more. The number od database scans required for FP growth is less as it creates the tree structure which is used for signatures of the transactions. signatures of transactions on a tree structure. Recently, a Matrix Apriori algorithm proposed by [5] takes the advantages of both Apriori and FPGrowth. The number of database scans is reduced in this proposed work because it creates signatures of itemset in the form of matrix. The overall performance of the algorithm is good as compared to FPGrowth [6]. Although in all of these improved versions of Apriori, the number of database scans required is less, but the time required is more. [7] While performing the association rule mining using Apriori algorithm, the first level candidate itemset are generated and then these are used to generate the second level candidate itemset and so on. The number of database scans as well as time required for frequent itemset mining is more in this case. An adaptive itemset mining is used to overcome this problem. Here the frequent itemset for the last level are generated, and then all transactions contained

Modeling and Optimization in Science and Technologies

Xin-She Yang
Gebrail Bekdaş
Sinan Melih Nigdeli *Editors*

Metaheuristics and Optimization in Civil Engineering

Springer

Editors
Xin-She Yang
School of Science and Technology
Middlesex University
London
UK

Sinan Melih Nigdeli
Faculty of Engineering
Istanbul University
Istanbul
Turkey

Gebrail Bekdaş
Faculty of Engineering
Istanbul University
Istanbul
Turkey

ISSN 2196-7326 ISSN 2196-7334 (electronic)
Modeling and Optimization in Science and Technologies
ISBN 978-3-319-26243-7 ISBN 978-3-319-26245-1 (eBook)
DOI 10.1007/978-3-319-26245-1

Library of Congress Control Number: 2015954625

Springer Cham Heidelberg New York Dordrecht London

Printed on acid-free paper

Springer International Publishing AG Switzerland is part of Springer Science+Business Media (www.springer.com)

Contents

Review and Applications of Metaheuristic Algorithms in Civil Engineering 1
Xin-She Yang, Gebrail Bekdaş and Sinan Melih Nigdeli

Application of the Flower Pollination Algorithm in Structural Engineering 25
Sinan Melih Nigdeli, Gebrail Bekdaş and Xin-She Yang

Use of Swarm Intelligence in Structural Steel Design Optimization 43
Mehmet Polat Saka, Serdar Carbas, Ibrahim Aydogdu and Alper Akin

Metaheuristic Optimization in Structural Engineering 75
S.O. Degertekin and Zong Woo Geem

Performance-Based Optimum Seismic Design of Steel Dual Braced Frames by Bat Algorithm 95
Saeed Gholizadeh and Hamed Poorhoseini

Genetic Algorithms for Optimization of 3D Truss Structures 115
Vedat Toğan and Ayşe Turhan Daloğlu

Hybrid Meta-heuristic Application in the Asphalt Pavement Management System 135
Fereidoon Moghadas Nejad, Ashkan Allahyari Nik and H. Zakeri

Optimum Reinforced Concrete Design by Harmony Search Algorithm 165
Gebrail Bekdaş, Sinan Melih Nigdeli and Xin-She Yang

Reactive Power Optimization in Wind Power Plants Using Cuckoo Search Algorithm 181
K.S. Pandya, J.K. Pandya, S.K. Joshi and H.K. Mewada

Reactive Power Optimization in Wind Power Plants Using Cuckoo Search Algorithm

K.S. Pandya, J.K. Pandya, S.K. Joshi and H.K. Mewada

Abstract This chapter presents the application of a new meta-heuristic optimization algorithm called cuckoo search algorithm (CSA) to solve optimal reactive power dispatch problem (ORPD) of the power system in the presence of wind power plants (WPP). Due to the inclusion of WPP, the ORPD problem becomes a complex combinatorial optimization problem and it has a nonlinear objective function with many local minima, and discontinuous and nonlinear constraint functions. CSA is based on the obligate brood parasitic behavior of some cuckoo species in combination with the Lèvy flight behavior of some birds and fruit flies. The effectiveness and feasibility of CSA have been tested on a 41-bus WPP test system and the obtained results that have been compared with particle swarm optimization (PSO). Simulation results yield that the CSA converges to better optimal solutions faster than PSO.

Keywords Artificial intelligence method · Cuckoo search algorithm · Particle swarm optimization · Reactive power optimization · Wind power plant

K.S. Pandya (✉)
Department of Electrical Engineering, CSPIT,
Charotar University of Science and Technology, Changa, India
e-mail: kartikpandya.ee@charusat.ac.in

J.K. Pandya
Department of Civil Engineering, Dharmsinh Desai University, Nadiad, India
e-mail: jignapandya2011@gmail.com

S.K. Joshi
Department of Electrical Engineering,
The M.S. University of Baroda, Vadodara, India
e-mail: skjoshi@ieee.org

H.K. Mewada
Department of Electronics & Communications, CSPIT,
Charotar University of Science and Technoloogy, Changa, India
e-mail: hirenmewada.ec@charusat.ac.in

X.-S. Yang et al. (eds.), *Metaheuristics and Optimization in Civil Engineering*,
Modeling and Optimization in Science and Technologies 7,
DOI 10.1007/978-3-319-26245-1_9

2016 International Conference on Signal Processing, Communication, Power and Embedded System (SCOPES 2016)

Paralakhemundi, Odisha, India
3-5 October 2016

Pages 1-656

IEEE Catalog Number: CFP16H12-POD
ISBN: 978-1-5090-4621-8

IEEE Catalog Number:	CFP16H12-POD
ISBN (Print-On-Demand):	978-1-5090-4621-8
ISBN (Online):	978-1-5090-4620-1

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

344. Conversion Of Lip Movement To Speech: An Aid To Physically Impaired And Dumb People 1868-1871
345. Underwater Wireless Sensor Network for tracking Ships approaching Harbor 1872-1876
346. Audiogram Equalizer using Fast Fourier Transform 1877-1881
347. Wavelet Transform And ANN Base Differential Protection For Power Transformer 1882-1887
348. Automatic Web Page Logo Detection(Logo Matching Using Semantic Relevance Feedback) 1888-1893
349. An Approach to Diagnose Incipient Faults of Power Transformer Using Dissolved Gas Analysis of Mineral Oil by Ratio Methods Using Fuzzy Logic 1894-1899
350. Load – Source Analysis And Scheduling In Hybrid Smart Grid Using Multilayer Adaptive Gnn Algorithm 1900-1907
351. Application of PSO and GSA Hybrid Optimization Method for 1-D Inversion of Magnetotelluric Data 1908-1911
352. Real-Time Big Data Analytics Architecture For Remote Sensing Application 1912-1916
353. Farey Sequences and Image Processing of Brain Images 1917-1922
354. Trust Centric Approach Based on Similarity in VANET 1923-1926
355. Biconvex Patch Antenna with Circular Slot for 10 GHz Application 1927-1930
356. Performance Analysis of a Renewable Grid Interconnected System Based on Fuzzy Logic 1931-1936
357. Implementation of OFDM and other Multicarrier Modulations on SDR 1937-1940
358. Resilient Performance Engineering for Wi-Fi Network Traffic Using Weibull Distribution Method 1941-1946
359. Multi-phase mouse dynamics authentication system using behavioural biometrics 1947-1950
360. A Wavelet Based Novel Technique for Detection and Classification of Parallel Transmission Line Faults 1951-1955
361. A Case Study on Optimal Phasor Measurement Unit Placement for Emerging Indian National Smart Grid 1956-1960
362. Image Denoising Using Wavelets Transform And Adaptive Least Mean Square Method 1961-1966
363. Designing of a Controller for MIMO Systems with Time Delay by Using Zero Frequency Decoupler 1967-1970
364. Boundary Detection of Biomedical Images using Modified Morphological Operation 1971-1975
365. A Differential relay based UPFC Compensated Line 1976-1981
366. THD Analysis of Single Phase and Three Phase Modular MLI with RL-Load 1982-1986
367. Theoretical Evaluation of Axial Induction Factor and Pressure Distribution on Wind Turbine Blades 1987-1990
368. Improvement of Voltage Stability by Optimal Capacitor placement using Sensitivity Matrix 1991-1996
369. Key Word Spotting using HMM in Printed Telugu Documents 1997-2000
370. Secure VANET From Vampire attack Using LEACH Protocol 2001-2005
371. Condition Monitoring of Induction Motors : - A Review 2006-2011
372. Shunt Active Power Filter Control by Instantaneous Reactive Power Compensation 2012-2016
373. Cloud Based Decentralized Approach For FANET 2017-2020
374. Hybrid Approach for detecting and preventing DOS attack in VANET 2021-2025
375. Secure Transmission of packets Using D-S theory for Preventing MANET by Attacks 2026-2030

An Approach to Diagnose Incipient Faults of Power Transformer Using Dissolved Gas Analysis of Mineral Oil by Ratio Methods Using Fuzzy Logic

Rahul Soni
Electrical Engineering Department
Charotar University of Science & Technology
Anand, Gujarat, India
rahulsoni.ee@charusat.ac.in

Kaushal Chaudhari
Electrical Engineering Department
SVBIT
Gandhinagar, Gujarat, India
Kaushal.chaudhari@bapugkv.ac.in

***Abstract*— Condition Monitoring plays a vigorous role in asset management strategy. Power Transformers are most important and critical component in electrical power transmission and distribution. To have a reliable electricity supply it is necessary to give considerable attention to maintenance of the transformer. Dissolved gas analysis (DGA) of transformer oil is one of the most effective power transformer condition assessment techniques to diagnose incipient faults. There are many interpretation methods for DGA diagnosis however all these methods rely on personnel expertise more than analytical calculation. As a result, various interpretation techniques do not necessarily indicate to the same result for the same oil sample. Furthermore, substantial number of DGA results fall outside the proposed codes of the existing ratio interpretation methods Furthermore, ratio methods fail to diagnose multiple fault conditions due to the mixing up of produced gases. To overcome these limitations, this paper introduces a new fuzzy logic approach to reduce reliance on expert personnel and to aid in standardizing DGA interpretation methods. The approach relies on incorporating all existing DGA interpretation methods into one proficient model. DGA results of 100 oil samples that were collected from different transformers of different rating and different life period are used to create the model. Conventional DGA interpretation methods are used to analyse the Together DGA results to evaluate the consistency and accuracy of each interpretation methods. Results of this analysis were then used to develop the proposed fuzzy logic model.**

Keywords— Dissolved gas analysis, IEC gas ratio method, Rogers gas ratio method, Dornenburg ratio method, CO_2 / CO method, CIGRE ratio method, Fuzzy Logic.

I. INTRODUCTION

Power transformers in utilities are highly valued items and take a long time to replace. They are normally operated 24/7 and difficult to take out of service due to power system constraints. It is vigorous to monitor their condition throughout operation. Power system operational and maintenance procedures for power transformers include monitoring, evaluation and remedial measures [16-17]. When the mineral oil is subjected to high thermal and electrical stresses, it decomposes and, as a result, gases are generated. Different types of faults will generate different gases, and the chemical analysis of these gases, performed through a procedure called DGA (Dissolved Gas Analysis), will provide useful information about the condition of the oil, and help to identify the type of fault in the transformer [4-5]. Dissolved Gas Analysis (DGA) is proved accurate method all over the world for condition assessment of power transformer. Taking the concentration of key gases (CO, CO_2, H_2, C_2H_6, C_2H_4, C_2H_2 and CH_4) incipient faults identified by various classical methods give different conditions for the same sample unit in this work, the condition based diagnosis system developed different DGA classical methods-Keys Gas Method, Rogers Ratio Method [6-7], IEC Ratio method, Dornenburg ratio method, CIGRE Method. DGA helps to diagnosis the present condition of the high voltage power transformer.

TABLE 1. METHODS WITH FAULT TYPES

Methods	F1 Thermal fault (Cellulose)	F2 Thermal fault (Oil)	F3 Electrical fault (Corona)	F4 Electrical fault (Arcing)
IEC	-Thermal fault <150 ºC. -Thermal fault 150-300 °C	-Thermal fault 300-700 ºC -Thermal fault >700 °C	- Low energy electrical discharge	- High energy electrical discharge
Rogers	-Thermal fault <150ºC. -Thermal fault 150-300 °C	-Thermal fault 300-700ºC -Thermal fault >700 °C	- Low energy electrical discharge	- High energy electrical discharge
Dornenburg	-Thermal decomposition	-Thermal decomposition	- Low energy electrical discharge	- High energy electrical discharge
CO_2/CO	-Thermal fault <150ºC. -Thermal fault 150-300 °C	-Thermal fault 300-700ºC -Thermal fault >700 °C	-	-
CIGRE	Thermal Fault	Overheating of Cellulose	Partial Discharge	Electrical Discharge

Dissolved Gas Analysis (DGA) of transformer oil is the best indicator of a transformer's overall condition [1, 2, 3].Hence this widely accepted method is used in routine maintenance of power Transformers. Transformer oils perform at least four functions for the transformer. Oil provides insulation, provides cooling, and helps extinguish arcs [21]. Any deterioration in

2016 International Conference on Electrical, Electronics, and Optimization Techniques (ICEEOT 2016)

Chennai, India
3-5 March 2016

Pages 1-770

IEEE Catalog Number: CFP16E71-POD
ISBN: 978-1-4673-9940-1

IEEE Catalog Number: CFP16E71-POD
ISBN (Print-On-Demand): 978-1-4673-9940-1
ISBN (Online): 978-1-4673-9939-5

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

730. An optimized routing algorithm for Elastic Optical Network 3873-3878
731. Study on Magneto-Optic Faraday effect drift on Sensing coil of IFOG as a function of variable Degree Of Polarizaton(DOP) 3879-3883
732. Fiber Optic Sensors and Optical Sensing Technology 3884-3891
733. GPS Free Localization based on Relative Velocity in MANETs 3892-3895
734. A review of Handwritten Signature Verification Systems and Methodologies 3896-3901
735. A Photonic Crystal Based Pressure Sensor 3902-3905
736. An Analytic Review of Geomagnetically Induced Current Effects in Power System 3906-3908
737. Analysis of Geomagnetically Induced current in Transformer 3909-3912
738. Software and Hardware Implementation of Five level Neutral Point Clamped Inverter 3913-3917
739. Hardware Realization of Space Vector-PWM 3-Level Inverter Using DSP With RTW 3918-3921
740. Triggering Circuit of Induction Furnace With Power Quality Analysis 3922-3926
741. Comparative Analysis Of Optimization Methods for Optimal Coordination of Directional Overcurrent Relays 3927-3931
742. Improvising Strategies For Efficiency of IE 4 SCIM 22kW Through Simulation 3932-3936
743. Distribution Network Reconfiguration for Loss Reduction 3937-3941
744. Reduction of Inrush Current for Transformer Using Sequential Switching Method 3942-3948
745. A novel approach to minimize distribution losses while improving voltage profile in Primary Distribution Network by incorporating Distributed Generation in system 3949-3954
746. Industrial Grade Power System Study Analysis 3955-3960
747. Use of smart metering for resolving harmonic issues 3961-3964
748. A Concept of Distributed Generation and the effects of its Placement in Distribution Network 3965-3969
749. Multi-objective Optimal Integration of Biorefineries using NSGA-II and MOGWO 3970-3975
750. On the performance of MATLAB's inbuilt genetic algorithm on single and multi-objective unconstrained optimization problems 3976-3981
751. Solving Portfolio Optimization Problem through Differential Evolution 3982-3987
752. Control of Mobile Robot for Trajectory Tracking by Sliding Mode Control Technique 3988-3994
753. Mathematical Analysis of Transmission dynamics of Tuberculosis with recurrence based on treatment 3995-4000
754. A Simple and Efficient Co-operative Approach for Solving Multi-modal Problems 4001-4006
755. Application of Markov Chain & Cellular Automata based model for prediction of Urban transitions 4007-4012

A novel approach to minimize distribution losses while improving voltage profile in Primary Distribution Network by incorporating Distributed Generation in system

Asst. Prof. J. S. Patel
Department of Electrical Engg.
CSPIT
Changa, India
jigneshpatel.ee@charusat.ac.in

Prof. R. R. Patel
Department of Electrical Engg.
GCET
V. V. Nagar, India
riteshpatel@gcet.ac.in

Asst. Prof. S. K. Rathor
Department of Electrical Engg.
GCET
V. V. Nagar, India
sumitrathor@gcet.ac.in

Abstract—This paper presents novel approach to utilize power generated using distributed generation, in the primary distribution network in such way that incorporating DG at capacity will reduce Distribution Network losses while improving voltage profile of overall system. Method of locating DG and sizing of DG using Genetic Algorithm is also presented. Simple load flow technique for accurate load flow is also described. The proposed technique is implied on two systems, 1. IEEE 34 Bus distribution System, 2. 69 Bus Distribution System. The proposed approach is implemented in software tool MATLAB and result of power flow are compared MI-Power

Keywords— Distributed Generation; Genetic Algorithm; Sitting and sizing DG

I. INTRODUCTION

There are many approaches to place DG in system considering various factors. A method for placement of DG based on voltage stability index is explained in [1]. In [2], sensitivity analysis of power losses has performed considering line losses, location and size of DG to incorporate DG at optimally. In other technique Placement of DG in distribution network is done using Continuous Power Flow technique in [3]. In [4], author has sited and sized DG on the basis of voltage stability indexing and optimizing algorithm. Reduction of line losses by optimally placing and sizing DG is done using analytic method in [5].To minimize the cost of active and reactive power generation, genetic algorithm based technique with optimal power flow calculation were used to determine optimum size and location of DG in [6].The primal-dual interior point optimization base technique has been employed to identify optimal location and size of DG units incorporated in the system in [7].A genetic algorithm based algorithm was also, presented to locate multiple DG units to minimize a cost function including the system losses and service interruption costs [8].

With the development of economy, load demands in distribution networks are increasing rapidly. So the distribution networks are operating more close to voltage instability boundaries. High demands are result in increasing interest in Distributed Generation(DG). Increase in demand of DG can also, be explained by factors such as development technologies associated with DG, environmental concerns, and other benefits due to restructuring business of electricity. Integrating DG units into distribution systems can have an impact on different parameters of system such as voltage profile, power flow, power quality, stability, reliability, and protection. The installation of DG units to the distribution system helps to reduce the line losses, improve the voltage stability and improve the power quality [9].DG in system can change power flow in distribution system. So, to reduce power losses and improve voltage stability placement and size of DG is more important. In [10]

In this paper, A novel technique based on Genetic Algorithm is described to locate and size DG appropriately, in such manner that incorporating DG in system will reduce power loss in system while, improving voltage profile of the system and also, improve over all voltage stability. The fitness function used in GA is combined with cumulative voltage deviation, active and reactive power losses. To analyze the distribution n system simple load flow technique described in [11]is used. The proposed technique is implemented using software tool MATLAB and tested on 1. IEEE 34 Bus Distribution System, 2. 69 Bus Distribution System from proposed methodology. The Distribution system is modeled in software tool Mi-Power.

II. POWER FLOW

Distribution systems are much simple compared to, interconnected transmission network. For power flow analysis consider system shown in Fig 1.

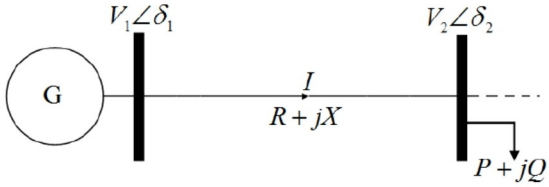


Fig 1: Radial Distribution Network showing only 2 Bus

$$I = \frac{V_1\angle\delta_1 - V_2\angle\delta_2}{R_1 + jX_1} \quad (1)$$

And also,

$$P_1 + jQ_1 = V_2^* I_1 \quad (2)$$

978-1-4673-9939-5/16/$31.00 ©2016 IEEE

2016 IEEE 6th International Conference on Power Systems (ICPS 2016)

New Delhi, India
4-6 March 2016

Pages 1-714

IEEE Catalog Number: CFP1602H-POD
ISBN: 978-1-5090-0129-3

IEEE Catalog Number: CFP1602H-POD
ISBN (Print-On-Demand): 978-1-5090-0129-3
ISBN (Online): 978-1-5090-0128-6

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings .com

TABLE OF CONTENTS

POWER QUALITY IMPROVEMENT USING CSC CONVERTER FOR HIGH POWER LED DRIVER 1
Aman Jha ; Bhim Singh

PFC CONVERTER BASED POWER QUALITY IMPROVEMENT AND RIPPLE CURRENT MINIMIZATION IN BLDC MOTOR DRIVE 7
Praveen Kumar Singh ; Bhim Singh ; Vashist Bist

A CASE STUDY ON REF LOW IMPEDANCE IED MAL OPERATION 13
K N Dinesh Babu ; R. Ramaprabha ; V. Rajini ; V. Nagarajan

GRID INTEGRATION OF WIND TURBINE AND BATTERY ENERGY STORAGE SYSTEM: REVIEW AND KEY CHALLENGES 18
Rishabh Abhinav ; Naran M. Pindoriya

DEVELOPMENT OF WIND TURBINE EMULATOR FOR STANDALONE WIND ENERGY CONVERSION SYSTEM 24
Himani ; Ratna Dahiya

ASSET MANAGEMENT OF TRANSFORMER BASED ON LOSS OF LIFE CALCULATION 30
Paneendra Kumar BL ; Roy Mathew

MANAGEMENT OF POWER EXCHANGE BETWEEN HYBRID MICROGRIDS USING INTELLIGENT CONTROL 35
Aarti Gupta ; Dinesh Kumar Jain ; Surender Dahiya

DEPLOYMENT OF FUZZY BASED MRAS AND IRFOC STRATEGY WITH FAST TRACKING FOR THE SENSORLESS SPEED CONTROL OF SPIM 41
Baluguri Ravi Teja ; Suresh Mikkili

GENERIC BATTERY MODEL COVERING SELF-DISCHARGE AND INTERNAL RESISTANCE VARIATION 47
Sibi Krishnan K. ; Prasanth Pathiyil ; Sunitha R.

HIGH IMPEDANCE FAULT DETECTION USING DWT FOR TRANSMISSION AND DISTRIBUTION NETWORKS 52
T. Ajay Ramamurthy ; K. Shanti Swarup

SIMPLIFIED MULTI-CARRIER PULSE WIDTH MODULATION SCHEMES FOR MULTILEVEL CONVERTERS 58
Rekha Agrawal ; Jitendra Kumar Tandekar ; Shailendra Jain

SMALL SIGNAL STABILITY IMPROVEMENT OF A GRID CONNECTED DFIG THROUGH QUADRATIC REGULATOR 64
Ganesh P. Prajapat ; N. Senroy ; I. N. Kar

EFFECTIVE PID-PSS DESIGN USING BAT ALGORITHM FOR SMIB POWER SYSTEM 70
D. K. Sambariya ; R. Gupta

DSP BASED IMPLEMENTATION OF AN IMMUNE FEEDBACK ALGORITHM FOR CONTROL OF SHUNT COMPENSATOR 76
Manoj Badoni ; Alka Singh ; Bhim Singh

ON 8-BUS TEST SYSTEM FOR SOLVING CHALLENGES IN RELAY COORDINATION 82
Vipul N. Rajput ; Kartik S. Pandya

OPTIMAL PLACEMENT AND SIZING OF DG IN DISTRIBUTION SYSTEM USING ARTIFICIAL BEE COLONY ALGORITHM 87
Mukul Dixit ; Prasanta Kundu ; Hitesh R. Jariwala

NETWORK PROTECTION SECURITY ENHANCEMENT BASED ON POWER FLOW ASSESSMENT 93
Pratim Kundu ; Ashok Kumar Pradhan

GRID INTEGRATION OF SINGLE SOURCE SPV SYSTEM USING ASYMMETRIC CASCADED 7-LEVEL VSC 98
Maulik Kandpal ; Ikhlaq Hussain ; Bhim Singh

FPGA BASED HIGHLY EFFICIENT, FAST & RELIABLE CONTROLLED BRAKING METHOD BASED ON 13 LEVEL MEDIUM VOLTAGE DRIVE SUITABLE FOR HIGH INERTIA 104
Deepak Kotkar ; Atul Gupta ; Tanmay Tandel ; Dipak Banbakode ; Millan Sabat

GRID DISTURBANCE ANALYSIS WITH MODULAR LOAD FLOW 110
Pragati P. Gupta ; S. D. Varwandkar ; M. V. Hariharan

A SYNCHRO-PHASOR BASED WIDE AREA PROTECTION SCHEME FOR INTERCONNECTED POWER GRIDS 116
Jitendra Kumar Dash ; Bidyadhar Biswal

REAL-TIME AUTOMATIC GENERATION CONTROL CONSIDERING COMMUNICATION DELAYS USING LINEAR MATRIX INEQUALITIES 122
Nikhil Pathak ; T. S. Bhatti ; Ashu Verma ; Ibraheem Nasiruddin

SINGLE SWITCHED INDUCTOR CAPACITOR COUPLED TRANSFORMERLESS HIGH GAIN CONVERTER FOR PV APPLICATION 128
Lopamudra Mitra ; Ullash Kumar Rout

MULTI-PORT DC-DC CONVERTER FOR DC MICROGRID APPLICATIONS 134
Savitha K. P ; P. Kanakasabapathy

On 8-Bus Test System for Solving Challenges in Relay Coordination

Vipul N. Rajput
Department of Electrical Engineering
Charotar University of Science and Technology
Changa, India
vipulrajput16986@gmail.com

Kartik S. Pandya
Department of Electrical Engineering
Charotar University of Science and Technology
Changa, India
kartikpandya.ee@charusat.ac.in

***Abstract*—The challenges in coordination of Overcurrent Relays (OCRs) are recognized as a nonlinear optimization problem with a large number of coordination constraints for multi-loop and multi-source interconnected networks. Several methods including topological analysis, deterministic and Artificial Intelligence (AI) based techniques are used to solve this problem. The 8-bus system is commonly used as a standard test case in majority of literature on relay coordination. This test case is employed in two ways: 1) 8-bus system without any link to another network and 2) 8-bus system with a link to another network, modelled by a short circuit power of 400 MVA. This paper presents simulation results of both the systems and demonstrates the results for researchers to test and validate their findings obtained using novel optimization algorithms and allied research. The various efforts to solve challenges in relay coordination are discussed with respect to the system and optimization algorithms. The paper concludes with an open ended discussion on selection of system, use of results for comparison and comments on global best solution.**

Keywords—8-bus system; optimization; power system protection; optimum relay coordination; test case

I. INTRODUCTION

In overcurrent protection scheme, it is necessary that the primary relay must have sufficient chance to protect the zone. Only if the primary relay fails to operate, the backup relay should initiate tripping to clear a fault. A certain time interval must be preserved between the operating times of Primary and Backup (P/B) relay pairs. So, the relays are coordinated in the correct sequence to isolate a minimum faulty section of the power network. The overall relay coordination is thus a very complex task.

The different optimization methods are tested by this complex relay coordination problem, and the 8-bus system is found to be a common test case in almost literature on optimal relay coordination of OCRs. The 8-bus system without interlink of another network is utilized as a test case in [1-13], and 8-bus system with a link to another network, modelled by a short circuit capacity of 400 MVA used in [14-21].

The main objective in relay coordination is to minimize the operating time of OCRs by selecting the appropriate values of relay settings, namely, Time Multiplier Settings (*TMS*) and Plug Settings (*PS*) or current pickup settings (I_p) so that the set of coordination constraints is satisfied and maintained at minimum value. The coordination problem is solved by considering supplementary constraints such as different network topology [15, 19], near-end and far-end faults [12, 22], sympathy trip [23], second zone of distance relays, fault critical point and series compensation [3, 5, 10, 18]. Moreover, the values of *PS*, I_p and *TMS* are considered continuous as well as discrete value in the literatures. The *TMS* is considered as a continuous and *PS* as discrete variables in [14, 15, 19], *TMS* and *PS* as discrete variables in [16] and both *TMS* and I_p as continuous variables in [2, 3, 7, 9, 11, 17, 18, 21].

In this paper, two different cases of 8-bus system are explained and simulated using ETAP software to verify the results reported in previous literatures. In each case, the results obtained by different methods presented in the literature are compared and finally appropriate utilization of the 8-bus system as well as the global best solution are discussed.

II. COORDINATION PROBLEM AND CONSTRAINTS FORMULATION

This section presents the problem and a constraints formulation for optimum relay coordination.

A. Objective Function (OF) Formulation

The relay coordination is stated as an optimization problem, where the *OF* to be minimized is the sum of the operating times of relays when they act as primary relays [1, 2, 4, 6-12, 14-19, 21]

$$OF = \sum_{i=1}^{m} W_i T_i \qquad (1)$$

where T_i indicates operating time of relay R_i for fault in its primary protection zone, m is the number of relays and W_i is the coefficient representing the probability of a given fault occurring in each protection zone. It is generally set to one, and thus assuming an equal probability of fault occurrence in each protection zone [1, 2, 8, 10, 12, 14, 15, 17-19, 21].

The objective of optimum relay coordination is to find the appropriate value of relay settings for all the relays which minimize the sum of their operating times when they work as primary relays, while satisfying various coordination and boundary constraints.

978-1-5090-0128-6/16/$31.00 ©2016 IEEE

2016 International Conference on Electrical, Electronics, and Optimization Techniques (ICEEOT 2016)

Chennai, India
3-5 March 2016

Pages 1-770

IEEE Catalog Number: CFP16E71-POD
ISBN: 978-1-4673-9940-1

IEEE Catalog Number: CFP16E71-POD
ISBN (Print-On-Demand): 978-1-4673-9940-1
ISBN (Online): 978-1-4673-9939-5

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

88. Stress Detection and Reduction using EEG Signals 471-475
89. Highly efficient discontinuous mode interleaved dc-dc converter 476-481
90. Optimal Placement of Multi-Type Facts Controllers Using Real Coded Genetic Algorithm 482-487
91. Design of Embedded Web Server Based on NIOS-II Soft Core Processor 488-492
92. Double Integrated Buck Offline Power Supply for Solid-State Lighting Applications 493-498
93. Industrial WSN using IOT:A Survey 499-504
94. A Survey on Software based Effort Estimation 505-509
95. Novel Text Independent Speaker Recognition Using LPC Based Formants 510-513
96. Novel Approach for Classification and Prediction of Non Linear Chaotic Databases 514-518
97. Fiber-Wireless (Fi-Wi) Architectural Technologies: A Survey 519-524
98. A Semiautomated Approach using GUI for the Detection of Red Blood Cells 525-529
99. MSFL Based Determination of Optimal Size and Location of Distributed Generation in Radial Distribution System 530-535
100. Parametric study in Element Free Galerkin method for an Elastic bar 536-543
101. Functional Realization of Electronic Elements in Liquid State: A Review 544-548
102. Proposed Inverter Topology and Control Circuit for the Proposed Grid Connected Photovoltaic System: Description and Design Specification 549-554
103. Model identification and dynamic matrix control of ethane-ethylene distillation column 555-560
104. Common-Mode Voltage Eliminated 2-level PWM Inverter Based on a Cascaded 3-level Inverter 561-566
105. Exporation of Voltage Sag and Its Mitigation Techniques 567-572
106. Hexapod: A Spider for Terrain and Obstacle Shunning by Arduino 573-578
107. An Active Load Single-ended Double Flipped Voltage Follower Amplifier and its Application 579-583
108. A Fuzzy-ACO Algorithm to enhance Reliability Optimization through Energy Harvesting in WSN 584-589
109. FPGA Implementation of Secondary Synchronization Channel Detector for WCDMA Systems 590-595
110. Detection of Blood Cancer in Microscopic Images of Human Blood Samples: A Review 596-600
111. An Efficient Islanding Detection Method In Microgrids Using Hybrid SVM Based Decision Tree 601-607
112. Analyzing the impact of TFETs for ultra-low power design applications 608-612
113. Design and Implementation of Neuro Fuzzy Based STATCOM Controller for Improving Power Quality 613-618
114. Design and Implementation of Microwave Integrated Ultra Low Noise Amplifier for Receiver Application 619-624
115. Load Balancing and Voltage Regulation for Two Leg VSC Based Islanded DG Set Supply System 625-630

Optimal Placement of Multi-Type Facts Controllers Using Real Coded Genetic Algorithm

Ishit Shah
Electrical Engineering
Birla Vishvakarma Mahavidyalaya
Anand, India
er.ishit@gmail.com

Neha Srivastava
Electrical Engineering
Birla Vishvakarma Mahavidyalaya
Anand, India
er.neha00510@gmail.com

Jigar Sarda
Electrical Engineering
CHARUSAT
Changa, India

***Abstract*— The objective of this paper is to enhance the Available Transfer Capability using Multi-type FACTS controllers. TCSC, SVC and UPFC controllers are implemented and included in the FLDF (Fast Decoupled Load Flow) algorithm to minimize the losses of the system. Optimal location of FACTS controllers are obtained by using Real Coded Genetic Algorithm. MATLAB coding is developed to analyze the performance of IEEE-30 bus system for different loading condition with and without FACTS devices.**

Keywords*— *FACTS Devices(TCSC, UPFC, SVC), FDLF, Elitist operation, Real Coded GA, Loadability, Losses, MATLAB.

I. INTRODUCTION

In present scenario the load demand increases. With increase in load demand the generation is not increase to that much level means the generation is not sufficient to supply the huge loads. So it is difficult to cope up with the load. It is results in the overloading of the lines. The losses also increases because of the overloading conditioned. It makes the system unstable because of the large real and reactive power demand and low voltage conditioned. It stresses the equipment into the power system and reduces its life. The solution is to place new transmission lines and extra generations. But the cost is not economical, and land problems are also occurs. So FACTS devices are suitable for these types of the problems. FACTS mean Flexible A.C. Transmission System which is based power electronic devices. It can control real and reactive power very rapidly. There are different types of FACTS devices and their working function is also different. This technology improves the system stability by exchanging the real and reactive power with system very rapidly and also it reduces the system losses simultaneously **[1-3]**. FACTS controllers are used to control the current, voltage, impedance, damp the oscillations and phase angle. FACTS devices are cost effective solution. This paper focuses on the evaluation of the impact of TCSC, SVC and UPFC as FACTS devices for improving the loadability of the system and reduced the transmission losses. In a competitive (deregulated) power market, optimal the location of the device and its control can significantly affect the operation of the system **[4]**. The optimal placement of the device can be obtained by using Real Coded Genetic Algorithm.

This paper has been organized in the following manner. Section II discusses overview of load flow study. Section III discusses about the genetic algorithm and its parameters. Section IV presents algorithm for calculating the loadability and losses of the system for different loading conditioned. Section V presents results of load flow for IEEE-30 bus system with and without FACTS controllers for different loading condition.

II. OVERVIEW OF LOAD FLOW

Load flow studies are very important to analyze current power system scenario. It gives the main information related to the system, like load bus voltage magnitude and its phase angle, power flow on each line and losses of the system. This information is essential to monitoring the present state of the system and for analyzing the effective future planning to cope up with the load. All the equations are non linear so this method is iterative and time consuming if we manually calculate, but now the algorithm are available to solve the load flow problems in digital computers and it is very fast and efficient. . The FLDF can be used very efficiently in optimization problem. It gives very accurate results for both real and reactive power for multiple load flow studies **[i-ii]**.

III. GENETIC ALGORITHM

A. INTRODUCTION

Genetic Algorithm method was developed by John Holland in 1970. It is based on the Darwinian theory of the fittest. It is a one type of E.A. (Evolutionary Algorithm) search technique. This method gives the globally optimal solution so it is the global search method. This method doesn't require any prior knowledge related to objective function. This method always gives high quality of the solution **[5]**. For complex problems this method is gives trustworthy optimal solution. It is an iterative method, and very useful to find optimal location for multi objective optimization problems. In every iteration the chromosomes are selected randomly from matting pool of the current population and those parents chromosomes are used to find new offspring for next generations, and optimal solution is obtained by repeated iterations. Then the fitness of each chromosome is evaluated and new populations are generated by genetic operators like;

978-1-4673-9939-5/16/$31.00 ©2016 IEEE

2016 International Conference on Electrical, Electronics, and Optimization Techniques (ICEEOT 2016)

Chennai, India
3-5 March 2016

Pages 1-770

IEEE Catalog Number: CFP16E71-POD
ISBN: 978-1-4673-9940-1

IEEE Catalog Number: CFP16E71-POD
ISBN (Print-On-Demand): 978-1-4673-9940-1
ISBN (Online): 978-1-4673-9939-5

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

204. Automated Wi-Fi Penetration testing 1092-1096
205. Software Architecture Techniques and Emergence of Problem Domain in E-Governance 1097-1109
206. Design And Analysis of Z-Shape Microstrip Patch Antenna used for Wireless Communication 1110-1113
207. Signal processing in LVDT for automatic calibration 1114-1118
208. Latest Developments on Dynamic Key Management for Dynamic Wireless Sensor Networks 1119-1124
209. A Real Time System for Denial of service Attack Detection Based on Multivariate Correlation Analysis Approach 1125-1131
210. Access Network Handover Functionalities for Three Tier NGN Architecture 1132-1141
211. Photovoltaic Simulator Developed in LabVIEW for Evalution of MPPT Techniques 1142-1147
212. Agent based Model of Item Response Theory 1148-1152
213. Comparative Review of Coverage Algorithms in Wireless Mobile Sensor Networks 1153-1157
214. Low Flicker-Noise RF CMOS Gilbert-Cell Mixer for 24GHz Wireless Communication Systems 1158-1161
215. Study of Electronic and Optical Properties of Boron Arsenide 1162-1166
216. Quadrotor Modelling and Control 1167-1172
217. Automated ROI Detection for Histological Image using Fuzzy C-means and K-means algorithm 1173-1178
218. Identifying Malicious Nodes in Mobile Ad-Hoc Networks using Polynomial Reduction Algorithm 1179-1184
219. Land use/ Land cover information from various classification methods of Shekhawati region of Rajasthan 1185-1189
220. Internet Controlled Robot: A Simple Approach 1190-1194
221. Bilingual Automatic Text Summarization Using Unsupervised Deep Learning 1195-1200
222. A Novel Technique for Adaptive Filtering and Compression of Fetal Cardiotocography Using System Generator 1201-1206
223. A Multi-Objective Optimization using a combined approach of Principal Component analysis and TOPSIS during Electric Discharge Machining of H-11 die steel using P/M processed Cu-Cr-Ni metal matrix composite 1207-1212
224. A Case Study of Transformer Protection from Lightning and Switching Impulses using PSCAD Software 1213-1220
225. Automatic Wheel Welding System with Digital Control 1221-1228
226. Shuffled SVD based Robust and Secure Digital Image Watermarking 1229-1233
227. Implementation in Arm Microcontroller to Maximize the Power Output of Solar Panel using Hill Climbing Algorithm 1234-1240
228. Certificateless Nominative Signature Scheme based upon DLP 1241-1245
229. Optical Properties of Chalcogenide Glass Microstructured Optical Fiber: An Analytical Field Model 1246-1251

Implementation in Arm Microcontroller to Maximize the Power Output of Solar Panel using Hill Climbing Algorithm

Vineetha Ravindran
Department of Electrical Engineering
CSPIT, Charotar University of Science & Technology
Anand, India
Vineetharavindran.ee@charusat.ac.in

Jil Sutaria
Department of Electrical Engineering
CSPIT, Charotar University of Science and Technology
Anand, India
Jilsutaria.ee@charusat.ac.in

Abstract— The objective of the paper is to discuss about the hardware implementation of a Maximum power point tracking (MPPT) unit which comprises of a 10W Photo Voltaic Panel, a Boost dc-dc converter and load, using ARM Cortex M3 32 bit Microcontroller in which the Hill Climbing Algorithm for maximum power point tracking with respect to insolation and load variations is executed. The ideal coupling of Photovoltaic (PV) Panel to the load is done through a controlled Boost type dc-dc converter. The boosted output voltage of the converter at MPPT can be coupled directly with grid synchronized inverter to supply power to local utility grid. The microcontroller instantaneously senses voltage and current output of solar panel with the help of 12 bit ADC of sampling frequency 200 KHz. It adjusts the duty cycle of the PWM signal given to the converter gate drive circuit. Generated PWM signal results in impedance matching of the panel with the load and hence deliver maximum power at customer side.

ARM Cortex M3 32 bit Microcontroller allows greater performance efficiency, easy system modifications, low power consumption, critical tasks and interrupts are serviced as quickly as possible & improved code density.

Keywords— Boost Converter;Duty cycle;Hill Climbing; MPPT; PV; I-V curve;P-V Curve, Solar;ARM microcontroller.

I. INTRODUCTION

With the emerging problems of severe global warming and other environmental issues, an urge for utilization of renewable energy has occurred. Photovoltaic cell technology is certainly nothing new, but its use has become more common, practical and useful for people worldwide.

The most important aspect of a solar cell is that it generates solar energy directly to electrical energy through the solar photovoltaic module, made up of silicon cells [1]. The average solar cell efficiency is approximately 15%, which means nearly 85% of the sunlight that hits the panel is not converted into electricity. Therefore best possible operation of a PV system is important due to the low efficiency of solar panels.

The output characteristic of a PV system is nonlinear and varies with ambient temperatures and solar irradiance levels. Therefore, a MPPT technique is required to obtain maximum power from a PV system [2]. The challenge lies in designing a system with maximum efficiency that will quickly and constantly monitor and change the operation of the system to obtain the optimum performance from a solar cell [1].

There are many algorithms which help in Solar tracking, of which Hill climbing method is used in this paper. Trishan Esram and Patrick L. Chapman [3] has presented a paper which concludes with a discussion on the different methods based on their implementation, the sensors required, their ability to detect multiple local maxima, their costs, and applications. M.M. Rashid et al. [4] has worked on Development of Economical Maximum Power Point Tracking System for Solar Cell. A MPPT unit is developed for the optimum coupling of a Photovoltaic Panel (PVP) to the battery (load) through a controlled Buck type dc-dc converter using PIC microcontroller.

Pallavi Bharadwaj et al. [5] have worked on Direct Duty Ratio Controlled MPPT Algorithm for Boost Converter to study its behavior for different modes of converter operation namely - continuous conduction mode (CCM) and discontinuous conduction mode (DCM). It has been shown that duty ratio based algorithm is effective for both modes of operation for boost converter. Mehmet Ali Özçelik et al.[5] has presented a paper which focuses on improving and eliminating oscillation problems in Perturb & Observe MPPT algorithm as well as solar energy integrated with wireless energy transmission by using conventional system and system using MPPT. This paper focuses on maximizing PV panel power output w.r.t load variations and insolation. In Section 2, system topology is discussed. Section 3 gives insight into the operating characteristics of Solar as well as relationship between PV input impedance and load. Section 4 describes the proposed MPPT algorithm/code implemented in ARM microcontroller step wise. Section 5 discusses the experimental setup followed by results.

978-1-4673-9939-5/16/$31.00 ©2016 IEEE

2016 International Conference on Electrical, Electronics, and Optimization Techniques (ICEEOT 2016)

Chennai, India
3-5 March 2016

Pages 1-770

IEEE Catalog Number: CFP16E71-POD
ISBN: 978-1-4673-9940-1

IEEE Catalog Number: CFP16E71-POD
ISBN (Print-On-Demand): 978-1-4673-9940-1
ISBN (Online): 978-1-4673-9939-5

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

338. Idea of Intelligent Smart Research Community Development (Idea Innovation Invention) 1825-1828
339. Image Re-ranking Semantic Search Engine : Reinforcement learning Methodology 1829-1837
340. 3D Photoelastic and Finite Element Analysis of Asymmetric Involute Spur Gear 1838-1842
341. Extraction of Speech Signal Based on Power Normalized Cepstral Coefficient and Mel Frequency Cepstral Coefficient: A Comparison 1843-1846
342. Development of 7-level cascaded H-bridge inverter topology for PV applications 1847-1852
343. Power Efficient Multicast Routing Protocol for Dynamic Intra Cluster Device to Device Communication 1853-1856
344. Tissue Engineering Scaffold Based On Starch: A Review 1857-1860
345. Operational Transformation algorithm for Consistency Control in Distributed System N/A
346. A Study of Divided Disk Cache Performance using DiskSim 1867-1872
347. Design, Implementation and Performance Evaluation of Efficient Energy Management Clustering Algorithm (EEMCA) in Wireless Sensor Networks 1873-1878
348. Design of CMOS Current Mode and Voltage Mode Winner Take All Circuit on 180nm Technology 1879-1882
349. A Semi-Supervised Research Approach to Web-Image Re-ranking: Semantic Image Search Engine 1883-1891
350. A Genetic Algorithm Optimized Fuzzy Logic Controller for Shunt Active Power Filter 1892-1896
351. Detection and Resolving Jamming in RFID Wireless Network Using Gauss Elimination Method 1897-1903
352. Trans Receiving Multimedia using Raspberry-Pi 1904-1908
353. Secure Data Sharing in Multi-Clouds 1909-1913
354. Enhancement of transient stability on power system with the use of power System stabilizers 1914-1919
355. Agent Based Communication Architecture for Smart Grids 1920-1925
356. A Hybrid Image Sharing Approach using CRT & Gray Level with Minimized Charter Participants 1926-1931
357. Fuzzified Philip_Heffron Model Power System Stabilizer for Improvisation Of Voltage Stability 1932-1935
358. Physicians Medicament using Linear Public Key Crypto System 1936-1939
359. Identification of Origitnal Gold Using Digital Image Processing 1940-1943
360. Wind-Solar Grid connected Renewable Energy System with Series Active Self Tuning Filter 1944-1948
361. Kalman Filter based Indoor Mobile Robot Navigation 1949-1953
362. An FPGA-based Portable Real-time Obstacle Detection and Notification System 1954-1958
363. structure Damage Localization Using a Reliable Wave Damage Detection Technique 1959-1962

Enhancement of transient stability on power system with the use of power System stabilizers

1. Mihir R. Patel,
Electrical Engineering Department,
Charusat University,
Changa, India-388 421
1. mihirrpatel.ee@charusat.ac.in

2. Nilay A. Patel,
Electrical Engineering Department,
Charusat University,
Changa, India-388 421
2. nilaypatel.cem@charusat.ac.in

***Abstract*-As we all know that most of the power systems are interconnected through long distance tie lines, in order to transfer a large amount of electric power. There are some constraints which affect to build new transmission lines, which are: limited availability of resources, strict environment and shortage of funds. Because of these constraints it necessitates the operation of transmission lines near or for short term on their thermal loading limits. Day by day the demand in electric power rapidly increases and is expected to continue growing; while growth of generation is restricted too, due to the same constraints mentioned above, this necessitates the generators to operate near their maximum stability limits. As a result of all these factors, power systems oscillations occurs and if not damped out these oscillations, the magnitude of these oscillations will go on increasing until loss of the system synchronism. So, for the improvement of power transfer capability within the safe stability limit it is necessary to enhance the transient stability of the power system. The objective of this paper is to investigate the enhancement of transient stability on power system by different types of power system stabilizers, which are: (I) Speed Input (II) Power Input (III) Frequency Input (IV) Del-P-Omega (V) Combination of frequency-electrical power input PSS and (VI) Speed-electrical power input PSS. The implementation and simulation carried out on the Single Machine Infinite Bus system.**

***Index Terms*-Transient Stability, Power System Stabilizer(PSS), Single Machine Infinite Bus (SMIB).**

I. INTRODUCTION

In the power system disturbances occurs because of variations in load, include electro mechanical oscillations of electrical generators. These oscillations are also termed as power swings and for maintaining system stability, these oscillations must be effectively damped out. Electromechanical oscillations can be classified in two main categories (i) Local Plant Mode Oscillations and (ii) Inter-area Oscillations. Local Plant Mode Oscillations are associated with units at a generating station swinging with respect to the rest of the power system. The frequencies of these oscillations are typically in the range 0.8Hz to 2.0 Hz. Inter-area Oscillations are associated with the swinging of many machines in one part of the system against machines in other parts. The frequencies of these oscillations are in the range 0.1to 0.7 Hz. For small scale stability the mathematical model presented is a set of linear time invariant differential equations [1]. The concepts of synchronous machine stability as affected by excitation control and the phenomenon of stability of synchronous machines under small perturbations in the case of single machine connected to an infinite bus through external reactance has been presented in [2]. The analysis also develops insights into effects of thyristor-type excitation systems and establishes understanding of the stabilizing requirements for such systems [2]. These stabilizing requirements include the voltage regulator, gain parameters and the transfer function characteristics for a machine speed derived signal superposed on the voltage regulator reference for providing damping machine oscillations [3].Kundur et al. presented a detailed analytical work to determine the parameters of phase-lead PSSs so as to enhance the steady state as well as transient stability of both local and inter-area modes. These parameters included the signal washout, stabilizer gain, and the stabilizer output limits. They concluded that by proper tuning, the fixed-parameter PSS can satisfy the requirements for a wide range of system conditions and hence the need of adaptive PSS is of little incentive [4].This paper discusses the performance of various types of power system stabilizers for SMIB system and shows which one is better among all. All the test system and MATLAB software used in the paper will be freely available by email to anyone who request.

II. POWER SYSTEM SATBILIZER

Power system stabilizer (PSS) is a cost effective way of improving the damping of electromechanical oscillations of rotors and in turn it improves the power transfer capability of transmission lines. The function of a power system stabilizer (PSS) is to add damping to the generator rotor oscillations. This is achieved by modulating the generator excitation so as to develop a component of electrical torque in phase with the rotor speed deviations. Such a way of producing damping torque is the most cost-effective method of enhancing the small signal stability of power systems, in comparison to FACTS-based controllers [5].The necessary power application is brought about in the normal process of torque

978-1-4673-9939-5/16/$31.00 ©2016 IEEE

2016 International Conference on Electrical, Electronics, and Optimization Techniques (ICEEOT 2016)

Chennai, India
3-5 March 2016

Pages 1-770

IEEE Catalog Number: CFP16E71-POD
ISBN: 978-1-4673-9940-1

IEEE Catalog Number: CFP16E71-POD
ISBN (Print-On-Demand): 978-1-4673-9940-1
ISBN (Online): 978-1-4673-9939-5

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

176. An algorithm for faults calculation in power system 932-937
177. Modelling, Simulation & Sensitivity Analysis of Various Types of Sensor Errors And its Impact on Tactical Flight Vehicle Navigation 938-942
178. Stability Improvement Of Fixed Speed Induction Generator Based Wind Farm Using STATCOM For Different Types Of Fault 943-949
179. An Implementation of Private Cloud's Service Model (IaaS) using Lightweight Virtualization 950-954
180. Workflow Scheduling in Cloud Computing Environment using Firefly Algorithm 955-960
181. Fault Ride-Through Capability of Induction Generator As Offshore Wind Farm 961-965
182. An Embedded-Z (EZ) Source Inverter Feed Based Industrial Adjustable Speed Drive System 966-971
183. To Extract Informative Content from online web pages by using Hybrid Approach 972-977
184. Random Arbiter and Platform level Design for Improving the Performance on 4x4 NoC 978-983
185. Reduction of Common Mode voltage for Three-Level Inverter using Novel switching sequences 984-989
186. Closed loop Contol of ZCS Interleaved High Step Up Converter for Sustainable Energy Applications 990-995
187. Enhancement of Visual Evoked Potentials 996-1000
188. Localization, Routing & Its Security In Uwsn - A Survey 1001-1006
189. A Closed Loop Control of Three Phase Dual-Switch Buck-Boost Converter 1007-1012
190. Malayalam Machine Translation Using Hybrid Approach 1013-1017
191. Development Of A Solar Photovoltaic System Sizing Application For Zimbabwe 1018-1023
192. Security analysis of civil registry database of Ecuador 1024-1029
193. Self-Motivated Node Exploitation using Two Dimensional Gaussian Distribution in WSN 1030-1034
194. Mixed Conduction in Alkali and Transition Metal Ion Doped Borate Glasses 1035-1039
195. A Mathematical Approach on Various Radix-2i FFT Algorithms 1040-1045
196. To Use Software Defined Networking Technology In Telecommunication For 5-G Network 1046-1049
197. VANET Security: Issues, Challenges and Solutions 1050-1055
198. Secure Swipe Machine with Help of Biometric Security 1056-1061
199. A Review on Biologically Inspired Approaches to Security for Internet of Things (IoT) 1062-1066
200. A Colour Byte Scrambling Technique for Efficient Image Encryption Based on Combined Chaotic Map Image Encryption Using Combined Chaotic Map 1067-1072
201. Luster A Scalable Architecture File System: A Research Implementation on Active Storage Array Framework with Luster file System 1073-1081
202. Performance analysis of coupled inductor based Quadratic boost converter 1082-1087
203. Big Data Analytics Using Agile Model 1088-1091

STABILITY IMPROVEMENT OF FIXED SPEED INDUCTION GENERATOR BASED WIND FARM USING STATCOM FOR DIFFERENT TYPES OF FAULT

PARESH P. LUHANA[1]
P.G. Scholar, M&V Patel Department of Electrical Engineering, C.S. Patel Institute of Technology, CHARUSAT, Changa, Gujarat, INDIA
pareshluhana27@gmail.com

MAULIK J. SHAH[2]
Assistant Professor, M&V Patel Department of Electrical Engineering, C.S. Patel Institute of Technology, CHARUSAT, Changa, Gujarat, INDIA
maulikshah.ee@charusat.ac.in

***Abstract*— as the power of wind energy system increases, the control of their active and reactive power becomes increasingly more important from a system standpoint given that these are typical frequency and voltage control parameters. This paper presents the impact of fault on the stability of fixed speed induction generator (FSIG) based wind farm connected to interconnected power system. This paper deals with voltage stability improvement of a distribution system embedded with Wind Turbine Induction Generator (WTIG) by using power electronics based Flexible AC Transmission Systems (FACTS) using Static Synchronous Compensator (STATCOM). The contribution of STATCOM to support the fixed-speed wind farm interconnected electric grid for different types of fault (L-G, L-L-G, and L-L-L-G) are investigated. The study is carried out by three-phase dynamic simulation of distribution system component models. Simulations are presented for different cases such as with and without Static Synchronous Compensator (STATCOM) for different symmetrical and unsymmetrical faults. Simulation test cases using MATLAB-Simulink are implemented on a 6 MW wind farm exports a power to 120 KV grids. The simulation results show the influence of faults on active power, reactive power, and bus voltage of the wind farm.**

***Keywords*—**

FSIG; WTIG; VOLTAGE STABILITY; STATCOM; FAULTS

I. INTRODUCTION

Given the present world energy state of affairs, it has become apparent that there is an immediate need for a concrete solution to its looming shortage, where wind energy has raised as a perfect solution thus far. In fact, since 2004, wind energy deployment has risen dramatically. Global installed capacity increased from 40 000 MW at the end of 2003 to 94 000 MW at the end of 2007, at an average annual growth rate of nearly 25% [1], [2] [3]. Wind power is an uncontrollable resource, which, when combined with the nature of wind induction generators like the fixed-speed squirrel-cage induction generator (SCIG), makes for a challenging integration of large wfs into the grid, particularly in terms of stability and power quality. These induction generators which are usually connected at weak end of a grid or at distribution networks draw large amount of reactive currents during disturbances such as faults. Consequently under these conditions the terminal voltage and the electrical output power are significantly reduced, whereas the mechanical torque may be still applied to the wind turbine and the rotor speed increases [4]. After fault clearance the generator needs reactive power for voltage recovery, however this reactive power to be supplied by network which in turn causes a voltage drop, so the machine terminal voltage cannot be recovered. If the voltage could be recovered and the generator speed is not too high, torque could be restored and the wind turbine may restore its normal operation eventually. Otherwise the generator would continue to accelerate and the rotor speed and reactive power consumption will increase, so the terminal voltage decreases further. If the rotor speed exceeds a certain critical value the generator set becomes unstable, thus must be tripped out by over speed protection devices [5]. As for cases in which a large amount of power is supplied by generators, theses generators should stay connected to the grid. Therefore, the stability becomes an important problem and has recently attracted considerable attention [6]. Various methods of stability improvement have been presented by researchers. The pitch control system is used to control the power output of the wind turbine and also for

978-1-4673-9939-5/16/$31.00 ©2016 IEEE

Faculty of Management Studies

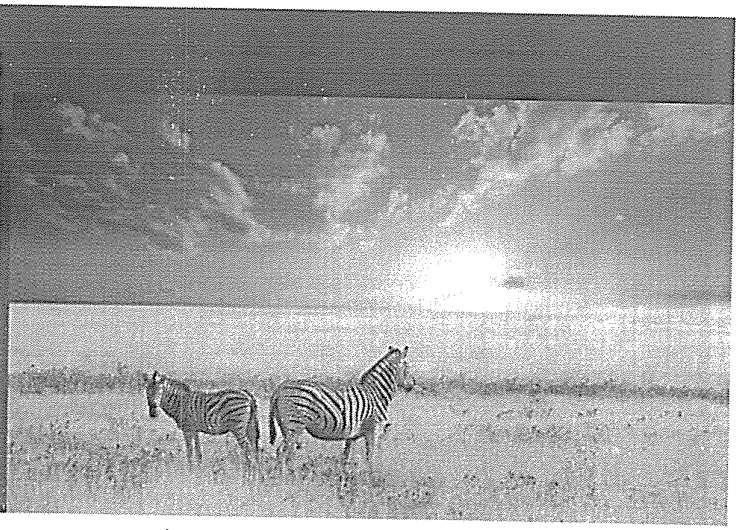
It is necessary to understand the colonial response in the form of Revolution in order to analyse the various consequences of discrimination in terms of race also. To understand why the people of Asia, Africa and South America have constantly been trying to free themselves from the clutches of imperial power, one should try to know some of the basics of these relationships between an industrial developed country and an underdeveloped country. It is not an accident or a coincident that most of the developed countries are white and almost all the underdeveloped countries are non-white. Both imperialism and racism are complementary, and they reinforce each other in contemporary world. It is meaningless to continue to define our world in relation to the dynamic of European colonialism or decolonization. In the era of globalization we cannot keep on arguing or analyzing literature using the concepts of margins and centers as a focal point for postcolonial studies. A radical break is needed to come out of the concepts of colonialism and anti-colonialism as today's economics, politics, cultures and identities are all better described in terms of "transnational" networks.

Dr. Gaurav Thakarar is an Assistant Professor at Humanities and Social Sciences, CHARUSAT, Changa. He has been teaching English Language, Literature and Communication Skills for more than 07 years. He has several research papers and a book in the field of English Language, Literature and Soft Skills published to his credit.

978-3-330-06916-9

A Study of Postcolonial Discourse

Thakarar



Gaurav Thakarar

Redefining Empire

A Study of Postcolonial Discourse

LAP LAMBERT Academic Publishing

INDEX

Part	Content	Page No.
1.	Introduction to Postcolonialism	01
2.	The Concept of Empire and Imperialism.....	31
3.	Resistance and Coexistence: A Postcolonial Discourse.....	53
4.	Empire – A 21st Century Context.....	73
5.	Conclusion.....	92
6.	Bibliography.....	115

Part I
Introduction to Postcolonialism

The beginning of 20th century brought with it lots of major upheavals at economic, social and political level across the globe. The First World War brought with it abundance of changes in the common ways of living life. The realm of literature with 'Avant Guarde' and Surrealism and especially criticism, was not excluded from that. In the 19th century, during Victorian era Metthew Arnold had already given the rules of criticism keeping in mind the aesthetics of literature. In 1930s T. S. Eliot came up with *'Tradition and the Individual Talent'* and gave the major argument emphasizing on 'Tradition' that No poet, no artist is significant in isolation. At the same time, with his own 'individual' he also contributes in the Tradition. *The progress of an artist is a continual self-sacrifice, a continual extinction of personality*.

I A Richards in his book *Principles of Literary Criticism* examines not any fresh investigation how the mind of the poet works but a close analysis of the relationship of the reader to what he reads. This brought a major shift from the author to the reader. Richards in his later book *Practical Criticism: A study of Literary Judgment'* we can find his insistence that literary criticism had to escape from dogmatism and argumentation into inquiry. This move from the reader to author gave way to 'New Criticism' with the principle against 'biographical positivism' and favouring to analyze text-as-text and not anybody's creation. The proponents like Cleanth

The study is carried out on Information Search Pattern of E-Resources by Management Students in B – School Libraries of Gujarat. It also examined types of information resources used by management students. There prevails a very sound understanding among the students about the traditional information search patterns and methods. Also, there seems to be very little awareness among the students about the advanced search patterns and methods like Boolean Operators, Truncation of Search Terms, and Field Searching. Finally, there prevails a very sound understanding of the gateways like Fedgate and J-gate compared to the other gateways KileKnimbus, Ebsco Discovery, and Focuz Info-tech. Another area in the need of attention is Information Seeking Behavior of the Library Users in the Virtual Environment and Inter-Library Loan. Moreover, Search Query Analysis of the Management Students – Library Users of the B – Schools of Gujarat may also be conducted. The impact of electronic information resources used on scholarly productivity can also be studied. Importantly, comparative study of the use and efficacy of the Resources – Print and Online used by the students may also is strongly suggested.

Dr. Pramod Patel is a Librarian in Indukaka Ipcowala Institute of Management, CHARUSAT, Changa (Gujarat, India), having total professional experience of more than seventeen years. He has been an efficient Researcher in Library Science working in the area of E-Resources.

978-3-330-04503-3

A Study of B–School Libraries of Gujarat

Patel

Pramod Patel

Information Search Pattern of E-Resources

A Study of B–School Libraries of Gujarat

LAP LAMBERT Academic Publishing

INDEX

Title	Page No.
CHAPTER 1: **INTRODUCTION**	01
CHAPTER 2: **REVIEW OF RELATED LITERATURE**	32
CHAPTER 3: **MANAGEMENT EDUCATION IN GUJARAT: GROWTH AND DEVELOPMENT**	87
CHAPTER 4: **TYPES OF INFORMATION SEARCH PATTERNS USED BY MANAGEMENT STUDENTS OF GUJARAT**	101
CHAPTER 5: **DATA ANALYSIS AND INTERPRETATION**	122
CHAPTER 6: **CONCLUSION**	162
LIST OF ABBREVIATIONS	169
BIBLIOGRAPHY	171
APPENDIX	
QUESTIONNAIRE	185

CHAPTER 1
INTRODUCTION

1.1 INTRODUCTION

It will not at all be hyperbolic to believe that the information explosion and Information Technology (IT) revolution have led to the advent of the electronic information environment. Over the past few decades, the competition to deliver innovative digital information services to millions of users world-wide has grown manifold. Resultantly, there has been a radical change in terms of improvement in the search interfaces. This has happened primarily because of the rise of Internet as a prominent communication system. New technologies – developed and tested – like Java, TCP/IP, XML and HTML distributed the data over the Internet gifting the world with new tools and flexible ways. If compared with the age-old Client/Server paradigm (based on data transmission), the new systems and patterns are enormously potential and user-friendly in transmitting the data and in its logical interpretation.

Thus, with the latest technological developments in the resources leading to e-resources, information search patterns of the users are highly influenced. Information revolution has given birth to Telecommunication systems with an added advantage over the Internet along-side the developments in mere audio-video content leading to e-commerce, digital archives, and games.

With a blended mix of fierce competition, digital system making data services cheap, flexible and available anytime, anywhere basis and the flexibility to revise and upgrade it n number of times, new information search patterns have evolved and older ones have been modified at a very rapid speed.

Elaborated a little, on the Web, information is fetched by browsing documents. In the days to come, on the Web, information may also be browsed by searching repositories. In the new millennium, when the era will take us beyond the Web, analysis environment technology would allow for the correlating of information across repositories. Information resources on Internet are really very fast looking at the academia in comparison with the traditional academic and research

A Product Recall is a generic term for removing a product from the marketplace, as well as a repair, replacement, or refund of a product. The effect of a product recall quite clearly threatens the continuity of an organization's operations. The objectives of research covers Establishing the process flow of product recall, Evaluate the various strategic options of product recall with respective likely outcome, Assess the product recall execution process with position of control over recall and effectiveness of corrective actions and Develop a checklist to effectively handle the product recall process. The study reveals the possible solutions for strategy architects for about reducing time to study the market at the incident of recall and identify the expected outcomes of strategy implementation with matching to prior incidences. The learning brings into light the techniques that use recall incidence as a leverage to enhance the brand image.

Dr. Pranav Desai is working as an Assistant Professor at Indukaka Ipcowala Institute of Management, Faculty of Management Studies, CHARUSAT. He has completed his Ph D from Dharmsinh Desai University, Nadiad in 2016.He also has to his credit several research and concept papers published in journals and chapters in books.

978-3-659-88164-0

Exploring Product Recall Strategies

Desai

Pranav Desai

A Multi Sector Investigation of Product Recall Strategies

LAP LAMBERT Academic Publishing

Table of Content

			Page No.
List of Tables, Figures and Charts			I
Definitions and Abbreviations			VII
Chapter 1:	Introduction and Overview		001
	1.1	Product Recall	003
	1.2	Common Causes for Recall	012
	1.3	The Research Problem	014
	1.4	The Significance of study	015
	1.5	Research Objectives	018
	1.6	Structure of Chapters	018
	1.7	Summary	022
		References	023
Chapter 2:	Literature Review		026
	2.1	Product Safety and Security in Critical Industries	031
	2.2	Use of Technology to deal with the Product Recall	044
	2.3	The Nature of Product Recall	046
	2.4	Product recall experience with Consumer Products	063
	2.5	Product recall experience with Automobile products	069
	2.6	Product recall experience with Toy Products	075
	2.7	Product recall experience with Pharmaceutical Products	081
	2.8	Product recall experience with Food Product	089
	2.9	Effects of Product Recall	099
	2.10	Lessons for Product Recall Planning	122

	2.11	Learning from Reports on Product Recall	131
	2.12	The Worst Mistakes during Handling of Product Recall	134
	2.13	Steps Involved in Recalling a Product	137
	2.14	Commonly Recalled Products	139
	2.15	Conclusion	140
		References	142
Chapter 3:	GAP Analysis & Research Methodology Mapping		150
	3.1	GAP Analysis	151
	3.2	Objectives of Research	160
	3.3	Research Methodology	161
	3.4	Variable Structure and Relativity of Variables	174
	3.5	Summary	185
		References	185
Chapter 4:	Product Recall Case Study Analysis		187
	4.1	Overview of Qualitative Research	188
	4.2	Modus Operandi of Qualitative Research	189
	4.3	Data Collection	189
	4.4	Interpretive Techniques	192
	4.5	Case Study: Cadbury Dairy milk (2003)	196
	4.6	Case Study: NOKIA Battery (2007)	200
	4.7	Case Study: Mattel Toy Recall (2007)	205
	4.8	Case Study: TOYOTA Etios and Liva (2011)	213
	4.9	Case Study Analysis: Ranbaxy Lipitor (2012)	224
	4.10	Product Recall: Cross Case Analysis	229
		References	246

Chapter 5:	**Quantitative Analysis and Interpretations**		**248**
	5.1	**Overview of Quantitative Research**	**250**
	5.2	**Role of Data Structure in Quantitative Research**	**251**
	5.3	**Correlation within Selected Decisive Elements used for Strategy Formulation during Product Recall**	**253**
	5.4	**Differences in perception about Selected Decisive Elements used for Strategy Formulation during Product Recall**	**280**
	5.5	**Summary**	**361**
Chapter 6:	**Discussion and Recommendations**		**375**
	6.1	**Development of General Product Recall Procedure**	**376**
	6.2	**Probes of Product Recall Stages and its Effects with Respect to Time**	**401**
	6.3	**Performa for Effectively Handling the Product Recall Process**	**419**
	6.4	**Techniques to Use Recall Incidence as a Leverage to Maximize Brand Wealth**	**422**
	6.5	**Checklist for Effectively Handling the Product Recall Process**	**428**
	6.6	**Summary**	**433**
Chapter 7:	**Limitations of Study and Future Research Directions**		**435**
	7.1	**Limitations of Study**	**436**
	7.2	**Directions for Future Research**	**437**

CHAPTER - 1

INTRODUCTION

The chapter provides the overview of the product recall. It also explores the types of the product recall, aims of the product recall and components of product recall by stance of their importance. The chapter includes the research problem that motivates to conduct the research. It is followed by the specimens of major product recalls. Than after, the chapter flow focuses on the significance of the study and why there is a high need of effective handling of product recalls. After credentials of importance of study the research objectives are mentioned; which are taken as a center point. At last the chapter provides road map of chapters of thesis concealed by the conclusion of chapter and references taken into consideration.

Chapter Flow

1 Introduction and Overview

1.1 Product Recall

1.1.1 Types of Recall

1.1.2 Aims of Recall

1.1.3 The Components of Product Recall

1.2 Common Causes for Recall

1.3 The Research Problem

1.4 The Significance of study

1.5 Research Objectives

1.6 Structure of a Thesis

1.7 Summary

References

Faculty of Medical Sciences

Indian Society of Ergonomics

IEA
International Ergonomics Association

2016

HWWE

Humanizing Work and Work Envioronment

Abstract

14th International Conference on Humanizing Work and Work Environment December 8-11, 2016

Editors :
Prof Arvind Bhardwaj
Dr Lakhwinder Pal Singh
Dr Sarbjit Singh

Department of Industrial and Production Engineering
Dr BR Ambedkar National Institute of Technology
Jalandhar-144011, Punjab, INDIA

HWWE 201	Comparison of Lifting Capacity Between Novice and Conditioned Manual Material Handlers	Girish N, Rauf Iqbal, Vivek Khanzode
Track Name: - Musculoskeletal Disorder		**Page: 291-322**
HWWE 005	Impact of Vibration and Wrist Posture Combined on CTS in Manufacturing Unit Workers	Md. Sarfaraz Alam, Urmi Ravindra Salve
HWWE 009	Trunk Muscle Strength: An Indicator of Back Pain	Urmi Ravindra Salve, Amitabha De
HWWE 024	Risk Factors Involved in Carpal Tunnel Syndrome: A Review	Arunita Paul, Ganesh Suresh Jadhav, Urmi R Salve
HWWE 033	Prevention of Ill-Effects of Carrying of Heavy School Bags	Manav Prakash, Pratyaksh Kalra, Arvind Kumar Vig
HWWE 034	Effect of one week intervention of vibratory massage therapy on forearm grip strength and endurance	Mohd Mukhtar Alam, Abid Ali Khan, Mohd Farooq, Siddharth Bhardwaj
HWWE 039	Musculoskeletal Problems and Postural Stress among the Workers in Spices Industry: An Assessment	Neena Vyas, Aruna Rana
HWWE 045	WMSDs of Women Labourers in Head Load Carrying Activity at Construction Site in Haryana	GarimaYadav, Kiran Singh, Kusum Rana, Manju Mehta, Mamta
HWWE 082	Musculoskeletal and Visual Discomfort Evaluation and its Interference with Academic Performance Among Indian Students Using Computer Displays	Mohammad Faisal Noor,Faisal Hasan, Abid Ali Khan, M. Muzammil, Qasim Murtaza
HWWE 096	Work Related Musculoskeletal Disorders (WMSDs) Risk Assessment for Different Welding Positions and Processes	Bharat Singh, Piyush Singhal
HWWE 120	Prevalence of Musculoskeletal Disorders among Women Working in Mathiya Making Units	M. Balaganapathy, Hiral Parmar, Devangi Patel, Khusboo Patel
HWWE 127	Effect of Deep Cervical Flexor Muscles Training Using Pressure Biofeedback on Pain and Disability in Chronic Neck Pain.	Krupa Dhirendrakumar Shah, M. Bala Ganapathy
HWWE 173	Prevalence of Low Back Pain: A Cross Sectional Study in Bell Metal Foundry Workers	Das Naba Kumar, Pal Amitava, Mahata Hiranmoy, Dhara Prakash C
HWWE 188	Work Related Musculoskeletal Disorders Perceived by Women Farmers of Rajasthan (India)	Hemu Rahtore, Suman Singh, Charu Sharma
HWWE 195	Post Rehabilitation Problems of the People with Spinal Cord Injury	Priyanka Rawal, Gaur G. Ray
HWWE 203 (L-020)	Influence of Keyboard Inclination on Forearm and Back Muscle Activity During Keyboard Operation	Swati Pal, P.K. Nag
HWWE 205	"An Ergonomic Investigation in Occurrence of Musculoskeletal Disorders among the Saw-Mill Workers"	Johny Khajuria, Lakhwinder Pal Singh, Sarbjit Singh, Arjan Singh
HWWE 219	Changes in Head & Shoulder Posture of Collegiate Students Carrying Laptop Bag	Siddhartha Sen, Ajita D Singh

Prevalence of Musculoskeletal Disorders among Women Working in Mathiya Making Units

Dr. M. Balaganapathy MPT PhD, Ms. Devangi Patel, Ms. Hiral Parmar, Ms. Khushbu Patel

Abstract:

Introduction: Musculoskeletal problems are the most common condition for the cause of disability, and inability to work. Among the sample workers; 18,942 (84.3%) participated, & 37.0% (standard error =0.4%) had MSD. "Lower back and waist" were the most frequently affected body parts (18.3% among males & 19.7% among females). But the prevalence of MSDs of neck ,shoulders ,hand, wrist were also above 10%.The tasks included kneading and rolling the dough into thin chapatis and roasting them to make Mathiyas. Majority of employees were involved in rolling (90%) and roasting (76%). Very few were involved in kneading (44%).

Aims & Objectives: 1) To find out the prevalence of musculoskeletal disorder in mathiya making units. 2) To find out the disability percentage due to musculoskeletal problem.

Methodology: A cross sectional study of 50 mathiya maker, between 18 to 60 years of age was conducted. They were divided into 3 groups based on their type of work (Rolling, lifting, over head activity).Prevalence of musculoskeletal disorder in mathiya maker was assessed using Nordic Questionnaire.

Result: The present survey study has shown high prevalence rate of shoulder , lower back and wrist region had the highest prevalence rate of 19%(N=50) other than forearm 2%, knee 16% and lower leg 2%.

Conclusion: The present survey study concludes that due to rolling, lifting and prolongs bending is a high prevalence of WRMSDs in which the low back, shoulder and wrist more common followed by forearm, knee and lower leg.

Key words: Women, Musculoskeletal problems, Awkward posture, Repetitive action, Discomfort.

INTRODUCTION

Mathiya is, like a papad, an Indian wafer. It is a special recipe from Gujarat; however, it is quite famous across the country, and the recipes may very more or less be region. In mathiya is a 'must-have' recipe during Diwali in Gujarat. It is spicy, crispy recipe made from muth flour. Some other flour like urad dal flour and gram flour are added to it in a limited quantity. Spices like ajwain, white chilli powder oil or ghee is added to make its crispy, and with the help of warm water, very, green chilli, salt and sugar to taste etc. are added to the blend of the flour. Some stiff dough is prepared.

Dr. M. Balaganapathy MPT, PhD, Asst Professor, is with Ashok & Rita Patel Institute of Physiotherapy (a constituent of Charotar University of Science & Technology),CHARUSAT Campus, Anand, Gujarat, India (Corresponding author e-mail: balaganapathy.phy@charusat.ac.in). Ms. Devangi Patel, an alumni student of Ashok & Rita Patel Institute of Physiotherapy, CHARUSAT, Anand, Gujarat, India.

Work -Related Musculoskeletal disorders (WRMD'S) are usually work related and it is a common phenomenon among several occupations. Musculoskeletal disorders affects alleges , re-occur most times , and the frequency increases with age. Muscle pain is most frequently related to tension, overuse, or muscle injury from exercise or physically-demanding work. Musculoskeletal disorders is a major health problem that affects quality of life, causing morbidity, increase in demand for health care and cost. In developing countries, great efforts are directed towards the development of small-industries as the engine for their economic growth. According to WHO over 1000 million people worldwide are employed in small-scale industries. The "Khakhra making" industry of India is one such industry which has provided ample opportunity of employment for the women of low socio-economic status. Although such industries are identified with women empowerment in India, the employees are found To have not subjected to occupational health and safety provisions. As a result they suffer adverse health impacts. In this study an attempt has been made to find out the health status of the women engaged in a "Khakhra-making"industry, the occupational factors influencing their health status and their felt health needs[3]. The occupational MSDs are major problem leading to adverse health & occupational risk factor involving high repetition rates, excessive force & awkward posture[11]. In spite of numerous reports on MSD in various specific groups of worker, few data on prevalence in the general working population are available except for back pain .We analyzed the information collected through a nationwide survey in Taiwan in 1994 to estimated the prevalence of MSD byage, gender & education level & identify high risk industries[3]. In the survey, a standard questionnaire was distributed to a representative sample of 22,475 non-self-employed workers in Khakhra units[4].Among the sample workers; 18,942 (84.3%) participated, & 37.0% (standard error =0.4%) had MSD. Female workers had a significantly higher overall prevalence than male workers (39.5% vs. 35.2%)[3]. Education & age also had significant association with MSD (P<0.001 in both genders)[4]. "Lower back and waist" were the most frequently affected body parts (18.3% among males & 19.7%among females). But the prevalence of MSDs of neck, shoulders ,hand, wrist were also above 10%[5]. The tasks included kneading and rolling the dough into thin chapattis and roasting them to make Khakhra. Majority of employees were involved in rolling (90%) and roasting (76%). Very few were involved in kneading (44%). Most women preferred to rest for shorter duration because of inadequate rest area. Additionally many reported that longer break resulted in less work done leading to low per day income. There was a high prevalence of upper and low back pain which interfered with their ability to perform efficiently. General tiredness and

Indian Society of Ergonomics

IEA
International Ergonomics Association

2016

HWWE

Humanizing Work and Work Envioronment

Abstract

14th International Conference on Humanizing Work and Work Environment December 8-11, 2016

Editors :
Prof Arvind Bhardwaj
Dr Lakhwinder Pal Singh
Dr Sarbjit Singh

Department of Industrial and Production Engineering
Dr BR Ambedkar National Institute of Technology
Jalandhar-144011, Punjab, INDIA

HWWE 056	Physiological Cost and Drudgery in Paddy Transplanting	Vijay Vithal Aware, Chhaya Ragho Kavitkar, Mahesh Ramesh Patil, Prashant Uddhavrao Shahare, Seema Vijay Aware, Nilesh Ashok Shirsat
HWWE 057	Validity of Oxygen Consumption Rate Observed in Laboratory with the Actual Observed During Field Observations	Vijay Vitthal Aware, Vinod Balasaheb Kadam, Seema Vijay Aware, Prashant Uddhavrao Shahare, Mahesh Ramesh Patil, Nilesh Ashok Shirsat
HWWE 058	Ergonomic Intervention to Mitigate Drudgery among Rose and Marigold Harvesters	Sharanbir Kaur Bal, Narinderjit Kaur, Anjuly Sharma
HWWE 142	Application of Ergonomics Checkpoints and Two-Factors Theory for Improving Working Conditions and Productivity in Agriculture Sector of India	Rahul Goswami, PiyushSinghal, Harish Kumar Sharma
HWWE 215	Whole Body Vibration – Analysis and Musculoskeletal Disorders on Exposure to Vibration in Tractor Drivers	Gurpreet Singh Dhillon, Lakhwinder Pal Singh
Track Name: - Anthropometry and Workspace Design		**Page: 86-94**
HWWE 092	Ergonomic Evaluation of Lecture Room	Komal, Sudesh Gandhi
HWWE 099	Ergonomic Analysis of Work stations in Coir Mat Industry in Kerala Using Digital Human Modeling method	M. Satheesh Kumar, K. Krishna Kumar
HWWE 111	Classroom Furniture and Anthropometric Characteristics of Rural and Urban School Students – A Cross-Sectional Study	M. Balaganapathy, Sweni Shah, RadhikaTadvi, Gazalaparvin, Dharti Desai
HWWE 118	To Evaluate Grip Strength and Pinch Strength of Thumb and Fingers in Touch Screen Phone Users and Keypad Phone Users	M. Balaganapathy, Darsh Gabhawala
HWWE 210	Ergonomics: Application of Ergonomics in Classrooms	KevanVollbach Singh, Safbjit Singh
Track Name: - Aviation Ergonomics		**Page: 95-99**
HWWE 011	An Ergonomic Assessment of Commercial Aircraft Airbus 300	Robin Rathi, Suman Kant, Jagjit Singh
HWWE 042	Prevalence and Contributing Factors of MSDs and on Board Injuries among Flight Attendants: An Exploratory Study	Nabila Rehman, Neha Rathore
HWWE 080	The Effect of Controlled Breaks on Mental Fatigue in Simulated Air Traffic Control Tasks	Manasi Nikhil Deshpande, Chen Ling
Track Name: - Behavioural Ergonomics		**Page: 100**
HWWE 184	Effective Communication and Inclusive Media Reporting of Northeast	Payel Chakrabarti
Track Name: - Biomechanics		**Page: 102-113**
HWWE 021	Knee Musculoskeletal Biomechanics in Sit-to-Stand and Stand-to-Sit Activity	Siddharth Bhardwaj, Abid Ali Khan, Mohammad Muzammil, Mohd Mukhtar Alam

To Evaluate Grip Strength and Pinch Strength of Thumb and Fingers in touch screen phone users and keypad phone users.

Dr. M. Balaganapathy MPT PhD, Ms. Darsh Gabhawala

Abstract:

Introduction: The reliable and valid evaluation of handgrip strength is of great importance in determining the affectivity of different treatment strategies and procedures. We live in a world of information and technology. People of all ages and backgrounds are clicking away on a various other smart phones that are popping up every day. These phones are very useful in helping us manage a calendar, surf the web, check email, text, tweet, blog, and much more. There is something no one is talking about. Using phones too much can be a source of pain in thumbs, wrist, forearm, and even neck! These may also result in decrease grip strength. The primary purpose of this study to evaluate grip strength and Pinch strength of hand in touch screen phone users and keypad users. **Methodology:** Study includes 99 healthy subjects between the age group of 18-30 years with mean age (21.02 + 1.99) years, who were using touch screen phone and keypad phones from last 1 year or more & more than 2 hours per day. Handgrip strength of the subjects was measured by using Jamar Dynamometer and pinch strength was measured by pinch gauze on both the side. **Results:** The data were analyzed using paired t- test & it shows highly significance difference in grip strength of dominant keypad users (30.03±7.60) and of touch pad users (27.80± 7.72), which was found to be highly significant (t=6.98; p=.001). There is significant difference in non-dominant grip strength of keypad users (34.03±6.12) and touch pad users (26.42 ±6.77), which was found to be highly significant (t=8.19; p=.000). there is significant difference in dominant pinch strength of keypad users (14.70±5.39) and touch pad users (10.58±5.82),which was found to be highly significant (t=6.5; p=.000). There is significant difference in non-dominant keypad users (15.67±5.55) and touch pad users (10.22±5.45), which was found to be highly significant (t=8.2; p=.000). **Conclusion:** This study concludes that there is highly significant difference in dominant & non dominant hand Grip strength and pinch strength in all the subjects using keypad phones. **Key words:** Grip Strength, Jamar Hand Dynamometer, Pinch Gauge, Touch Screen Phones, Keypad Phones.

INTRODUCTION

Dr. M. Balaganapathy MPT PhD, Asst Professor, is with Ashok & Rita Patel Institute of Physiotherapy (a constituent of Charotar University of Science & Technology),CHARUSAT Campus, Anand, Gujarat, India (Corresponding author e-mail: balaganapathy.phy@charusat.ac.in). Ms.Darsh gabhawala , an alumni student of Ashok & Rita Patel Institute of Physiotherapy, CHARUSAT, Anand, Gujarat, India and now works in United States.(gabhawaladarshu@yahoo.com)

Humans are nothing more than an advanced animal. The interesting concept here is why? Why is it humans have come further, reason humans have come so far is quite simply because we have hands. Most other animals have paw like body parts, or claws etc., the hand is perfectly in proportion with every part of itself and therefore it makes it easy to grab hings, because we can grab things we can pick things up and because we can do this we can make things. It is fascinating that this one small part of us has changed the whole world we live in, everything that exists, everything that has been built by a human, everything that has been thrown, manufactured, etc. has been done so with a human hand, Our hands can perform extremely gentle and precise actions such as writing a letter, painting a picture, threading a needle or playing a violin. Our hands also enable us to perform heavy labor, such as digging with a shovel, swinging an ax, using a jackhammer to drill through concrete, or pounding a railroad spike with a sledgehammer. We use our hands to feel whether something is rough or smooth, hot or cold, sharp or dull[3]. Grip is a commonly used as an index to assess impairment and treatment outcome of hand function. Analysis of grip strength is an important index of hand rehabilitation program as because it assesses the patient's initial limitation and can be compared with normal. Measurement of handgrip strength's utility continues throughout the treatment process because it provides a quick reassessment[7].

- Grip patterns and their relevant functions

(a) Each tool requires its own grip pattern.

(b) Each function in multi-function mobile device requires its own grip pattern.

Touch Screen Phones.

A touch screen cell phones is an electronic visual display that the user can control through simple or multi-touch gestures by touching the screen with a special stylus/pen and-or one or more fingers. Some touch screens use an ordinary or specially coated glove to work while others use a special stylus/pen only. The user can use the touch screen to react to what is displayed and to control how it is displayed (for example by zooming the text size) [23].The touch screen enables the user to interact directly with what is displayed, rather than using a mouse, touchpad, or any other intermediate device. Touch screens are common in devices such as game consoles, all-in-one computers, tablet computers, and smart phones. They can also be attached to computers or, as terminals, to networks. They also play a prominent role in the design of digital appliances such as personal digital assistants (PDAs), satellite navigation devices, mobile phones, and video games.

Key Pad Phones

Indian Society of Ergonomics

IEA
International Ergonomics Association

2016

HWWE

Humanizing Work and Work Envioronment

Abstract 14th International Conference on Humanizing Work and Work Environment December 8-11, 2016

Editors :
Prof Arvind Bhardwaj
Dr Lakhwinder Pal Singh
Dr Sarbjit Singh

Department of Industrial and Production Engineering
Dr BR Ambedkar National Institute of Technology
Jalandhar-144011, Punjab, INDIA

HWWE 056	Physiological Cost and Drudgery in Paddy Transplanting	Vijay Vithal Aware, Chhaya Ragho Kavitkar, Mahesh Ramesh Patil, Prashant Uddhavrao Shahare, Seema Vijay Aware, Nilesh Ashok Shirsat
HWWE 057	Validity of Oxygen Consumption Rate Observed in Laboratory with the Actual Observed During Field Observations	Vijay Vitthal Aware, Vinod Balasaheb Kadam, Seema Vijay Aware, Prashant Uddhavrao Shahare, Mahesh Ramesh Patil, Nilesh Ashok Shirsat
HWWE 058	Ergonomic Intervention to Mitigate Drudgery among Rose and Marigold Harvesters	Sharanbir Kaur Bal, Narinderjit Kaur, Anjuly Sharma
HWWE 142	Application of Ergonomics Checkpoints and Two-Factors Theory for Improving Working Conditions and Productivity in Agriculture Sector of India	Rahul Goswami, PiyushSinghal, Harish Kumar Sharma
HWWE 215	Whole Body Vibration – Analysis and Musculoskeletal Disorders on Exposure to Vibration in Tractor Drivers	Gurpreet Singh Dhillon, Lakhwinder Pal Singh
Track Name: - Anthropometry and Workspace Design		**Page: 86-94**
HWWE 092	Ergonomic Evaluation of Lecture Room	Komal, Sudesh Gandhi
HWWE 099	Ergonomic Analysis of Work stations in Coir Mat Industry in Kerala Using Digital Human Modeling method	M. Satheesh Kumar, K. Krishna Kumar
HWWE 111	Classroom Furniture and Anthropometric Characteristics of Rural and Urban School Students – A Cross-Sectional Study	M. Balaganapathy, Sweni Shah, RadhikaTadvi, Gazalaparvin, Dharti Desai
HWWE 118	To Evaluate Grip Strength and Pinch Strength of Thumb and Fingers in Touch Screen Phone Users and Keypad Phone Users	M. Balaganapathy, Darsh Gabhawala
HWWE 210	Ergonomics: Application of Ergonomics in Classrooms	KevanVollbach Singh, Safbjit Singh
Track Name: - Aviation Ergonomics		**Page: 95-99**
HWWE 011	An Ergonomic Assessment of Commercial Aircraft Airbus 300	Robin Rathi, Suman Kant, Jagjit Singh
HWWE 042	Prevalence and Contributing Factors of MSDs and on Board Injuries among Flight Attendants: An Exploratory Study	Nabila Rehman, Neha Rathore
HWWE 080	The Effect of Controlled Breaks on Mental Fatigue in Simulated Air Traffic Control Tasks	Manasi Nikhil Deshpande, Chen Ling
Track Name: - Behavioural Ergonomics		**Page: 100**
HWWE 184	Effective Communication and Inclusive Media Reporting of Northeast	Payel Chakrabarti
Track Name: - Biomechanics		**Page: 102-113**
HWWE 021	Knee Musculoskeletal Biomechanics in Sit-to-Stand and Stand-to-Sit Activity	Siddharth Bhardwaj, Abid Ali Khan, Mohammad Muzammil, Mohd Mukhtar Alam

14th International Conference on Humanizing Work and Work Environment HWWE-2016
ISBN Number: 978-93-83006-81-6

Classroom Furniture and Anthropometric Characteristics Of Rural And Urban School Students – A Cross-Sectional Study

M. Balaganapathy, Sweni Shah, Gazalaparvin, Radhika Tadvi and Dharti Desai

***Abstract*— Furniture plays a vital part in the environment and learning experience /process. It is as important as equipment, buildings, and other learning resources. Proper implementation of classroom ergonomics is needed for the maintainer of good health, improvement and motivation. School children spend most of their working hours at school, mostly in the sitting position. Ergonomically, unsuitable school furniture is frequently considered one of the major causes of severe posture problems in students. Recent studies have reported the increasing prevalence of musculoskeletal problems in school children and adolescents. Design of school furniture is one of the contributing factors to the development of such symptoms among school children. So the objective of the study was to assess the student ergonomically who is using classroom furniture and to determine the prevalence of musculoskeletal disorder in school students. The present study was carried out in 295 school students of rural and urban area having the age range of 15 to17 years. Eight anthropometric measurements (height, sitting height, popliteal height, knee height, hip breadth, elbow rest height, buttock popliteal length, and buttock knee length) and four dimensions of the existing classroom furniture were measured. Nordic questionnaire was filled by students to determine the prevalence of musculoskeletal problems. The results indicated a considerable imbalance between anthropometric dimensions of students and the existing classroom furniture dimensions. The anthropometric dimension of the school students increases with their age. Moreover, there was a little difference between mean values of different anthropometric dimension. These differences become much higher when they were compared between boys and girls. In conclusion, the findings of this study that the design criteria should be selected based on the anthropometric dimensions of the students. There are chances of mismatch between the student's dimensions and available furniture. The importance design of benches may create many problems for the students such as fatigue, muscle stress and discomfort/ pain in different body parts. Through Nordic questionnaire, we concluded that participants who areheighted, having lower back pain followed by neck pain comparatively short heighted.**

Ashok& Rita Patel Institute of Physiotherapy, Charotar University of Science and Technology, Changa, Gujarat, India.
F.A. balaganapathy.phy@charusat.ac.in
S.B. swenishah.phy@charusat.ac.in
T.C. naazmalek83@gmail.com

I.INTRODUCTION

The efficiency of a person depends strongly on the fact that how comfortable a person is with the work environment and also the appropriateness of workstation with the user. Schools are the places from where we get qualified and capable which then help in building the nations. Therefore, it is very important to make the classrooms in schools comfortable and suitable for students, so that they can concentrate and evolve as talented individuals. The comfortable, physical health, well-being and performance of people can be increased by designing equipment, furniture and other devices according to the needs of the human body. A comfortable classroom environment improves the efficiency of students by encouraging and motivating them to perform better. Students spend a major time on the chair and desk during school hours; hence it is necessary that the school furniture should fit the requirements of the students. Therefore, the school furniture should be made on the basis of anthropometric dimensions of the user. Specific measurements such as popliteal height, knee height, buttock to popliteal length and elbow rest height are necessary in order to determine the dimension of school furniture that will enable students to maintain the correct sitting posture. Anthropometry of people differs not only from region to region but also within the region as well, therefore it is very essential to consider the anthropometry of users while designing any product to assure the suitability of the product in order to improve the efficiency of students. It is difficult to design the seating furniture that suits every student, but anthropometry considerations can increase the suitability of furniture with the majority of the user populations. In a research work it is seen that the anthropometric dimensions vary not only from region to region, but within the region as well which must be considered while designing of furniture's. It has been reflected in many studies that there is a mismatch between the classroom furniture dimensions and the anthropometric dimensions of the students. Literature on this issue points to various consequences like; back pain prevalence among the students, musculoskeletal discomfort and low back pain, biomechanical problems, awkward