

Proceedings of the International Conference on Green Computing and Engineering Technologies 2016



AALBORG UNIVERSITY

Editors

D. M. Akbar Hussain, G. S. Tomar, Bishwajeet Pandey

Proceedings of the International Conference on Green Computing and Engineering Technologies 2016

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Chair Message:

It is such a pleasure that as a chair I have the honor to welcome you with great respect and enthusiasm to the International Conference on Green Computing and Engineering Technologies ICGCET-2016 to be held at Department of Energy Technology, Aalborg University Esbjerg Denmark from 18 – 20 August 2016. It is the third conference hosted by Gyancity Research Lab and as a founder member I hope that we will continue to provide such forums in future as well. ICGCET – 2016 is the second in the series, which is intended to attract innovative technical and scientific work in the field of Green Computing Engineering Technology. The response to the conference is over whelming and I am proud to state that we have really good quality contributions and I am sure as a participant you will share the same sentiment once you will listen these presentations.

As a chair and on behalf of the organizing committee I sincerely hope that ICGCET -2016 will offer a great venue at Esbjerg Denmark to the participants coming from different parts of the world to share and contribute in the area of Green Computing Engineering Technologies. We hope to provide a good platform to the participants of ICGCET-2016 where not only they meet together and share their vision and ideas but also fertilize their thoughts in the ever-growing field of Green Computing Engineering Technologies.

I am also confident that our keynote speakers will be able to enrich your knowledge during the conference and I wish you a very pleasant and enjoyable stay in Esbjerg, Denmark.

Best wishes.

D. M. Akbar Hussain, Aalborg University Denmark.

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Chair ICGCET - 2016

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Schedule

18 August		19 August	
08:00	Registration Start	08:00	Registration Start
09:00	Welcome to International Conference on Green Computing and Engineering Technologies Prof. Jens Bo Holm Nielsen, Center for Bioenergy and Green Engineering, Aalborg University, Denmark	09:00	Welcome to 2 nd Day of International Conference on Green Computing and Engineering Technologies Prof. D M Akbar Hussain, Section of Power Electronics, Aalborg University
09:20	Keynote: Challenges in MMOGs Development and Security Prof. Abdenmour El Rhalibi, Liverpool John Moores University, UK	09:20	Keynote: Next Generation Network and Cryptography Dr. Karan Singh, Jawaharlal Nehru University, Delhi, India
09:50	Coffee Break	09:50	Coffee Break
10:10	Paper Presentation in Session 1 Session Chair: Prof M F L Abdullah, UTHM, Malaysia	10:10	Paper Presentation in Session 4 Session Chair: Dr. Muhammad Nasir Khan, The University of Lahore, Pakistan
12:30	Lunch Break	12:30	Lunch Break
13:30	Keynote: Cognitive Radio Prof G S Tomar, THDC Institute of Hydropower Engineering and Technology	13:30	Keynote: Wireless and optical communication, in context of photonics and robotics Prof M F L Abdullah, UTHM, Malaysia
14:00	Paper Presentation in Session 2 Session Chair: Dr. Agileswari Ramasamy, Universiti Tenaga Nasional, Malaysia	14:00	Paper Presentation in Session 5 Session Chair: Prof G S Tomar, MIR Lab, India
16:20	Coffee Break	16:20	Coffee Break
16:40	Paper Presentation in Session 3 Session Chair: Dr. Naveen Chilamkurti La Trobe University, Melbourne, Australia.	16:40	Paper Presentation in Session 6 Session Chair: Prof Mohsin Jamil National University of Sciences and Technology (NUST), Islamabad, Pakistan.
18:00	Concluding Remark of Day-1	18:00	Concluding Remark of Day-2
18:30	Social Event Party and great fun time at Aalborg University Campus and Nature Area of Esbjerg	18:30	Social Event Party and great fun time at Aalborg University Campus and Nature Area of Esbjerg
20 th August			
City Tour of Esbjerg and Scandinavia's oldest town, Ribe.			
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Keynote 1:

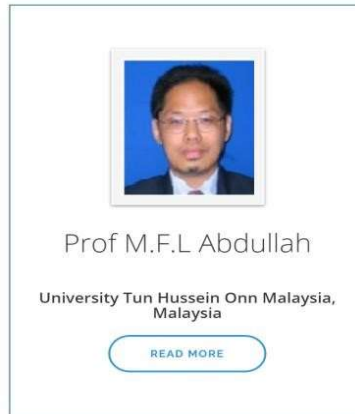


Prof D M Akbar Hussain

Aalborg University, Denmark

D. M. Akbar Hussain is working as an associate professor in the department of Energy Technology, Aalborg University Denmark. He holds a PhD degree in Control Engineering from the Faculty of Engineering and Applied Sciences (EAPS), University of Sussex ENGLAND, more specifically, in the field of state estimation / Tracking and its implementation on multi-processor systems. The main focus of his research is related with computer and control engineering. He has made contributions in several energy related areas for example; PV integration with grid and security issues related with grid communication network, energy efficient hardware design and design of control to get maximum power from a wind turbine. He has the experience of working in three continents (ASIA, EUROPE and NORTH AMERICA) with different cultural heritage and feels proud in adapting to these environments adequately. He has multi-discipline/cross disciplined ability in teaching and he has have been teaching both core computer science and engineering subjects, for example Computer Architecture, Microcontroller Programming, Compiler Construction, Operating Systems, Software Engineering, Digital Signal Processing, Real Time and Embedded System Programming, Databases and Engineering Management. He is chief editor of a Springer Book CCIS series published in November 2008, 2013; he is also author of a contributory chapter in a book "Parallel Processing in Control System Environment, published by Prentice Hall UK, 1993, edited by Eric Rogers. He has reasonable publications record in the various fields of his interest and expertise in some refereed journals, Springer books and conference papers. He has been the Chief Editor of Journal of Software Engineering, Associate Editor of International Journal on Computer Engineering and Information Technology (IJCEIT), Editor of Advances in Computer Science and IT, Editor of International Journal of Computer Science and Software Technology (IJCSST) Editor Board Member of International Journal of Multidisciplinary Sciences and Engineering (IJMSE), Regional Editor for Journal of Computing & Applications, Editorial Board Member for ACRS International Journal on computing & ACRS Journal on Mathematics and Computer Science and Member of International Committee for IMECS. He has also reviewed couple of books on filtering, management, computer science and actively involved in reviewing conference papers related with his research. He is external examiner, chairman of the evaluation committee and coordinator for over 20 PhD examinations. He was member of the E-study board of Aalborg University for many years and now is an observer for the same study board. He has formally obtained a certificate in management from the University of Toronto, CANADA, Adjunkt pædagogikum ved Aalborg Universitet (University Pedagogy for Assistant Professors).

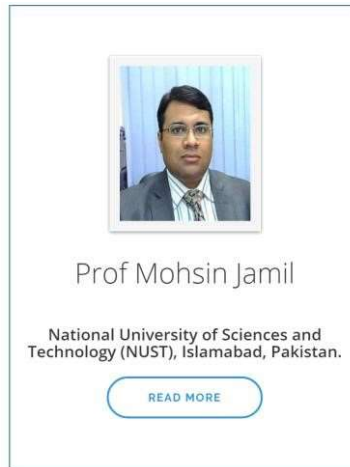
Keynote 2:



Mohammad Fiaz Liew Abdullah received Bsc (Hons) in Electrical Engineering (Communication) in 1997, Dip Education in 1999 and MEng by research in Optical Fiber Communication in 2000 from University of Technology Malaysia (UTM). He completed his PhD in August 2007 from The University of Warwick, United Kingdom in Wireless Optical Communication Engineering. He started his career as a lecturer at Polytechnic Seberang Prai (PSP) in 1999 and was transferred to UTHM in 2000 (formally known as PLSP). At present he is an Associate Professor and Deputy Dean (Research and Development), Faculty of Electrical and Electronic Engineering, University Tun Hussein Onn Malaysia (UTHM). He has 15 years of teaching experience in higher education, which consisted of subjects like Optical Fiber Communication, Advanced Optical Communication, Advanced Digital Signal Processing and etc. His research area of interest are wireless and optical communication, photonics and robotics in communication.

Email: faiz@uthm.edu.my

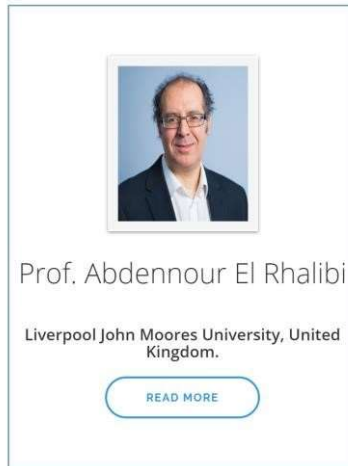
Keynote 3:



Dr Mohsin Jamil is working as an assistant professor and deputy head of department in the department of Robotics at National University of Sciences and Technology (NUST), Islamabad Pakistan. He holds a PhD degree in Electrical Engineering (Control Systems/Power Electronics) from the University of Southampton, U.K. He has done two MSc degrees from National University of Singapore and Dalarna University Sweden in the field of Electrical Engineering (Automation and Control Engineering. His PhD thesis was "Repetitive Current control of Two-Level and Interleaved Three Phase PWM utility connected inverters". The main focus of his research is related with the application of control systems in different domains of electrical engineering. He has made contributions in the field of control engineering, biomedical, computer networking and overall communication systems. He has published more than 50 papers in International peer reviewed conferences. He is active member of IEEE and currently serving as Chair IEEE student activities Islamabad region (R10) section.

Email: mohsin@smme.nust.edu.pk

Keynote 4:



Abdenmour El Rhalibi is Professor of Entertainment Computing and Head of Strategic Projects at Liverpool John Moores University. He is Head of Computer Games Research Lab at the Protect Research Centre. He has over 22 years' experience doing research and teaching in Computer Sciences. Abdenmour has worked as lead researcher in three EU projects in France and in UK. His current research involves Game Technologies and Applied Artificial intelligence. Abdenmour has been leading for six years several projects in Entertainment Computing funded by the BBC and UK based games companies, involving cross-platform development tools for games, 3D Web-Based Game Middleware Development, State Synchronisation in Multiplayer Online Games, Peer-to-Peer MMOG and 3D Character Animation. Abdenmour has published over 160 publications in these areas. Abdenmour serves in many journal editorial boards including ACM Computer in Entertainment and the International Journal of Computer Games Technologies. He has served as chair and IPC member in over 100 conferences on Computer Entertainment, AI and VR. Abdenmour is member of many International Research Committees in AI and Entertainment Computing, including IEEE MMTC IG: 3D Rendering, Processing and Communications (3DRPCIG), IEEE Task Force on Computational Intelligence in Video Games and IFIP WG 14.4 Games and Entertainment Computing.

Keynote 5:



Dr. Karan Singh received the Engineering degree (Computer Science & Engineering) from Kamala Nehru Institute of Technology, Sultanpur, UP, India and the M.Tech (Computer Science & Engineering) from Motilal Nehru National Institute of Technology UP, India. He is Ph.D. (Computer Science & Engineering) from MNNIT Allahabad deemed university. He worked at Gautam Buddha University since Jan 2010. Currently, he is working with School of Computer & Systems Sciences, Jawaharlal Nehru University, New Delhi. His primary research interests are in computer network, computer network security, Multicast communication and Software Define Network. He supervised many Master Degree students (M.Tech.). He is reviewer of IEEE & Elsevier conferences. He is reviewer of International Journals and IEEE Transaction. He is an Editorial Board Member of Journal of Communications and Network (CN), USA.

He published more than many research papers in journal and good conference. He organized the various workshop, Session, Conference and training. Dr. Singh worked as General Chair of international conference (Qshine) in year 2013 at Gautam Buddha University, India. Recently he is going to organize a workshop on "PYTHON". He nominated for Who's who in World in year 2008. Dr. Singh has been joined as Professional member of Association for Computing Machinery (ACM), New York, Computer Science Teachers Association (CSTA) U.S.A, Computer Society of India(CSI), Secunderabad, India, Cryptology Research Society of India (CRSI), Kolkata, India, Institute of Electrical and Electronics Engineers (IEEE), USA, International Association of Computer Science and Information Technology (IACSIT), Singapore, Institute for Computer Sciences, Social-Informatics and Telecommunications Engineering (ICST), America, International Association of Engineers (IAENG), Hong Kong, Association of Computer Electronics and Electrical Engineers (ACEEE), India, Internet Society(ISOC), USA and Academy & Industry Research Collaboration Center (AIRCC).

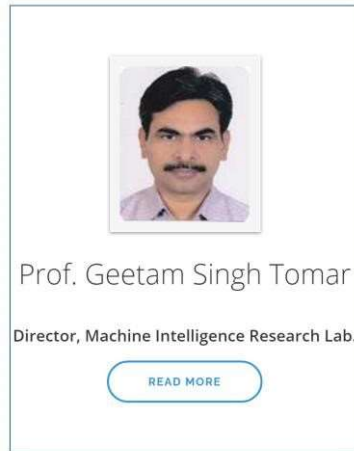
Keynote 6:



Dr. Naveen Chilamkurti is an acting head of Department of Computer Science and Information Technology in La Trobe University, Melbourne, Australia. He is an TECHNICAL EDITOR of IEEE WIRELESS COMMUNICATIONS MAGAZINE (Impact Factor= 6.524) and Associate Technical Editor of IEEE Communications Magazine (Impact Factor = 4.46). He is also serving as EDITOR-IN-CHIEF International Journal of Wireless Networks and Broadcasting Technologies (IJWNBT) (IGI-Global USA publication) and many more springer. Wiley and IEEE journal. He is also SENIOR MEMBER of International Electrical and Electronic Engineering (IEEE). He was general chair and co-chair in various global conferences like ISWPC-2009, 2011, 2012, 2013, ATNAC 2011, 2012, IEEE ICC 2014, IEEE SMARTGRIDCOMM 2013, IEEE IoT 2013, MUM 2014....and so on. He has published 180 Journal/conference papers including IEEE and ACM Transactions. He has supervised 40 students as of 2015 and 37 students graduated PhD, Masters and Honours program. He has received grant from many funding agency like National ICT Australia (NICTA), Department of Industry, Innovation Science, Research and Tertiary Education and so on. Major global publisher like Springer, IGI Global, Wiley, Nova Publications (USA) have published Book written by him.

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Keynote 7:



Prof. Geetam Singh Tomar (IEEE M' 2002), received his UG, PG, and Ph. D. degrees in electronics engineering from reputed universities of India. He is also Principal, Malwa Institute of Technology & Management, Gwalior, India and R&D Advisor, MPCT Group of Colleges, Gwalior. He is actively involved in research and consultancy in the field of Air Interface and Advanced communication networks. He is actively involved in IEEE activities and has organized more than 10 International conferences in India and other countries. He is a Visiting Professor in Hannam University Korea, Thapar University Patiala, and many other institutes of repute. He has served in IIITM and other Institutes of National Importance. He received International Pluto award for academic excellence in 2009 from Cambridge UK. He was listed in 100 top academicians of the world in 2009. Listed in who's who in the world for 2008, 2009 and 2010 continuously. He is chief editor of 5 International Journals and has published more than 100 research papers in international journals/conferences and has written 05 books, two of which are published by Springer Verlag, Germany. His emphasis is on spreading research activities in the pockets of India where research activities are at low level.

Abstract of Paper
Presented in ICGCET 2016

Paper	Abstract of Research Paper
Paper ID 24	<p data-bbox="370 436 1409 552">Impact of Different Climate of European Countries on Working and Power Dissipation of Electronics Circuits</p> <p data-bbox="337 562 1458 762">Diksha Singla^[1], Viren Singh Pathania^[2], Ayushi Chodha^[3], Bakshish Gill^[4] Gyancity Research Lab, Gurgaon, India singla145@gmail.com^[1], pathania.viren@gmail.com^[2], vinodabhinav@rediffmail.com^[3], bakshish_gill@yahoo.com^[4]</p> <p data-bbox="313 835 451 867">Abstract</p> <p data-bbox="313 882 1474 1413">Environment temperature plays a pivotal role in leakage power dissipation in any Electronic devices. We are performing an experiment by using a FPGA system and we have taken the temperatures of capitals of different countries and corresponding power dissipation of our electronic device under test. When there is increase in temperature due to global warming and other conditions then more supply power is needed due to which there is depletion in resources. In the other words, if there is increase in temperature then we need to provide more supply power because leakage power is directly proportional to ambient temperature. We can think to regulate temperature of environment with cooling system in order to reduce power dissipation of any electronic device in operation.</p> <p data-bbox="313 1518 1474 1612">Keywords: Impact of Different Climate, European Countries, Power Dissipation, Working of Electronics Circuits.</p>

ANDROID APPLICATION BASED MISHAP IDENTIFICATION AND WARNING SYSTEM

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Abstract

Speed is one of the key reasons for accident in vehicles. These over speed accidents could be avoided if emergency services could be able to get the information and take necessary actions in time. Now a day it is very hard to imagine our daily life without transportation. Every invention has some limitation and so with the transportation. With the increase in the population the numbers of vehicles also increase on roads and highways to meet the necessity of travelling. And hence with the increase in vehicles, traffic jams and accidents are also increasing. So we need to develop a system, which can help the public in such situations and can reduce the risk of mishap. Today, remote development has tilted the chances for achievement more than ever. This paper insight about mishap of car crisis ready circumstance.

Keywords: GPS, GSM, AT commands, ARM7 microcontrollers, Android Studio Interface.

Power Line Communication

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Abstract

Power line correspondence is a progressive thought that phone correspondence is moved on another establishment. Power line correspondence (PLC) is one of the advancements that have shown accommodating for control applications. It is broadly use in home robotization, car and web access applications. Power Company have been worked the robotization framework for transferring and supervisory controls by utilizing open correspondence system. Be that as it may, these frameworks must have the strictest necessities of correspondence. Thus, there are great deals of troubles to apply to the Automation System considering the cost, area environment, and different attributes of electrical cables. Be that as it may, as of late, the current electrical cable can be utilized as correspondence media by utilizing Power Line Communication (PLC). PLC can be embraced as a primary correspondence implies, and other wired/remote can be received as second means. With a specific end goal to this, the high voltage PLC must be utilized as a long separation correspondence system.

Keyword: PCL, filter, noise, modulator, demodulator.

Performance improvement in lifetime and throughput of LEACH protocol

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Abstract

Wireless Sensor Networks (WSNs) are proving themselves as vital part of technology advancements. A WSN comprises of multiple sensor nodes and a base station as a sink node (i.e., for data communication). We propose a modified algorithm to improve the performance and lifetime. Sensor nodes are battery powered and placed over remote locations to analyze data. Therefore, the usage of battery affects the whole network lifetime. Communication methods between nodes and base station are based on various protocols. Among all protocols, clustering protocols are considered the best protocol so far (lifetime and throughput performance). Lifetime and throughput are crucial parameters of a network. In this paper, the critical parameters of a WSN protocol low energy adaptive clustering hierarchal (LEACH) are improved using the proposed algorithm. Simulation results of the proposed scheme for the network lifetime and throughput are compared with original LEACH protocol. We achieve better performance as compared to the conventional technique with less computational complexity and better lifetime. Further improvement can be achieve if use some hybrid algorithm.

Keywords: Wireless sensor network (WSN); low energy adaptive clustering hierarchal (LEACH); cluster head (CH); threshold.

Leakage Power Reduction With Various IO Standards and Dynamic Voltage Scaling in Vedic Multiplier on Virtex-6 FPGA

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Abstract

The 8-bit design is able to process 256 times input combination in compare to 4-bit Vedic multiplier, using approximates 6 times basic elements, 2 times IO buffers, approximate 1.5 times total power dissipation. HSTL_I_12, SSTL18_I and LVCMOS12 are the most energy efficient IO standards in HSTL, SSTL and LVCMOS family respectively. Device static power and design static power are two types of static power dissipation. Device static power is also known as Leakage power when the device is on but not configured. Design static power is power dissipation when bit file of design is downloaded on FPGA but there is no switching activity. Design static power dissipation of 8-bit Vedic multiplier is almost double of design static power dissipation of 4-bit Vedic multiplier. Device static (leakage) power dissipation of 8-bit Vedic multiplier is almost equal to device static power dissipation of 4-bit Vedic multiplier on 40nm FPGA.

Keywords: Static Power Reduction, IO Standards, Vedic Multiplier, LVCMOS, HSTL, SSTL, Voltage Scaling.

Sixth Sense Junior

Chetan Arora [1], Hriday Goyal [2], Nikhil Arora [3], Gaurav Verma [4]

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Abstract

The Research paper deals with the several facet of image processing like color detection and some applications of it. It will enable you to make gestures with the help of RGBY colors. The colors are detected on the basis of a property named centroid. On the basis of the coordinates of the centroid, apply distance algorithm and get the distance. By varying the distance between the fingers, different gestures can be made which can perform various operations of today's digital world and also be applied to the industries.

Keywords : MATLAB, Sixth Sense, Augmented Reality, Gesture Recognition, Arduino, GUI.

Controlling Home Appliances in IOT Environment

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Abstract

With increasing technology and decreasing amount of time in everyone's lives, the luxury of home automation is being deeply valued. This paper will provide an efficient solution for a reliable, economical and user friendly home automation system. In this system we will be using Raspberry pi to connect to the home network through which we can access the home appliances from across the globe. PHP Script has been used for creation of web portal through which the user can provide the inputs for controlling the appliances. Python program has been used in Raspberry pi, which will turn devices on and off. Connection between PHP and Python has been maintained using My SQL Database.

Keywords: IOT, Raspberry pi, Web page, Database, Python and PHP, Relay controlled switchboard.

Evaluating the Issues and Challenges in Context of the Energy Crisis of Pakistan

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Abstract

Pakistan is an energy deficient country and the current power crisis of Pakistan is hampering its economic development. This article investigates the main causes that have led to the current power shortage of Pakistan. An overview is given to the major causes such as ineffective power policies, ineffective distribution system and tariff system that have led to the current power shortage in Pakistan. Additionally, the possible measures that can help to address these issues and help Pakistan overcome its power crisis are also presented.

Keywords: Energy Crisis; Hydel Energy; Electrical power energy; Energy crisis; Electricity generation.

Jib System Control of Industrial Robotic Three Degree of Freedom Crane Using a Hybrid Controller

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Abstract

Cranes are used to carry loads effectively. During movement, often-undesired fluctuations of lifted payload occur, which needs to be controlled. Control is the basic requirement for desired operation of crane. Objective is to control the trolley position and swing angle of payload. The continual flow requires an effective control methodology to achieve a high positioning control of the trolley carrying payload and suppression of swing angle of payload during operation. Optimal control techniques can be used to control these undesired vibrations. These techniques result in some undesired overshoot and undershoot causing the payload to swing prior to system getting stable. However if these techniques are combined with intelligent control techniques then a more stable system can be obtained. In this paper a hybrid controller called Neuro-optimal controller has been used to control the swing angle of lifted payload by controlling the trolley position. The proposed technique of using a hybrid controller has stabilized the system by reducing the overshoot, undershoot and settling time. The proposed technique is very useful in many industrial applications. Experimental analysis can further provide the insight and limitations of the proposed techniques.

Keywords: 3 Degree Of Freedom (3DOF), Linear Quadratic Regulator Controller (LQR), Artificial Neural Network (ANN), Algebraic Riccati Equation (ARE), Neural Network Predictive Controller (NNPC), Back Propagation (BP).

Effect of Project Management Practices on Project Success in Make-to-Order Manufacturing Organizations

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Abstract

Engineering organizations operating on Make-to-Order projects have a specific work environment where an integration of manufacturing practices with the project management practices is needed for project success. The aim of this research is to analyse the Project Management Practices. Engineering organizations operating on Make-to-Order projects have a specific work environment where an integration of manufacturing practices with the project management practices is needed for project success. The Project Management practices evaluated are Project Scope Management, Project HR Management, Project Communications Management, Project Stakeholder Management and Project Planning. The effect of these Project Management Practices is analysed on Project Success. Various statistical tools were employed to validate the hypotheses. The aim of this research is to analyse the Project Management Practices adopted by engineering organizations operating on Make-to-Order projects both for public sector and private sector manufacturing organizations of Pakistan. The proposed results provide realistic analysis and are quite different from previous research works.

Keywords: Project Management practices; Make-to-Order Manufacturing; Project Management Practices; Project Success.

Review of Fiducial and Non-Fiducial Techniques of Feature Extraction in ECG based Biometric systems

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Abstract

Biometric is a tool of measuring and statistically analyzing biological data. Due to advancement in technology, spoofing attacks and credential forgery are becoming very common issues of modern societies. Over the last decade, the electrocardiogram (ECG) is known as an emerging biometric instrument for individual identification and verification as the ECG varies among people because of their diverse anatomy of the heart. At present ECG is a popular research topic in the area of physiological biometrics. The greater part of ECG biometric literature employs fiducially based features, resulting from spikes, crest and temporal marker of ECG signal. The main focus of this review is to provide scientific analysis and comparison between fiducial and non-fiducial techniques of feature extraction especially in terms of efficiency in large and small datasets. It also provides a key manifestation of future research perspectives in the field of ECG based biometrics. The proposed review can be useful in further research in the same area.

Keywords: Biometrics, ECG, Fiducial, Non-Fiducial, QRS-Complex.

Design and Analysis of a Three Level Neutral Point Clamped Fuel Cell Based Grid Connected Inverter

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Abstract

This paper presents the design and analysis of a three level neutral point clamped grid-connected inverter using fuel cell as a green energy source. Three different controllers that is a boost dc to dc converter, a power controller and a current controller were being modeled and simulated on matlab. The system was being investigated using a PI controller and a sliding mode controller. Simulation results show that the sliding mode controller shows a superior performance of the active power control and the voltage regulation capability as compared to a simple PI controller under voltage sag conditions.

Keywords: Distributed Power Generation; Fuel cells; Pulse Width Modulated Inverters; Power Control; Power Demand.

Energy Efficient Design of 100Gb/s Optical DPSK Transmitter Design Using UltraScale FPGA

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Abstract-

Information and communication technology (ICT) is growing rapidly, and ICT devices are consuming plenty of energy, for communication systems. In Gb/s transmission system high range and high- speed optical transmitter requires high power for transmitting information at long distance. The existing techniques are consuming vast amount of power, exhibits heating effect, and leakage power problems for optical transmitter of 40 Gb/s or more. In this work, an energy efficient 100Gb/s optical DPSK transmitter is designed using UltraScale Field Programming Gate Array (FPGA). The design is realized by controlling the impedance of 100Gb/s optical DPSK transmitter using Digitally Controlled Impedance (DCI) IO (Input/Output) Standards available on UltraScale FPGA. It is determined that 80% power is reduced using designed 100Gb/s optical DPSK transmitter, for 100 GHz, 300 GHz, 900 GHz and 12 THz using High Speed Low Voltage DCI (HSLVDCI_15) IO Standard compared to optical transmitter design without IO Standard. Furthermore, using designed system 90% leakage power is also reduced. The designed energy efficient optical transmitter can be interfaced with other optical components, to provide the green optical communication.

Keywords: Differential Phase Shift Keying (DPSK), Energy efficient, Field Programming Gate Array, Laser signal, Non-Return-to-Zero modulation, Optical transmitter.

Impact of Different Climate of European Countries on Working and Power Dissipation of Electronics Circuits

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Abstract

Environment temperature plays a pivotal role in leakage power dissipation in any Electronic devices. We are performing an experiment by using a FPGA system and we have taken the temperatures of capitals of different countries and corresponding power dissipation of our electronic device under test. When there is increase in temperature due to global warming and other conditions then more supply power is needed due to which there is a depletion in resources. In the other words, if there is increase in temperature then we need to provide more supply power because leakage power is directly proportional to ambient temperature. We can think to regulate temperature of environment with cooling system in order to reduce power dissipation of any electronic device in operation.

Keywords: Impact of Different Climate, European Countries, Power Dissipation, Working of Electronics Circuits

Advancement in Engineering Technology: A Novel Perspective

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Abstract

In this paper we will be discussing about the impact of technology on our daily lives. How everybody is dependent upon technology in one or other way. Technology has played a significant role in the evolution of the society. Science has produced many new ideas but to harvest those ideas, technology is a must. With the huge requirement of engineering equipment's, the industry needs specialists who can manage and operate these technologies. Detailed information about the merits and demerits of technology is also mentioned in this paper. Technology has affected the environment on a great scale; in some cases technology is even replacing human being or use of manpower. So proper counter measures have been mentioned, which can be used to control and limit harmful effect.

Keywords: Engineering, Advanced Technology, 3 R's, E-waste, Computation.

Design of Low Power Digital Clock on FPGA using Different IO Standards

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Abstract

This paper analyzes the power of a digital clock with the help of Xilinx ISE V-14.2 and executing it on virtex-6 FPGA and Spartan 3E FPGA. On FPGA we use Verilog HDL to synthesize the clock where the targeted device is FPGA. Analysis of different IO Standard on Xilinx software depicts the least power consumption for 2 different frequencies. With the results portrayed in the paper we get a combination of perfect low power consuming IC design. Xilinx XPower analyzer has been used to analyze the power consumption of digital clock based on FPGA. Further power utilization using different IO standards at different frequency has been decreased effectively. The device when operating at 50 Mega Hertz and 100 Mega Hertz frequencies the reduction of power is attained. This low power consuming IC design will be useful wherever digital clock is used and energy efficiency is to be attained

Keywords: Low Power Design, Energy Efficiency, Power Consumption, IO standards FPGA

Self-organized HGBBDSA Approach for the Power Allocation in OFDMA-based Heterogeneous Network

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Abstract

This paper studied the power allocation and downlink interference issues in orthogonal frequency-division multiple-access (OFDMA) system to mitigate the interference issues. In Orthogonal Frequency Division Multiplexing Access (OFDMA) frameworks, resource allotment to the subcarrier is crucial attributable to the deficient assets accessible at the base station. In OFDMA, subcarrier and power distribution are not separate, along with these lines this two portion are not self-overseeing. This paper examines the power allocation approach through exploring the HGBBDSA approach. The integration of GA with Biogeography Based Optimization algorithm benchmarked over the Particle Swarm Optimization (PSO). The both of the algorithms cross usefulness is evaluated and looked at the exhibitions in Heterogeneous Network (HetNet).

Keywords: OFDMA; Heterogeneous Network; LTE-A; HeNodeB.

Improvement in ECG based Biometric Systems using Wavelet Packet Decomposition (WPD) Algorithm

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Abstract

In this paper, a non-fiducial approach based on wavelet packet decomposition (WPD) for automatic analysis of single lead electrocardiogram (ECG) for human identification is proposed and evaluated. Multiple samples of ECG wave are extracted considering R-peak as a reference and WPD algorithm is applied for feature extraction. This feature file is fed as an input to a machine learning classifier i.e. random forest in order to classify the individuals. In this work, records from publicly available MIT/BIH arrhythmia dataset have been used to train and test the proposed system. It is observed that best result relies on third level of wavelet decomposition using Daubechies wavelet to analyze the signal. Furthermore ranker search method is used in conjunction with relief attribute evaluator for feature selection and random forest classifier is applied by generating 100 trees. It is shown that the method is effective for quantifying the classification of arrhythmia ECG signals with accuracy of 92.62%.

Keywords: Biometrics, ECG, MIT-BIH arrhythmia database, wavelet packet decomposition, random forest.

Studying the Open System Interconnection Model and Proposing the Concept of Layer Zero

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Abstract

The background objective of this research paper is to break a predefined networking model so that it is studied in greater depth and open new portals of improvements for the coming generations. Since this research work is more of a theoretical approach therefore there is no sample testing involved but it proposes to add something in the predefined technique, which is being used to make networking structure. The mainly used devices are available ordinarily in the combination with other amount of hardware; actually the devices mentioned here are embedded within the circuitry of other devices. It has been found that after implantation of the addition proposed there would be more ease in understanding the hierarchical structures of networking. A separate division of the networking branch is made for the digital electronics by doing so. Also a layer is bifurcated leading to ease the way things were approach. There is a greater chance of improvement in what has been accomplished, like by changing a device with more efficient device could be lead to great innovations.

Keywords: Open System interconnection, networking, flips flops, bit streams, client server model

Efficient Digital Clock Design and Implementation Based On SPARTAN-6 FPGA Using SSTL I/O Standard.

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Abstract:

Today digital clocks are rapidly taking the place of analogue clocks. For the same reason the objective is to make energy efficient digital clock for saving the energy consumed. Implementation and simulation of code is done in Xilinx ISE Design Suite 12.1. The power consumption of clock is tested for different SSTL I/O Standard like SSTL2_I, STTL2_II, SSTL15_II and SSTL18_II at different frequency range from 0.01 GHz to 100GHz. Savings in Clock, Logic, Signals, I/Os, Leakage and total power are calculated by frequency scaling. Doing so reduction in total power consumed is calculated and data is also plotted graphically.

Keywords: Digital Clock, Power, Frequency Scaling, I/O Standard, FPGA

Daily Activity Monitoring of an Elderly Person for Determining Their Wellness

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Abstract

The work carried out in this paper aims to present a model based on elderly's daily activities to determine their wellness status. A wellness function is delineated to estimate the health condition of the aged individuals while carrying out their day-to-day routine. The proposed model can also be used to monitor the mobility parameters, such as entry and exit of room and bed occupancy of an elderly. Simple sensors such as capacitive sensors are equipped into their homes to monitor their behavior and identify their daily activities via noncontact means. The device will allow extracting daily behavioral patterns of the elderly person.

Thus the device will help in providing information to build behavioral model of the person, which can foresee the anomalies in their behavior. In case the elderly is distressed, an alarm can be sent to a receiver unit. The cost effectiveness of the device will ultimately lower the total cost of wellness monitoring of an elderly person. A prototype of the device can be fabricated and broadly tested for extracting precise results.

Keywords: Elderly care, home monitoring, daily activities, wellness, capacitive sensor.

Quantitative Frequency Security Assessment for Multi-Machine Power System Based on COI frequency

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Abstract

The frequency is one of the instruments for measuring the health status of the power system, due to its ability to anticipate any imbalance between generations and loads. If the generated power is adequate for the system load and losses, then, the system will be in a steady state, otherwise frequency deviates from nominal value due to the mismatch between the generation and load. If the frequency continues to deviate from nominal value, the system may collapse. The assessment of frequency stability level becomes an essential aspect of power system operation and also for projecting the ability of the power system to maintain nominal frequency when subjected to any disturbance. In this paper, a method is proposed to evaluate frequency security of multimachine power system using transient frequency deviation index (TFDI) which is based on center of inertia (COI) referred frequency. The proposed method has been tested on the New England 39-bus test system. Results show that the proposed method takes the advantage of TFDI in accumulating the effect of frequency trajectory deviations.

Keywords: Transient frequency deviation index, COI frequency, frequency stability assessment, quantitative security assessment.

Design and Analysis of Second Order Passive Filters for Grid Connected Inverter with Series and Parallel Damping Resistors

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Abstract

Grid connected inverters are widely used to integrate renewable sources into the grid. The suitable power quality is required which can be either achieved using active or passive filters. This paper focuses on second order passive filters such as inductor capacitor (LC) and LC inductor (LCL) which can be used to attenuate harmonics for grid connect inverters. To overcome the resonance of LCL filters passive damping [6-8]. or active damping can be used. Active power filters are more expensive because of sensors and control systems additional cost. Passive damping strategies due to simple circuit and low cost are more favored. A LCL filter equipped with series or parallel resistor with a capacitor forms a LCL filter with damped resistor Addition of resistor to filter circuit will cause an increase in power losses. The peak resonance of LCL filter depends upon the value of resistor so select a value of resistor which decline peak resonance of filter. At resonance frequency they have some issues related to stability. LCL filter can be equipped with damping resistor but there are some power loss and introduction of voltage, current harmonic.

Keywords: Grid voltage (U_g), Inverter voltage (U_{Inv}), Inductor (L), Capacitor (C).

Design and Development of Optimal Control System for Quad Copter UAV

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Abstract

Design and development of an optimal control system for a quadcopter unmanned aerial vehicle (UAV). The 6DOF quad copter state-space models was used for Linear Quadratic Regulator (LQR) and Linear Quadratic Gaussian (LQG) simulations in MATLAB/Simulink. The simulations produced satisfactory results, which have been presented. A comparison between Low Pass Filter (LPF) and Kalman filter is also shown which shows that LQR is useless in presence of noise hence LQG was employed in such a situation. The optimal control system for quadcopter was successfully developed, which can be practically implemented on an actual quadcopter for stable unmanned flight of the aerial vehicle.

Keywords: UAV, Quad-Copter, Control, LQR, LQG, LPF, DOF, GPS.

Detection of Sleep Spindles in Sleep EEG by Using the PSD Methods

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Abstract

In this study, Fast Fourier Transform (FFT), Welch, Autoregressive (AR) and MUSIC methods were implemented to detect sleep spindles (SSs) in electroencephalogram (EEG) signals by extracting features in frequency space. A database from these signals of five subjects which were recorded at sleep laboratory of Necmettin Erbakan University in Turkey was ready for use. The database consisted of 600 EEG epochs in total. The number of epochs was 300 for both with and without SSs in this database. Comparison of the performances of these methods on SS determination process was performed by using Artificial Neural Networks (ANN) classifier. According to the test classification results, notable difference was obtained between the applied PSD methods. By using the extracted all features, maximum test classification accuracies were achieved as 84.83%, 80.67%, 80.83% and 80.33% with use of FFT, Welch, AR and MUSIC, respectively. To determine the SSs, principal component analysis (PCA) also was utilized in this study. When PCA was applied, the results were 89.50%, 82.00%, 93.00% and 94.83% by use of the same PSD methods, respectively.

Keywords: AR, EEG, FFT, MUSIC, sleep spindle, welch.

Effect of EEG Time Domain Features on the Classification of Sleep Stages

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Abstract

Studies on the field of automatic sleep stage classification have been taking more attention of researchers day by day. Noise in the recordings, nonlinear dynamic feature of EEG signals and some other reasons affect the performance of proposed systems in negative manner. Sleep can be divided five main stages as Wake, NonREM1, Non-REM2, Non-REM3 and REM. Almost every proposed method can successfully classify some evident stages like Non-REM2 and REM. But when it comes to the transitions between stages, the systems are not very good in their performances. Thus a different classification strategy was proposed in this study. Five different classifiers were designed especially for transitions between stages using time domain features of EEG, EOG and EMG signals and evaluated these features for each classifier. Sequential backward feature selection process was applied in each classifier to find out which features are dominant in each classification procedure. Artificial Neural Networks was used in designed classifiers. The highest classification accuracy was obtained as 91.03% for Classifier-3 which predicts stages coming after Non-REM II.

Keywords: ANN, Automatic sleep stage classification, EEG, EMG, EOG, feature selection.

Stability Analysis of Sitr Model and Non Linear Dynamics in Wireless Sensor Network

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Abstract

Security is one of the essential concerns in wireless sensor network. To find the stability points when worms appears in the wireless sensor network. By using ODE formulate the Sitr model for wireless sensor network. Find the existence of positive equilibrium and perform the stability test with the help of Jacobian matrix. Some theorems are proposed for the analysis of model. The model explains that some infected individuals should move from treated phase to recovered phase even after applying the protection mechanism. The entire dynamics of the transmission of worms can be analyzed by this mathematical model; propagating feat by worms in WSN can be determined by the value R_0 basic reproduction number. Simulation has performed using MATLAB of the proposed model. This shows the validity of propped model.

Keywords: Wireless Sensor network, worms, epidemic model, Stability, Equilibrium.

AN APPRAISAL OF THE ADVANCEMENT OF EMERGING TECHNOLOGIES IN HEARING AIDS

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Abstract

To shed light on the history of development of hearing aid, along with the various pros and cons of each developed technological solution. A historical survey has been conducted, which highlights some of the more renowned and widely deployed hearing aids within the market. The different types of hearing losses and the varying degree of assistance provided by the different technological solutions have been discussed. Over the years, the overall accuracy as well as practicality of the hearing aids have improved, ranging from cumbersome and heavy hearing aids in the early 1960-1970s to the portable and wearable ones available in the market at present. Technological innovation is spearheading massive improvement within the hearing aids. Some of the key features causing these changes include wireless technology, frequency lowering, directional microphones and digital noise reduction algorithms.

Keywords: Ear trumpets, hearing aid, digital signal processing (DSP), directional microphones, digital noise reduction, frequency lowering.

Implementaion of High performance Home Automation Using Arduino

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Abstract

In this day and age we individuals are such a great amount of occupied in our lives that we have to control some of our undertakings naturally. Some time we don't recall to switch of the lights and other electronic apparatuses in our homes. This prompts increment in our power bills and additionally wastage of force. To take care of this issue the work is done to control the gadgets in our home with cellular telephones and PCs. This prompts a mechanized home whose gadgets can be controlled consequently if there is any action saw for the same. The work is likewise done to distinguish any sort of action in the house for wellbeing reason like fire alerts for identifying fire and fan for stickiness in the house. Arduino Uno, PIR sensor, LM35 and IR Led are utilized as primary segments. Interfacing of parts with Arduino and afterward with MATLAB and XAMP is finished.

Keywords: Arduino Uno, MATLAB, PIR sensor, XAMP, Safety, Automation

Detection of REM in Sleep EOG Signals

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Abstract

Sleep staging is very important phase for diagnosing respiration and sleep diseases. Nowadays, Electroencephalogram (EEG), Electromyogram (EMG), Electrooculogram (EOG) signals are particularly used together in studies on sleep staging. Associating only EOG signals to sleep staging was distinctly purposed. So, this paper deals with extraction features and classifying for determining REM-NREM states from the EOG signals. In this study, left eye (LEOG) and the right eye (REOG) signals were used. After EOG signals were obtained, 21 different features were extracted from LEOG and REOG in time and frequency domain according to rules of American Academy of Sleep Medicine (AASM). Artificial neural networks (ANN) was adopted on features as method of classification with 3-fold cross validation technique and reached conclusion with the maximum test classification accuracy as 88.05%. To obtain higher classification accuracies, Sequential Backward Selection (SBS) method was used.

Keywords: Artificial neural networks, EOG, feature selection, SBS, sleep stage.

Refining Ku-Band Rain Attenuation Prediction using Local Parameters in Tropics

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Abstract

Researches disclosed rain attenuation prediction models offered by ITU-R severely underestimate the signal attenuation in tropical region. Improvement can be accomplished by incorporating three in-situ parameters of prediction models. The locally derived components are rainfall rate, rain height and specific attenuation coefficients. Beacon signal data for MEASAT-I satellite were sampled for one year. Sampling time of 1 minute was chosen for rainfall rate. Both attenuation and rainfall rate were represented in terms of annual cumulative distribution. Rain height data were gathered from related researches and visually compared with radar data of 10 convective and 30 stratiform rain events. In previous works, these components were treated separately. By combining all three components, rain attenuation prediction model with distinctive accuracy can be acquired compared to the previous results. All previous and current works exhibited significant improvement from the latest ITU-R P.618 revision 12 model.

Keywords: Rain Attenuation, Ku-band, Tropical, Satellite, ITU-R

Exploitation of Radio Direction Finder in the design of a UHF Transmitter Locator System

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Abstract

This paper outlines how the direction finder technology was exploited in the design of a device; capable of locating the where about of a UHF transmitter. The value of amplitude and frequency of the signal were employed in the determination of the signal source direction. The study emphasized on the utilization of low cost components. The assembled prototype offers 22.5° bearing coverage. The determination of the direction was achieved by differentiating the received frequency signal involving multiple antenna arrays. Direction of transmitter was determined by making the receiver antenna arrays emulating condition of motion with the use of antenna switcher. Received signals were converted into tones where larger signal amplitude translates to louder tone. Antenna arrays were arranged in specific manner where the tone volumes were compared and the direction within 360° position was determined. The result suggests that the system can provide the detection coverage's up to 22.5 degree, which is better than the existing solutions in terms of equipment selection, cost, and coverage.

Keywords: RDF, Antenna Switcher, Direction Finder Technology, Pseudo Doppler Technique.

Development of a Rainfall Rate Monitoring System for Malaysia

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Abstract

Floods are one of the major disasters occurring all over the world, including Malaysia. It can lead to destruction of facilities, infrastructures as well as properties. Minimizing the risk of hazards and loss can be achieved by implementing several measures. Motivated from one of the biggest flood disasters ever occurred in the country, this monitoring system is developed as a means to reduce the risk of loss and damages. Monitoring rainfall rate may assist the community as it can provide early flood forecasting even though it cannot fully prevent the flood. Besides, it can give additional information on the probability of landslide occurrences. This paper presents the development of useful and reliable rainfall rate monitoring system for online hydrological stations in Kelantan. The whole processes in the development of this first prototype are conducted and performed using open-source software and tools such as Visual Basic and Quantum GIS (QGIS).

Keywords: Flood, Rain Gauge, Rainfall Rate, Real-time Monitoring.

Development of a River Basin Monitoring System for Malaysia

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Abstract

Flood is a natural disaster that can destroy and damage a lot of properties, infrastructures, facilities, homes, vehicles and can even cause loss of lives. To minimize the hazard risk and loss due to the floods, intensive measures have to be considered. Monitoring any drastic changes in water level or river stage at river basin may not prevent the flood, but this measure benefits the community as early prediction of flood can be done before the water reaches the general population. This paper discusses the development of an informative and interactive river basin monitoring system for online hydrological stations in Kelantan, Malaysia. The first trial version has been assembled using Visual Basic.

Keywords: Flood, Real-time Monitoring, River Basin, River Stage.

Non-Intrusive Monitoring of Elderly People in a Room Environment

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Abstract

The aim of this work is the development of a non-intrusive monitoring system for monitoring the elder people. With the rapid growth of number of elderly people in the world, an increasing need has arisen to provide physical security to these isolated elderly individuals. Researchers have been working towards monitoring such smart systems for past decades. However, the needs of elderly people and their families are yet to be fulfilled, especially since the developed existing systems need their users to change their lifestyles. This work aims at creating a monitoring system for the elderly people staying at bedroom. The sensors being chosen can measure the sleep pattern, presence detection control lighting devices and water flow sensors. This particular sensor was chosen as a result of its ease of integration, cost-effectiveness, and reliability. The proposed work has been demonstrated in the form of sensor-embedded on specific places in the room. An alarm system has also been integrated in the room to enable the elderly to call for help during an emergency. Bed sensors are installed under the bed sheets to detect the sleeping patterns of the elderly.

Keywords: elderly monitoring, bed sensor, lighting devices, microcontroller

Discovering Weighted Calendar-Based Temporal Relationship Rules using Frequent Pattern Tree

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Abstract

The advent of data mining approach has brought many fascinating situations and several challenges to database community. The objective of data mining is to explore the unseen patterns in data, which are valid, novel, potentially subsidiary and ultimately understandable. The authorize and real-time transactional databases often show temporal feature and time validity life span. Utilizing temporal relationship rule mining one may determine unusual relationship rules regarding different time-intervals. Some relationship rules may hold, through some intervals while not others and this may lead to subsidiary information. Using calendar mined patterns has already been projected by researchers to confine the time-validity relationships. However, when we consider the weight factor like utility of item in transactions and if we incorporate this weight factor in our model to mine then fascinating results of relationships come on time-variant data. This manuscript propose a narrative procedure to find relationship rule on time-variant-weighted data utilizing frequent pattern tree-hierarchical structures which give us a consequential benefit in expressions of time and memory-recollection utilization though including time and weight factor.

Keywords: Data-Mining Temporal Association Rule-Mining Temporal Data-Mining Weight-carrying Transaction Time-Weight-carry Mining Temporal-weighted Relationship Rules.

Design of a Wide Range Hamming Distance Search Circuit Using Neuron CMOS Inverters

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Abstract

Recently, pattern recognition technologies such as character recognition and finger print recognition are used in various fields. Accordingly, the retrieval technology is becoming important to retrieve the most similar data from a huge database. However, the real-time search is difficult for a software approach, because a digital computer must compare the called data sequentially. To solve this problem, an associative memory has been studied in order to retrieve the reference data which is the most similar to an input data. The associative memory is one of functional memories which are capable of high-speed retrieving for the most similar data by operating parallel. Human brain can retrieve the most similar data to the input data instantly, because it processes information parallel. Accordingly we have focused a neuron CMOS inverter which has characteristics of the brain neuron.

Keywords: Hamming distance, associative memory, neuron CMOS inverter, time domain.

An Ingenious Multiple Communicator Concept for Next Generation Smart Metering Communication System

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Abstract

In this article, we propose and study a self-switching network concept known as an ingenious multiple communicator mechanism which can be applied to energy provider's smart metering device. We outline reasons why such multiple connections networks are required through real case study scenarios and key components that drive towards such concept. We have gathered actual measurement values for a particular network and identified in what situation this is most suitable and applicable. We have come out with the basic system model for this multiple communicator. We also observed that a less fluctuating and similar pattern of network performance helps to design better network predictive analytics function. Finally numerical examples and analysis of the results are presented.

Keywords: Cognitive selection mechanism, smart meter, smart home, advanced metering infrastructure, multiple broadband.

Investigation of Enhanced Particle Swarm Optimization Algorithm for the OFDMA Interference Management in Heterogeneous Network

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Abstract

In orthogonal frequency division multiplexing Access (OFDMA) systems resource allocation to the subcarrier is essential owing to the insufficient resources available at the base station. In OFDMA, subcarrier and power allocation are not separate; thereby this two allocation are not self-governing. This paper proposes the subcarrier allocation approach through investigating previous methods, and also the Enhanced Particle Swarm Optimization (PSO) algorithm is analyzed. The both of the algorithms cross functionality is analyzed and compared the performance of the subcarrier allocation of OFDMA systems in Heterogeneous Network (HetNet). The simulation results show that the PSO approach efficiently allocates the OFDMA subcarriers.

Keywords: OFDMA; Particle Swarm Optimization; Heterogeneous Network

Analyses of Cloud Characteristic During Malaysian 2014 Flood Event

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Abstract

Floods refers to the condition of great overflow of water over a dry land. In Malaysia, monsoon flood which caused by the heavy rain in monsoon seasons regularly hits the country. A criteria of the cloud based on horizontal and vertical profile of radar reflectivity have been analyzed in this paper to estimate flood event. The values of the thickness and the size of the cloud are estimated from the analysis. In this paper, we analyze the river basin data and radar data in the duration of flooding time, T for the specific area covered by meteorological radar and rain gauge data. The procedure was applied to 14 days precipitation phenomenon observed in Kota Bharu, Kelantan (Malaysia) from 13 December 2014 until 26 December 2014. The objective of this paper is to analyse the distinctiveness of the cloud during flood events. The results shows that during the critical time of flood disaster, the cloud shows largest size of 13070.6 km² and the thickness appeared to be the largest at almost 10.2 km during the beginning of the rain fall. The analysis helps us to understand the cloud characteristics hence in future flood estimation model can be constructed and modelled.

Keywords: Radar, Flood Model, Flood Estimation Model, RHI and CAPPI.

Analyses of Rainfall Rate During Malaysian 2014 Flood Event

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Abstract

An analysis based on rainfall rate characteristics has been carried out to estimate flood occurrence. In this paper, we analyzed the rain gauge data for 5 different rain gauge stations. 14 days acquired data covering events before, during and after the flood tragedy in Malaysia. The analysis of the rain gauge data was processed on precipitation phenomena observed in year 2014 in Kota Bharu, Kelantan (Malaysia) from 13 December until 26 December. The data was acquired from the Malaysian Drainage and Irrigation Department (DID). The objective of the research is to derive the tropical flood estimation model using rain gauge data in Malaysia. Among the preliminary result shows that the average rainfall rate at kota bharu is 204.5 mm/hr. during the flood tragedy.

Keywords: Rainfall Rate, Flood Model and Flood Estimation Model.

Comparative Analysis of Dynamic Path Maintenance Routing Protocols for Mobile Ad-Hoc Networks

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Abstract

The purpose of the paper is to compare the various protocols of different categories in Mobile Adhoc Networks (MANETs). The wireless networks are promising as future technology, which will be going to be the highest demanded source of communication. MANETs is one of the wireless technologies which make use of intermediate nodes in order to transport the data from the starting place to destination. All the transitional joints operate as a router, which can decide the path for the movement of the data packets. This paper helps us in revising the available technologies on the basis of various parameters illustrated in the last section of the paper. A healthy comparison is made between AODV, DSR, DSDV, TORA, CGSR, WRP and ZRP on the basis of various parameters. These algorithms are compared in an exhaustive way in section 7 by considering 16 parameters like time complexity, communication complexity, advantages and disadvantages etc. as can see in table 2. After in-depth knowledge, one can easily apply these protocols in various applications like military rescue, Pocket switched networks, and personal application networks etc. according

Keywords: MANET, AODV, DSR, DSDV, WRP, TORA, ZRP, CGSR. to their characteristics.

Improvement in Stability of HVDC System by Optimizing PI Control Parameters in PSCAD

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Abstract

The stability of High-Voltage Direct Current (HVDC) system is improved by optimization of system's control parameters. The simulation model of HVDC network is designed in Power Systems Computer Aided Design (PSCAD) and the Proportional Integral (PI) parameters optimization are achieved by using simplex algorithm. Simulation based evaluation of Integral Time Absolute Error - Objective function (ITAE-OF) is implemented in this paper. Simulation calculation results are iterated to determine the new values of objective function. The model of three parallel HVDC lines connecting Power system of Central-East China is used as a test network. PI control parameters of San-Chang ± 500 KV HVDC system line are optimized. Optimized results have been achieved by evaluating ITAE-OF using transient simulation and converged via Simplex algorithm in PSCAD. The performance of system in steady state behavior as well as in fault condition is improved through optimized control parameters as compared to the initial control parameters, which are presented by plotting graphs. The derived equation can be further optimized using the hybrid system.

Keywords: HVDC, Simplex Algorithm, Optimization, Objective Function, PI controller.

Energy Efficient ECG Machine Design on FPGA using Capacitance Scaling Technique

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Abstract

In medical sciences and particular in cardiology related area, ECG machine is considered a basic equipment to get the fundamental knowledge about proper functioning of heart. In this work the aim is to make energy efficient ECG machine design on FPGA using capacitance scaling technique while the device is operating under various WLAN specific frequencies. Concept of internet of things is used in this work by adding additional 128-bit IPv6 address in the input of ECG machine that will use to control the device via internet. Kintex-7 is used from the FPGA family for this task. It is analyzed that 89.15%, 89.75% and 89.81% power reduction can be achieved under device operating frequencies 0.9GHz, 2.4GHz and 3.6GHz respectively when the capacitance is taken 500pF in place of 5000pF.

Keywords: Internet of Things (IoT), ECG Machine , FPGA, Capacitance Scaling, Total Power.

Improvement in Stability of HVDC System by Optimizing PI Control Parameters in PSCAD

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Abstract

The stability of High-Voltage Direct Current (HVDC) system is improved by optimization of system's control parameters. The simulation model of HVDC network is designed in Power Systems Computer Aided Design (PSCAD) and the Proportional Integral (PI) parameters optimization are achieved by using simplex algorithm. Simulation based evaluation of Integral Time Absolute Error - Objective function (ITAE-OF) is implemented in this paper. Simulation calculation results are iterated to determine the new values of objective function. The model of three parallel HVDC lines connecting Power system of Central-East China is used as a test network. PI control parameters of San-Chang ± 500 KV HVDC system line are optimized. Optimized results have been achieved by evaluating ITAE-OF using transient simulation and converged via Simplex algorithm in PSCAD. The performance of system in steady state behavior as well as in fault condition is improved through optimized control parameters as compared to the initial control parameters, which are presented by plotting graphs. The derived equation can be further optimized using the hybrid system.

Keywords: HVDC, Simplex Algorithm, Optimization, Objective Function, PI controller.

Modal Analysis of Ship's Mast Structure Using Effective Mass Participation Factor

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Abstract

Each structure tends to vibrate at particular frequencies, called resonant or natural frequencies. When a structure is excited by dynamic load with frequency coinciding one of its natural frequencies the structure experiences stresses and large displacements. In this paper effective mass participation factor criterion is used to solve the vibration problem in the ship mast. The effective mass participation factor provides a measure of the energy contained within each resonant mode. Vibration problem originated when one of the antenna at top of mast was replaced by a new antenna with greater mass at same location. The overall mast structure started vibrating because of the resonance of natural frequencies of the mast structure with natural frequencies of rotary equipment. It caused interruption in sensitivity of equipment installed on the mast structure. Instead of fabricating the new mast structure, some alteration has been carried out on the basis of results obtained from modal analysis. The study is very effective to overcome the vibration problems in ship mast.

Keywords: Modal analysis, ship mast, effective mass participation, mode shape.

Second Generation Neural Network for Two Dimensional Problems

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Abstract

Neurocomputing in complex domain has yielded second generation neural networks. Complex value based neural network is a multi-layered neural network whose weights, biases, inputs and outputs are all complex numbers. It can be applied in the areas where inputs and outputs of the system need to be represented by complex values such as in signal processing, speech processing, learning and prediction of motion on plane etc. It has been also shown that the complex valued neural network can transform geometric figures, e.g. rotation, similarity transformation and parallel displacement of straight lines, circles etc. These transformation capabilities appears only by extending neural networks to complex domain. A number in complex domain is composed of two real numbers and phase information of any point on plane is naturally embedded in this number.

Keywords: Real Valued Neural Network, magnitude and phase, Complex valued neural network, activation functions, complex back-propagation, split activation function, Liouville's theorem, sigmoidal function, Cauchy-Riemann equation

Implementation of Server Handover for Live Streaming Application During High Traffic with Bitrate Adaptation

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Abstract

As the rate of internet users is increasing on a daily basis, a tremendous amount of these users are accessing online streaming websites and applications. This paper proposes a live streaming architecture that supports traffic balancing during peak times and bitrate adaptation. Rather than replicating content on multiple servers, we implemented traffic balancing by assigning a temporary regional server to manage the traffic at regional area. Bitrate adaptation at server side was also proposed and implemented to provide a fair video quality to all users. Through a few tests that has been run on the testbed, we can see the live video streaming was move seamlessly from one server to another server with an acceptable video quality among the users.

Keywords: traffic balancing, Live streaming, bitrate adaptation, Server handover.

Mechanical Properties, Material and Design of the Automobile Piston: An Ample Review

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Abstract

This paper is about the mechanical properties and shape of the automobile piston in the engine. Currently downsizing of the engine is attractive field for the research, which benefitted in the reduction of fuel consumption and emission pollutants from the engine. While on the other side various pressure boosters attached with the engine piston-cylinder to maintain the output power at the bar / more than the bar. These attachments cause to produce high stresses & displacement vectors in the piston-cylinder and the gas forces generated during the combustion cause to produce thermal stresses on the face of the piston, which sometime may leads to the failure of piston material. To withstand all these problems the material must be strong enough. Al-Si alloy is the main alloy material to manufacturing the piston because of low coefficient of thermal expansion; minimum weight, high hardness & strength and good wear resistance properties.

Keywords: Mechanical Properties, Casting Techniques, Hypereutectic Al-Si Piston alloy, Alloying Elements, Shape of the Piston.

Thermal Effect on the Automobile Piston: A Review

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Abstract

Mechanical and thermal properties of aluminum-based piston alloys are mainly depend on the heat treatment. Conventional heat treatment techniques are also not resulted to that level where it can be used for piston of downsized engine. Around 30 papers were reviewed to understand the thermal effects and consequences on the Al Si piston alloy. From the literature it can be understood that two-step solution treatment of the Al Si alloy resulted the good mechanical properties then the single step solution treatment. Heat treatment at 540 °C for 8 h and aging at 190 °C for 8 h is correctly choice to achieve optimum mechanical properties by heat treatment. To calculate the temperature effect and heat transfer to the engine piston crown, the spatial and time averaged combustion side boundary condition is a most favorable and suitable treatment method within engineering approximations. For temperature and thermal stress distributions for a coated surface piston crown, the coating surface temperature increased with coating thickness by decreasing rate and the best results are at 1mm coating. The coated piston has low thermal conductivity then the uncoated piston.

Keywords: Thermal effects, Heat Treatment, Mechanical Properties, Thermal Properties, Al-Si Piston Alloy.

Effect of Wind Energy Unit Availability on Power System Adequacy

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Abstract

Wind power has remarkable economic and environmental advantages when compared to other power generation sources. Presently, wind power is considered to be an essential alternative source for generating power. The growing pervasiveness of Wind Energy Conversion System (WECS) in power systems has a huge influence on the electrical system's reliability in relation to other conventional sources for power generation. If the variation in the speed of the wind of a specific site is significant, then, the power output from the wind turbine may get severely affected. The output power from the WECS may also get affected by the unavailability of wind generating units for a considerable period of time. The impact of wind turbine units on the reliability of power generating systems and operating reserves is explained in this paper, while considering wind power units that are frequently unavailable and for a considerable amount of time. The paper presents the impacts of the duration and frequency of failures of the wind turbine generators (WTGs) on the WECS output power. A Sequential Monte Carlo Simulation (SMCS) technique along with Frequency and Duration method shows it is effective for estimating the WECS output power, and the simulation was conducted on IEEE RTS-79 bus system.

Keywords: Wind Energy Conversion System, Generating Capacity Adequacy, Sequential Monte Carlo Simulation, Wind Power.

Evaluation of an Enhanced Multicast Data Flow Technique in Network Mobility

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Abstract

Mobile IPTV applications are becoming very popular worldwide. According to CISCO research, mobile Internet video usage is increasing rapidly each year and soon reaching zettabyte threshold in 2019. With the increase number of traffic, it is a great effort for internet service provider to provide acceptable network performance. The objective of this paper is to mathematically evaluate a new proposed mobile multicast technique to support high performance mobile IP traffic. The new technique enhanced multicast services in Network Mobility Management which is Proxy Mobile IPv6 (PMIPv6). The evaluation is done using mathematical equations that are derived from signaling call flow of the multicast process in the proposed technique. Results are analyzed and compared with the current base solution technique. Using mathematical analysis this paper validates and highlights the strengths of the proposed technique compared to the existing technique.

Keywords: Multicast, Mobile, PMIPv6, Mobility Management.

Monocular Vision-based Signer-Independent Pakistani Sign Language Recognition System using Supervised Learning

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Abstract

To construct a Pakistani sign language learning-based gesture recognition system with a reasonable rate of accuracy. Mention about test samples the control employed or approach used for comparing the test sample. The proposed system uses static images to extract local and global, region and boundary-based descriptors for acquiring gesture information, which is provided as input for supervised learning method known as Support Vector Machine (SVM). The purpose of this research is to formally introduce a practical learningbased PSL recognition system, which can lay the groundwork for future research pertaining to PSL. The proposed system was developed and the ten class supervised learning based system was able to achieve an accuracy of 83%. It is a preliminary work, which will be further improved to construct a real-time static and dynamic gesture based PSL system that is able to recognize words and sentences information.

Keywords: Gesture recognition, Sign language recognition. Support Vector Machines. Fourier Descriptors, Hu Moments.

Development of Fuzzy Logic Controllers for Controlling Bipedal Robot Locomotion on Uneven Terrains with IMU Feedbacks

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Abstract

Locomotion controller is an important and essential aspect for bipedal robots. Typically, a linear inverted pendulum model (LIPM) is a mathematical approach to generate the center of mass (CoM) trajectory of a bipedal robot. By combining the swing foot trajectory, the omni-directional walking command is capable of generating joint angle control commands in terms of inverse kinematics (IK). To improve bipedal locomotion stability on uneven terrain situations, an inertia measurement unit (IMU) was desired to place on the robot's chest was used to measure the body's tilt posture on uneven terrains. The robot body's tilt posture provided an indication of locomotion stability. The body's tilt posture information was further evaluated with a fuzzy logic controller (FLC) to generate appropriate offset angles to be applied on the corresponding joints so that the body's tilt posture can be adjusted accordingly to meet a stable situation. Finally, a kid-size bipedal robot, named HuroEvolutionJR, was used as the experiment platform. The proposed FLC can be applicable to the terrain conditions of maximum 25° slope in double support phased (DSP) stand cases.

Keywords: bipedal robots, fuzzy logic controller, inertia measurement unit, uneven terrain locomotion stability.

A Robust Model Predictive Control for Balancing of an Inverted Pendulum

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Abstract

This paper presents a methodology to design robust predictive controller for the balancing of an inverted pendulum. The inverted pendulum is one of the most difficult control problem in which the pendulum needs to be balanced against the cart, which moves only in two direction to the left or to the right. A new robust controller is designed to balance the pendulum and produces results which are more effective and fast A Model Predictive Control (MPC) and PID control strategies are applied for controlling the system equations of the inverted pendulum model and are analyzed and compared. The results of controllers implemented in MATLAB shows that both the strategies are able to control the system but robust model predictive control strategy gives better response as compared to conventional PID controller.

Keywords: Model Predictive Control (MPC), Proportional Integral Derivative (PID), Inverted Pendulum (IP), Controller.

Power Electronics Component Location and Heat Sink Length Optimization – Hybrid Electrical Vehicle (HEV)

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Abstract

Main components of Electric Vehicle (EV) inverter such as Insulated Gate Bipolar Transistors (IGBTs) and diodes are subtle to temperature and must operate below fixed temperature limits to function effectively. Currently there are high demands in reducing the size of the inverter to fit in limited space available in vehicles and also to increase the output. This paper focuses on optimizing best location of PE components with heat sink and optimizing the length of heat sink in order to reduce the overall temperature of a Hybrid Electrical Vehicle (HEV) inverter. The heat transfer model of IGBTs and diodes was modelled in MATLAB environment. The model was enhanced to incorporate heat sink model, which was developed based on commercially available heat sink. Simulated annealing optimization method was used for both the optimization. Applying component location and heat sink length optimization, initial maximum temperature of inverter is reduced from 131.616°C to 126.979°C. Further, total heat sink length was also reduced from 48cm to 32.1cm. length optimization, MATLAB.

Keywords: Hybrid Electrical Vehicle (HEV), Inverter, Power electronic, placement Optimization, heat sink

Mechanical Behavior of Ultra Violet (UV) Curable Renewable Polymer/ Graphite (PG)

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Abstract

Renewable polymer/ graphite (PG) films were prepared by casting film solution on square container and cured to ultraviolet (UV) irradiation at different time exposure (0, 250, 500 and 750 hours) was applied. The influence of graphite (as filler) content (neat, 10 wt. %, 20 wt. % and 30 wt. %) on the mechanical behavior of resulting PGs films with prolonged UV irradiation exposure were investigated. Based on observations, different UV exposure time yield PG with varying tensile strength, modulus and elongation at break. However, the mechanical behavior of PGs gives plateau series due to chemical crosslink and chain scissions that is shown in infrared spectra (FTIR) of the films. The system indicates that the mechanical behavior can be tailored based on requirements of an application.

Keywords: We would like to encourage you to list your keywords in this section.

Distributed cell association for load balancing in HetNet: A probabilistic approach

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Abstract

Starting from low traffic generating equipment, such as Machine Type Communication (MTC) devices, to high traffic generating User Equipment (UE), browsing HDTV on the internet, future cellular networks will be full diversity. Intelligence transport system, smart home application, smart city are few examples that will further diversify the network. Fifth generation (5G) cellular networks are projected to meet these diverse requirements. 5G systems will adopt a multi-tier architecture consisting of the macrocell, picocell, and femtocell, known as a heterogeneous network. A mobile terminal (MT) needs to select a base station (BS) from the several BSs which it can access. The strategy to select a BS shouldn't incur additional overhead to the network. It is argued that existing cell selection strategy will not be suitable for 5G from the load balancing point of view. The load imbalance among the Base Stations (BSs) will further reduce the aggregate throughput. We propose a cell association strategy which accesses the BS in a probabilistic way. An explanation was given to justify that the proposed cell selection procedure performs better than the existing ones.

Keywords: Load balance, HetNet, 5G, MAX-SINR, Mobile Wireless Network, Probabilistic-approach

Error Analysis of Heat Conduction Partial Differential Equations using Galerkin's Finite Element Method

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Abstract

This paper presents the error analysis framework for the construction of a Galerkin finite element method (GFEM) for computing numerical solutions of two-dimensional steady heat conduction partial differential equations (PDEs) in arbitrary planar domains. The steady state heat distribution in a plain region is modeled by two-dimensional Laplace partial differential equations. In the present work, a simple three-node triangular finite element model is used. The present method can be used to solve the steady heat conduction problem using unstructured or structured grid mesh. Comparisons of the results using error analysis between the present GFEM and exact solution as well as other numerical software such as ANSYS to check the accuracy of the established scheme provide a promising result.

Keywords: Heat conduction, finite element mode, Galerkin method, Laplace equation,

Adjoining Ant's Activities in Adhoc On-demand Multipath Distance Vector Routing

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Abstract

This paper tries to devise a new algorithm based on ACO as well as multipath routing in adhoc multipath distance vector (AOMDV) environment. Routing is a technique of transmitting data from source node to the destination node. Path breaks frequently in MANET due to the moving nodes. Multipath Routing presents a solution towards this problem, because of the presence of alternative paths. So, communication does not halt. Ant colony optimization (ACO) is a newer field of swarm intelligence to tackle optimization problems. The new algorithm is named A-AOMDV and is compared with other multipath and unipath protocols. Some of the performance metrics are chosen to compare and evaluate the new routing algorithm with traditional algorithms like Throughput, Jitter, Number of packets send, End to End Delay, Packet Lost, Delivery Ratio. Based upon the obtained results, the comparison graphs have also been made while evaluating parameters. The results are very encouraging and the new algorithm has outperformed other algorithms used for the purpose of comparison. Data communication can take place through alternative paths using efficient multipath routing protocol and easily tackle problems of disconnections during data communication

Keywords: MANET, DSDV, MDART, AOMDV, A-AOMDV

A Novel Framework for Social Internet of Things

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Abstract

The modern era has witnessed the transformation of objects to intelligent objects and more recently, there has been a flourish of proposals for giving social-like capabilities to these intelligent objects. The focus has been on developing mechanisms that shall allow direct interactions among objects that are “friends” with each other. Social Internet of Things aims at assimilating the concepts of Internet of Things and Social Networks for providing value added services to humans or other devices. Different models and guidelines have been proposed for materializing the social aspect of these intelligent objects. They are, however, related to specific device types and their individual functionalities, and often require a dedicated internet connection for the delivery of services. The paper proposes a generic framework for leveraging the emerging types of social relationships among the participants (devices and users) in the system. It enables interaction among devices with diverse capabilities and heterogeneous platforms. One of the major advantage of this work is that the services can be offered by the objects even in the areas having no internet connectivity. The work relies on Bluetooth Low Energy protocol for disseminating information to the users. The proposed framework can easily be employed for developing applications that exploit the social behavior among things.

Keywords: Social Network, Internet of Things, Bluetooth Low Energy, Social Internet of Things.

Efficient Hierarchical Clustering Routing in Wireless Sensor Networks

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Abstract

The routing protocol allows routing data from source to destination through intermediate nodes up to the sink. In the hierarchical routing based on the clustering, every cluster head node forms its cluster with their neighbor nodes. The cluster heads are responsible of their clusters. In fact they coordinate between nodes in the cluster for intra-cluster communication and route data to the other clusters for inter-cluster communication. In this article we propose a centralized and periodic protocol named Efficient Clustering Routing Protocol (ECRP). Our protocol is based on a modified version of CLARANS algorithm; it takes into account the location and the remaining energy of the sensor nodes to divide the sensed area to disjoint and balanced clusters. The simulation results show that the proposed protocol is more efficient than the existing hierarchical protocols in terms of packet delivery ratio, and energy consumption.

Keywords: Clustering; routing; wireless sensors networks; CLARANS; energy consumption; latency.

Stability Analysis of SIRD model for worm propagation in Wireless Sensor Network

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Abstract

Security is one of the essential concerns in wireless sensor network. To find the stability points when worms appear in the wireless sensor network. By using ODE formulate the SIRD model by introducing the concept of dead nodes for wireless sensor network. Find the existence of positive equilibrium and perform the stability test with the help of Jacobian matrix. Some theorems are proposed for the analysis of model. The model explains that the inactive nodes are the nodes which die due to battery consumption and cannot be recharged because of remotely located in harsh region. Inactive nodes are not capable to transmit data from one sensor node to another sensor node. The model describes the nonlinear dynamics of Susceptible, Infectious, Dead and Recovered class of nodes. The entire dynamics of the transmission of worms can be analyzed by this mathematical model; propagating feat by worms in WSN can be determined by the value R_0 basic reproduction number. The simulation by using MATLAB results validate the efficiency of this model. Proposed model is useful to reduce the battery overhead, enhance the lifetime of wireless sensor network.

Keywords: Wireless Sensor network, worms propagation, epidemic model, Stability, Equilibrium

Experimental Study for Effect of Perforation in Circular Ring on Thermohydraulic Performance in Circular Cylindrical Tube Heat Exchanger

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ABSTRACT

The present work focuses on effect of perforated circular ring insert (PCRI) on thermo hydraulic performance of the circular cylindrical tube heat exchangers. Different geometrical and flow parameters used in the present study includes fixed diameter ratio (“d/D” ratio) = 0.7, pitch ratio (“l/D” ratio) = 1, 2 & 3, Perforation index (“Pa/Ta” ratio) = 0%, 8%, 16% & 24%, and Reynolds number (Re) between 6,500 to 23,000 respectively. The experimentation is carried out in a test section of 1.4 m length and 68 mm hydraulic diameter. It was found that there is about 4 times improvement in heat transfer for Pitch ratio=1 and Perforation index = 0%, and there is 1.25 times improvement in thermal performance factor for Pitch ratio=1 and Perforation index of 24% as compare to smooth tube heat exchangers.

Keywords: Experimental Study, Circular Ring on Thermohydraulic Performance, Circular Cylindrical Tube Heat Exchanger.

Advance Signaling Cost for Multicast Fast Reroute Proxy Mobility Management

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Abstract

Mobile data traffic over IP has grown very rapidly in size. This huge increase in size creates high demand performance on network that supports mobile multicast services. This motivates the development of a better performance procedure with better signaling cost. A mathematical evaluation of signaling cost for multicast network mobility management namely Proxy Mobile IPv6 (PMIPv6). The signaling cost is derived from a novel combination of Multicast only Fast Reroute (MFR) and predictive Context Transfer (CT) with network mobility management. The signaling cost is designated base on the improved signaling call flow of the advanced method combination. It is calculated as the location updates and the packet delivery cost of the call flow. This combined procedure helps to mitigate unnecessary multicast network mobility traffic as usage increases. From the results it is clearly shows that the location update for the advanced signaling cost remain consistent regardless of the traffic usage. Where else for the standard method the signaling cost increases significantly, in parallel with the traffic increase. This is hardly because of the reduced location updates and the packet delivery cost of the novel combination procedure. Therefore through this implementation better signaling cost formula is brought forward.

Keywords: *signaling cost, fast reroute, multicast, mobility management.*

Network Simulators Parametric Comparison for Network Mobility Management

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Abstract

It is generally known that network simulator is a program used to verify new or existing network architecture and its activities. Basically network simulator helps to implement the virtual part of network research. This has save a lot of cost on analysis as the results of a network simulator is very close to real network cases. In recent researches, new models and prototypes are introduced to enable latest technologies support on network simulators. Some well-known network simulators are NS2, NS3, OMNET++ and QUALNET. As network research continues to grow rapidly, there is a need to analyze the supports and services offered by each network simulators. The objective of this paper is to investigate and analyze these network simulators in term of network mobility supports. This is because network mobility management has become a crucial topic in networking research.

Keywords: Network Simulator, Simulation and Mobility.

Two Objectives Big Data task Scheduling using Swarm Intelligence in Cloud Computing

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Abstract

Cloud computing is the latest and the most used type of distributed computing systems and also it covers most of their features. It has been widely used for its enormous benefits and its ability to cope with large-scale data such as workflows and big data applications. On the other hand, scheduling algorithms; starting from traditional to Hyper-heuristic; are widely used in computing systems such as cloud computing to monitor the use of resources. However, these scheduling algorithms vary in term of their performance and most of these traditional and simple scheduling algorithms may not be efficient for large-scale data. Although many scheduling algorithms have been implemented for cloud computing, it has been realized that most of the applications nowadays require different objectives that simple scheduling algorithms fail to achieve. Either one of the objective is violated or the results are far from the optimal solution. In this direction, this paper first gives review of some previous scheduling algorithms used in cloud. Then, it proposes a type of swarm intelligence called Particle Swarm Optimization (PSO) algorithm to minimize cost while meeting deadlines. The proposed method is evaluated using CloudSim and big data applications are used as sample of applications.

Keywords: Cloud Computing, Scheduling, Swarm Optimization, Hadoop and Big Data.

HSTL IO Standards Based Processor Specific Green Counter Design on 90nm FPGA

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Abstract:

Extending battery life and increase in portability of modern electronic devices and gadgets are the main motives behind the Green Computing which is also known by similar terms like energy efficient design or low power design or green design. Such efficiency is only possible if all the components of processor are also energy efficient. In this work, the researchers tried to analyze the energy optimization possibility in counter design by selection of energy efficient IO standards. The researchers had used High Speed Transceiver Logic for the purpose of energy efficient counter design on Spartan3 (90nm) FPGA (field-programmable gate array) using VHDL (VHSIC Hardware Description Language) hardware description language along with the Xilinx ISE simulator for the analysis and synthesis of counters. Spartan 3 with 90 nm low power is used to achieve substantial power savings. Here, researchers have used five different HSTL IO standards for this work. The standards used are HSTL_I, HSTL_III, HSTL_III_18, HSTL_III_DCI and HSTL_II_18.

Keywords: IOStandards, HSTL, Environment-Friendly Design, Counter, Energy Efficiency, FPGA.

DESIGN OF LOW POWER AND SECURE IMPLEMENTATION OF SBOX AND INVERSE- SBOX FOR AES

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Abstract

In the cutting edge world, data security has turned into an essential issue furthermore the innovation is going to increment quickly. In this paper, the symmetric key standard for encryption and decoding is propelled Encryption standard (AES). The key stride in the AES is the "S-Box". S Box is an imperative segment for symmetric key calculations. An S-box takes some number of information bits "p" and interprets them in yield bits 'q', where "p" is not as a matter of course equivalent to 'q'. In AES Encryption calculation Sub Bytes change uses S-Box and Inverse S-Box uses Inverse of S-Box. The Sub Bytes substitution is a nonlinear byte substitution that uses substitution table (i.e. S-Box) takes the multiplicative reverse ($GF(2^8)$) and infers a relative change to do the Sub Bytes change. Though, converse Sub Bytes Substitution additionally uses gaze upward table (i.e. Reverse S-Box) takes an opposite relative change and after that suggests multiplicative backwards of Galois Field ($GF(2^8)$).

Keywords: S-BOX/Inverse S-Box, AES, Power Analysis, FPG, VHDL.

Intelligent Web Proxy Cache Replacement Algorithms Based on Adaptive Weight Ranking Policy via Dynamic Aging

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Abstract

Nowadays, World Wide Web plays an essential role in our lives. It has become a great useful tool for people in all facets of life. Most people's work, study and entertainment depend on accessing internet. The vast usage of World Wide Web leads to increase in network traffic and create a bottleneck over the internet performance.

For most people, the accessing speed or the response time is the most critical factor when using the internet. Web proxy cache technique reduces response time by storing a copy of pages between client and server sides. If requested pages are cached in the proxy, there is no need to access the server. Due to the limited size and high cost of cache compared to the other storages, cache replacement algorithm is used to determine a page eviction when the cache is full. On the other hand, the conventional algorithms for replacement like Least Recently Use (LRU), First in First Out (FIFO), Least Frequently Use (LFU), and Randomized Policy etc. may discard important pages just before use. Furthermore, using conventional algorithm cannot be well optimized since it requires some decision to intelligently evict a page before replacement.

Keywords: Adaptive Weight Ranking Polic, proxy cache; replacement algorithms; Naïve Bayes; Incremental wrapper feature subset selection (IWSS).

A Numerical Framework for the Analysis of Handoff Delay Component in Proxy NEMO Environment

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Abstract

Network Mobility Basic Support Protocol (NEMO-BSP), the existing IETF standard for mobile network support, signifies an important portion for future heterogeneous wireless access networks. The reason is to provide continuous Internet connectivity during movement of Mobile Router (MR) in NEMO. This paper conducted a quantitative analysis on the handoff delay component of NEMO-BSP as well as its existing enhancements, i.e., Fast NEMO (F-NEMO) handoffs, and an Extension of F-NEMO (EF-NEMO), using the numerical framework. The mathematical scenario includes two access routers, one local home agent and up to 20 MRs that interrelate by two different wireless access networks are mainly WiFi and WiMAX. The analysis offers quantitative outcomes of the performance enhancements achieved via the proposed improvements concerning handoff delay gain, packet loss, and packet loss ratio.

Keywords: NEMO-BSP; F-NEMO; heterogeneous wireless access networks; handoff delay component.

Autonomous Control of Tilt Tri-Rotor Unmanned Aerial Vehicle

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Abstract

Tilt Tri-Rotor Unmanned Aerial Vehicle (TRUAV) is an aircraft that has three motors and does not allow pilot intervention in the management of the flight. There exist situations where the surrounding environment is not appropriate or even dangerous to a human being. Examples of such case is a war zone area, steep terrains, explosive area, or even during armed attacks. Thus, this paper propose a control algorithm of tri-rotor aircraft using PID control, and observe the effect of it in a tilt tri-rotor aircraft. In the development of the control algorithm, a mathematical model consisting variables from three motors used and its tilting mechanism is obtained and referred to. A significant improvement is observed when the control algorithm is applied to the system in which the pitch overshoot is greatly reduced and approach to a constant zero.

Keywords: Autonomous, Control, UAV, Tilt, Tri-Rotor, VTOL.

A new approach for Optimization of Program Dependence Graph using Finite Automata

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Abstract

The essential structure chosen to represent a program in a working environment plays a crucial role in software development. The form should be beneficial to the programmer in implementation and also it should increase responsiveness. The appropriate form to represent a program according to requirement is Program Dependence Graph (PDG). In this paper we have demonstrated how a PDG can be used to represent a program with explicit representation of both data and control dependences for each and every statement in program. Data dependence is a program statement or an instruction depends on the data of a preceding statement or it is used to represent relevant data relationship between segments of program and control dependencies show the control flow relationship between statements of program. PDG is used in compiler optimization phase also because it connects computationally related parts of a program. PDG is a non-linear data structure in which the transformations can be performed uniformly for both data and control dependences. A dependence Graph or a Program Dependence Graph can be treated as Finite Automata;

Keywords: Finite Automata, PDG, Isomorphic graphs, DFA, NFA, Program Slicing, minimization of Finite Automata, Optimized PDG.

CAMLESS ENGINE USING LASER LDR CIRCUIT

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Abstract

This Paper gives an overview about the latest camless engine designed using laser LDR circuit. Here, a camless engine is developed in which the valves of the engine are actuated hydraulically with the help of a laser LDR Circuit. In the proposed system a laser LDR circuit is fitted over the crank shaft of the engine which senses the exact time of opening and closing of engine valves. Thus, providing better power output and fuel economy by making the engine to follow the ideal valve timing diagram. Hence making today's automotive engines more environments friendly by producing less hydrocarbons and unburnt fumes.

Keywords: Valve actuation system, camless engine, Laser interferometer.

Performance Analysis of a Diesel Engine using the Soybean Oil based Biodiesel

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Abstract

This paper gives an overview of the investigation being done for the preparation of biodiesel from soybean oil using the Transesterification technique with the help of KOH, used as a catalyst. Biodiesel produced is being used & tested in a VCR type 4-stroke diesel engine. It has been observed that feeding vegetable oil directly to the engine for a longer period may cause working problems and disturbances to the engine. These problems are due to physical properties of oil like viscosity, volatility & polyunsaturated character. Transesterification process comes out as an effective solution of this problem as it reduces fluid viscosity & other operational errors from the oil. Methyl ester of soybean oil (SBD) were found to be very similar to mineral diesel due to this, a mixture of SBD and mineral diesel were used to make different blends of biodiesel which were then fed to a CI engine as fuels. Engine was tested for different blend of biodiesel at 1500 rpm at different loading conditions and its performance parameters were analysed. The outcome of the investigation has proved that biodiesel exhibits physical properties which are similar to that of mineral diesel. It is to be noted that the BSFC (brake specific fuel consumption) of biodiesel is more as it has low heating point.

Keywords: Soybean Biodiesel, Diesel Engine, Emission Parameters, Brake Thermal Efficiency, Hydrocarbon, CO, NO_x.

Segmentation, Feature Extraction and Classification of Astrocytoma in MR Images

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Abstract Astrocytoma (Brain tumor) is a life threatening disease. So, it's very important to find the grade of astrocytoma in the early stage. For the classification of astrocytoma into (Low/High) grade doctors mostly faith in biopsy which is an invasive methodology. The approach uses a non-invasive methodology, which includes automatic thresholding, feature extraction and k-nearest neighbor (k-NN). Gray level co-occurrence matrix (GLCM) is used for extracting the texture features from segmented tumor region. This paper is the extension of our previous paper based on the performance analysis of image enhancement techniques for Astrocytoma detection in MR images. The submitted approach of astrocytoma classification into (Low/High) grade is estimated on the basis of various values such as severity, specificity and accuracy.

Keywords: Magnetic Resonance Images (MRI); Grading; Astrocytoma; GLCM; k-NN classifier; Contrast limited Adaptive histogram equalization (CLAHE); tumor.

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Our Host City:

Esbjerg

Esbjerg's landmark, the nine-metre-high sculpture *Man Meets the Sea*, overlooks both the Wadden Sea and the North Sea. Esbjerg is the spot where people, sea and great art and culture meet. Therefore, the scope of what you can experience in Esbjerg is wide - very wide.

Esbjerg - Denmark's energy metropolis - buzzes with energy. In Esbjerg you will find exciting museums and art, lots of shops, events and festivals, top sports facilities. Everything surrounded by the unique and beautiful nature of the Wadden Sea National Park, which is a UNESCO World Heritage Site.

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The Wadden Sea is Denmark's largest National Park and is among the most valuable wet-land areas in the world and of crucial importance for breeding birds, ocean mammals, and plant life. Here you will find both room and opportunity to feel the elements and experience a varied and unique wildlife.



In many ways, the Esbjerg area is a journey through time and place. Here, you will find both Denmark's youngest city, Esbjerg, and Scandinavia's oldest town, Ribe, whose history dates back to the beginning of the 700th century. To wander through the old cobblestone streets of Ribe is to travel back through time. Many of the beautiful buildings here can be linked with famous figures and with certain periods of the town's long and dramatic history with Vikings, kings, queens, bishops, traitors, witches, floods and fire.

In 2014 Ribe gained the title of "Europe's Best Big Time Small Destination".

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2nd International Conference on Recent Trends in Computer Science and Electronics 02-03 January 2017
Swiss-Garden Hotel, 117, Jalan Pudu, 55100 Kuala Lumpur, Malaysia.
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Highlight of RTCSE-2016



ABOUT RTCSE-2017

Welcome in 2nd International Conference on Recent Trends in Computer Science and Electronics Engineering (RTCSE'17). The conference will be held on 02-03 January 2017 in Swiss-Garden Hotel, 117, Jalan Pudu, 55100 Kuala Lumpur, Malaysia. This is the 4th International Conference being organised by Gyancity Research Lab. The 1st International conference on Green Computing and Engineering Technology (www.icgcet.org) was organised in July 2015, Dubai and 2nd was in Malaysia, 3rd was in Denmark. The main objective of RTCSE'17 is to present the research from different areas of science and technology. This conference provides a platform for researchers and scientists across the world to exchange and share their experiences and research results about all aspects of electronics and information technology. This conference also provides an opportunity to interact and establish professional relations for future collaboration. The conference aims to promote innovations and work of researchers, engineers, students and scientists from across the world on Advancement in electronic and computer systems. The basic idea of the conference is what more can be done using the existing technology. In Today's world electronic and computer systems plays an important role for future's innovation. These systems involve a very wide area for research. We are pleased to invite prospective authors to submit their original manuscripts to RTCSE'17. RTCSE'16 was in collaboration with UTHM Malaysia.

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