Proceedings of the International Conference on Recent Trends of Computer Science and Electronics 2016



Authors D. M. Akbar Hussain, M F L Abdullah, Bishwajeet Pandey

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Chair Message:

As a chair I have the honor to welcome you with great respect and enthusiasm to the

International Conference on Recent Trends in Computer Science and Electronics Engineering (RTCSE'16) to be held at Park Royal Hotel, Kuala Lumpur Jalan Sultan Ismail 50250 Malaysia on 02 – 03 January 2016. It is the second 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. RTCSE'16 intended to attract innovative technical and scientific work in the field of computer science and electronics engineering. The response to the conference was 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 later.

I am pleased to inform you that we received more than 250 papers. In order to maintain publication ethics and practices of Scopus Index Journal, we accepted only 55 papers (22% acceptance rate). All accepted papers have been submitted to the SCOPUS Index Journals and these papers will be available online by middle of 2016.

As a chair and on behalf of the organizing committee I sincerely hope that RTCSE'16 will offer a great venue at Kuala Lumpur to the participants coming from different parts of the world to share and contribute in the areas of expertise. We hope to provide a good platform to the participants of RTCSE'16 where not only they meet together and share their vision and ideas but also fertilize their thoughts in the ever-growing computer science and electronics 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 Malaysia.

Best wishes. D. M. Akbar Hussain, Aalborg University Denmark.

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Our Next Conference

Conference Information:

We are grateful for your contribution in International Conference on Recent Trends in Computer Science and Electronics Engineering (RTCSE'16). Venue of International Conference on Recent Trends in Computer Science and Electronics Engineering (RTCSE) is Park Royal, Kuala Lumpur Jalan Sultan Ismail, and 50250 Kuala Lumpur, Malaysia.

The conference will be held on 02-03 January 2016 in Kuala Lumpur, Malaysia. This is the 2nd International Conference being organized by Gyancity Research Lab. The 1st International conference on Green Computing and Engineering Technology (www.icgcet.org) was organized in July 2015, Dubai. The main objective of RTCSE'16 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'16.

We are pleased to inform that we received more than 250 papers. In order to maintain publication ethics and practices of Scopus Index Journal, we accepted only 55 papers (22% acceptance rate). All accepted papers have been submitted to following SCOPUS Index Journal. Paper will be available online by mid of

2016.

Following are the SCOPUS indexed journals in which papers has been submitted:

- International Journal of Software Engineering and Its Applications (IJSEIA)
- International Journal of Control and Automation (IJCA)
- Indian Journal of Science and Technology (IJST)
- International Journal of Multimedia and Ubiquitous Engineering (IJMUE)
- International Journal of Security and Its Applications (IJSIA)
- International Journal of Smart Home (IJSH)
- International Journal of u- and e- Service, Science and Technology (IJUNESST)

We are grateful for our chair for their constant guidance and motivation of more than 300 committee members for quality in review and also deliver high performance as per global standards. Few papers are sent to other Scopus indexed journals also which are not listed here.

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Schedule

2nd January 2016

10:00-01:00 PM Registration at Lower Lobby Foyer (Next to Si Chuan Duo Hua Restaurant)

3rd January 2016

8:00-09:00 Am	Reporting at Registration Desk
09:00-09:30 Am	Inaugural Speech by General Chair Prof D M Akbar Hussain.
09:30-11:00Am	Paper Presentation
11:00-11:15 Am	Coffee Break
11:15-11:45 Am	Second Keynote by Associate Prof Mohammad Faiz Liew Abdullah.
11:45-01:00 Pm	Paper Presentation
01:00-02:00 Pm	Lunch
2:00-02:30 Pm	Third Keynote By Associate Prof Anika Zafiah Mohd Rus.
02:30-4:45 Pm	Paper Presentation
4:45-5:30 Pm	Ending Ceremony and Keynote By Prof Geetam S Tomar & Prof Bishwajeet Kumar Pandey.
5:30 -6:00 Pm	Coffee Break

Abstract of Paper Selected for Presentation:

Id	Abstract of Paper
6	Voltage Based Energy Efficient Mobile Charge Sensor Design Using LVCMOS
	Arpit Gupta, Aarushi Sapra Department of CSE Chitkara University Punjab India
	gupta.arpit02727@gmail.com, <u>aarushisapra41@yahoo.com</u>
	<i>Abstract</i> —In this paper an approach is made to design the voltage based energy efficient mobile charge sensor design and for that reason we have used LVCMOS IO standards. Power dissipation is the major factor that has been analyzed and focused .Voltage sensor is operating at different frequencies and at fix temperature that is 25 degree Celsius. Frequencies of different mobile phones have been evaluated. Frequencies taken in consideration are 1400MHz for Nokia Lumia710, 1.2 GHz for Samsung Galaxy core, 2100 MHz for iphone6, 1700 MHz for HTC/T, 1800 MHz for micromax X091 and 2.2GHz for Song Xperia Z1. This research work, is basically done to check the charging status of a mobile phone. The coding is done in Verilog on 28nm FPGA that is Kintex-7. Kintex7 is 28-nm FPGA on which we implement our circuit to re-assure power reduction and reduction in junction temperature in sequential circuit.There is 4-19% reduction in power dissipation with LVCMOS33, 3-15% reduction in power dissipation with LVCMOS25, 2- 13% reduction in power dissipation with LVCMOS18, 2-12% reduction in power dissipation with LVCMOS15, 1-5% reduction in power dissipation with BLVDS25 at 25 degree Celsius when we use 28nm FPGA. The performance of our sensor is evaluated and tested through simulations on Xilinx software development kit. The quality of our sensor can be improved by changing IO standards.

Energy Efficient Traffic Light Controller Design on 28nm FGPA

7

Arpit Gupta¹, Aarushi Sapra², Alisha Nagpal³, Sanchit Sharma⁴

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Abstract-In this work, our focus is on study and analysis of power and junction temperature at different temperaturesand at different capacitance values. Kintex7 is 28-nm FPGA on which we implement our circuit to reassure power reduction and reduction in junction temperature in sequential circuit. Varying the values of capacitance and temperature enhance the efficiency of the Energy Efficient Traffic Light Controller design. This paper basically deals with FSM (Finite State Machine) and is implemented on FPGA. FGPA is preferred because of its high speed and is inexpensive. Traffic lights are beneficial in managing the traffic, reducing accidents rate, relaxing traffic cop's job, minimizing fuel consumption and emission and save time. The performance of our energy efficient traffic lights is evaluated and tested through simulations on Xilinx software development kit. For 2.4GHz operating frequency, there is

47.71% reduction in total power dissipation, 69.94% reduction in IOs power dissipation, and 0.78% reduction in junction temperature when we use 28nm FPGA and temperature is 25 degree Celsius and capacitance is scaled down from 100pF to 20pF.

8	SSTL Input/Output Standard Based Energy Efficient
	Tiryagbhyam on 28nm FPGA
	Md. Saifur Rahman1, Md Mahbub E Noor2, Tania Islam2, Rohit Tiwari3, Kartik Kalia4, Tanesh Kumar5
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	Abstract- We have taken different set of frequencies and done study of power by varying frequencies and with different SSTL Standard Used for Input/Outputs at fixed temperature i.e. 25 degree Celsius. SSTL family includes SSTL15, SSTL18_II, SSTL135, SSTL12, SSTL18_I. Power has been calculated on these standards and analysis has been done to find the standard with least power consumption and to make an energy efficient device. The proposed multiplication algorithm is coded in Verilog, synthesized and simulated using Xilinx ISE design suit 14.2.at the end we can conclude that there can be 34-50% power consumption reduced by using frequency scaling technique and using SSTL Standard used for Input/Output. The maximum power has been consumed by SSTL18_II and minimum power consumption is by SSTL12.

SSTL IO Standard Based Low Power Arithmetic Design Using Calana kalanabhyam on FPGA

Gaurav Verma¹, Sushant Shekhar¹, Kumar Shashi Kant², Vikas Verma³, Himanshu Verma⁴, Bishwajeet Pandey⁵ ^{1,4}Jaypee Institute of Information Technology Noida, India ²Symbiosis Institute of Technology, India 3 Indian Institute of Technology, Roorkee 5Gyancity Research Lab, India gaurav.iitkg@gmail.com, sushantshekhar09@gmail.com, shashi.nitjsr26@gmail.com vikasverma.iitr@rediffmail.com, himanshutechdn@gmail.com, gyancity@gyancity.com

Abstract-Vedic mathematics consists of 16 formulas. Calanakalanabhyam is a Sanskrit word meaning "Sequential motion". Using this Vedic technique, we will find the roots of the equation in few seconds. We have tried to make an energy efficient Calanakalanabhyam Vedic formula based root finder with 4 inputs and 2 outputs. We have taken different SSTL Input/Output Standards and have done Study of Power by varying frequencies. SSTL

Input/Output Standards used in this paper are SSTL15, SSTL18_II, SSTL135, SSTL12,

SSTL18_I. The code has been implemented on 28nm FPGA platform, XC7K160T device, FBG676 package and -3 speed grade. With our proposed technique, we have 41-60% achieved reduction in total consumption of power with frequency scaling.

10 Clock Gating Based Energy Efficient and Thermal Aware Design For Vedic Equation Solveron 28nm and 40nmFPGA

Bishwajeet Pandey¹, Sujeet Pandey², Shivani Sharma³, Kartik Kalia⁴, Khyati Nanda⁵, D M

Akbar Hussain⁶

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Abstract-In this paper, we are integrating clock gating in design of energy efficient equation solver circuits based on Vedic mathematics. Clock gating is one of the best energy efficient techniques. The Sutra 'SunyamSamyasamuccaye' says thatif sum of numerator and sum of denominator is same then we can equate that sum to zero and find the value of unknown variable. In order to test the portability of our design, we are operating our design with respective frequency of different mobile architecture. Operating frequency of iPhone6 is 2100MHz. For thermal analysis of our energy efficient design, we have

2100MHz. For thermal analysis of our energy efficient design, we have taken temperatures of four different regions of Furnace Creek Ranch (329.85K), Mohenjo-Daro (326.65K), and median temperature of Delhi (313.15K) and standard normal temperature (294.15K). Saving in clock power dissipation is 96.15% for 1400MHz, 94.59% for 1.2GHz, 93.75% for 2100MHz, 94.23% for 1700MHz, 94.54% for 1800MHz, and 94.02% for 2.2GHz, when we use gated clock instead of un gated one on 40nm FPGA and temperature is 329.85K. Power consumption in 28nm FPGA is less than 40nm FPGA.

11 Low Power Squarer Design Using Ekadhikena Purvena on 28nm FPGA

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Abstract- EkadhikenaPurvena is a Sanskrit name which means "one more than the previous". This technique is used for squaring any big number but the condition is it should end with digit "5". Vedic mathematical formulas are used to solve tedious and cumbersome arithmetic operations. Tool is Xilinx ISE Design Suite 14.2 and Kintex-7. We have taken different frequencies and calculated its power. Today's demand forces us to design the low power energy efficient devices which takes lesser time for its execution. In our design there are 2 inputs and 1 output. The inputs are clocked and the number whose square we are supposed to calculate is 8 bits wide and the output is 14 bits wide (squared number). Many researchers have performed research on Vedic mathematics to solve DSP operations using UrdhavaTrivagbhayam multiplication sutra. We have done power analysis by varying frequency at different temperatures to make our Vedic squarer energy efficient. Temperatures taken in view are 56.7, 53.5, 40, 21 degree Celsius and Airflow is 250 LFM (Linear Feet Per Minute). Analysis results shows that the maximum power consumption is at 2.2 Billion Hertz and minimum power consumption is at 1400 Million Hertz. In respect to temperature maximum power is consumed at 56oC and minimum at 21oC.

13 Design Goal Based Implementation of Energy Efficient Greek Unicode Reader For Natural Language Processing

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Abstract-Unicode font is used in coding system that assign a unique code to every symbol of scripts irrespective of their platform, and language. The Greek Unicoder receives 16-bit hexadecimal code of alphabet. The device has been designed to convert Greek language into different languages that our people could understand. This Unicode reader code has been implemented on 28nm FPGA platform called Kintex-7 FPGA. In this paper we are using frequency scaling technique and Design goal. In this paper power analysis is our main concern and we have studied about the power analysis at different frequencies keeping the temperature constant at 25 degree Celsius and maintaining the constant air flow.

High Performance Surveillance and Operating Robot with Raspberry Pi

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Abstract-In this work, we are harnessing the benefits available in Raspberry pi in order to make a robot vehicle that is fully controlled by the raspberry pi. Every month there is a new technology launched in some or the other part of the world, by this statement we can estimate how fast the world is growing in field of science and technology. If we study the current era of technology, the upcoming trend we can see is that of the nanotechnology, robotics, artificial intelligence, internet of things, and automation. One of the technologies that we are studying is the coming up of mini CPUs, or we can say the Raspberry pi. The ARM architecture is what the raspberry pi is based on.

Buffer, Extraction and Style based RAM Design on 28nm Field Programmable Gate Array

16

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Abstract: In this work, we report a detailed analysis on a low power memory circuit using buffer, extraction and style based RAM design on 28nm Field Programmable Gate Array (FPGA). To design this memory circuit we are using Verilog as HDL, Xilinx ISE 14.6 simulator with kintex-7 FPGA. Different RAM styles and RAM extracts are compared on basis of power consumption and reduction. Auto RAM style is the default RAM style and it consumes minimum power as compared to block RAM. The RTL schematic shows I/O ports, nets and primitives. Bufgdll also consumes less power and power reduction is also maximum for bufdll and auto RAM as compared to block RAM, ibufg and RAM extract yes. Auto RAM at 10GHz frequency can be used in designing various like in radio astronomy, microwave devices applications and communications, wireless LAN, most modem radars, communications satellites, satellite television broadcasting.

17 Comparative Analysis of two Stochastic Models subjected to Inspection and Scheduled Maintenance

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Abstract- The present paper analyses the comparison of two stochastic models of a cable manufacturing plant subjected to inspection and scheduled maintenance. Here, two models are compared on the basis of MTSF, steady state availability and profit function using Laplace transforms and software package Code-Blocks 13.12. Model 1 is a single unit system with scheduled maintenance whereas Model 2 is a single unit system with inspection of repairable failure. reinstallation/reconditioning failure and replaceable failure. The graphs have been plotted to decide which model is better than the other model for a particular condition. Using regenerative point technique and semi-Markov processes, the complete system is analyzed.

21 Voltage Scaling Based Wireless LAN Specific UART Design based on 90nm FPGA

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Abstract- This research work emphasizes on the design of the wireless LAN specific UART. The frequencies that are standardized for the wireless LANs have been analyzed by scaling the voltage. The aim is to find out the most energy efficient specifications for the UART. After all the calculations, deduction comes over to a point that increasing the voltages increases the power consumption and therefore, the wastage gets elevated too. However, at lower values there is lesser wastage of power and hence the efficiency increases. Virtex-4 FPGA and WLAN standards have been focused upon to make the UART design. Xilinx software as well as the Verilog Hardware Description Language have been used for the purpose.

Frequency based energy efficient Motley RAM design on 40nm FPGA Technology

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Abstract—this paper incorporates the most efficient layout of the RAM in terms of the power consumption. Various RAM styles have been thoroughly analyzed. Frequency analysis has been done for RAM on 40nm FPGA. The main focus has been on studying the various power consumption parameters (total power, I/O power, signal power and the clock power) at different frequencies for the different layouts. We focus highly to find out the optimum conditions at which the RAM behaves the best. Frequency variations and its effect on the RAM technologies is basically the main point of concern. Lesser the power consumption, more efficiently would the circuit behave because the improvidence in terms of power consumption is reduced. The analysis has been done using the Verilog VHDL language and XILINX 12.1. We lead to a conclusion that the distributed style is the most preferred one and that too at a lower value of frequency.

23 Delivering High Performance Result with Efficient Use of K-Map

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Abstract- The Karnaugh map popularly known as the K-map is a method to simplify a given Boolean expression. The Karnaugh Map (K-Map) based technique breaks down beyond six variable. Telecommunication engineer at Bells lab Maurice Karnaugh refined the works of Edward Veitch ad created these k maps. The results are transferred from truth table to the rectangular grid numbering of cells is done according to a special code called Gray code and then assigning the 0s & 1s to the cells of the grids. After that Recognition of the pattern of collecting most number of entries starts. Now write the minimal expression for the required truth table. With the help of k maps one can get a rapid overview of interdisciplinary field in a short time.

High Performance Energy Efficient Different Counters Design and Implementation on 28nm FPGA

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Abstract - In this paper, we have done analysis of ten different counters in term of frequency related to high performance and power dissipation related to energy efficiency. Conserving energy is now a days a very important aspect. In order to conserve energy consumption of our design, we are using dynamic frequency scaling with default LVCMOS18 IO Standard technique which plays a very important role in power saving. Our design is capable to operate with 1 THz frequency that deliver high performance in less time i.e. 1 pico second. Among 10 different counters, 8 bit simple up counter provide maximum reduction in total power that is 84.25% and 98.33% between a frequency range of 1GHz to 10GHz and 1 GHz to 100 GHz respectively.

27	Efficient IP Traffic over Optical Network Based on
	Wavelength Translation Switching
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	<i>Abstract</i> — With the advent of TCP/IP protocol suite the overall era of communication technologies had been redefined. Now, we can't ignore the presence of huge amount of IP traffic; data, voice or video increasing day by day creating more pressure on existing communicating media and supporting back bone. With the humongous popularity of Internet the overall traffic on Internet has the same story. Focusing on transmission of IP traffic in an optical network with signals remaining in their optical nature generated at particular wavelength, proposed is the switching of optically generated IP packets through optical cross connects based on translation of wavelength when an IP packet is crossing the optical cross connect. Adding the concepts of layer 3 routing protocols along with the wavelength translation scheme, will help in spanning the overall optical network for a larger area.

FPGA Based Low Power DES Algorithm Design And Implementation using HTML Technology

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Abstract— In this particular work, we have done power analysis of DES algorithm implemented on 28nm FPGA using HTML (H-HSUL, T-TTL, M-MOBILE_DDR, L-

LVCMOS) technology. In this research, we have used high performance software Xilinx ISE where we have selected four different IO Standards i.e. MOBILE_DDR, HSUL_12, LVTTL

and LVCMOS (LVCMOS 15, LVCMOS 18, LVCMOS 25 and LVCMOS 33). We have

done power analysis of on-chip power like clock power, signals power, IO power, leakage power and supply power. We notified our analysis at five different voltages like 0.5V, 0.8V, 1.0V, 1.2V and 1.5V.

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Fuzzy Logic Controller for Boiler Temperature Control using LabVIEW and Matlab

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Abstract- The aim of this project is to achieve a precise temperature control of boiler and it can be done by fuzzy logic controller. Fuzzy logic controller is computer generated and is easy to implement. Fuzzy logic controller being more efficient than other conventional controllers provide us with better and accurate results. MatLab simulation and Labview experimental results clearly show the amount of overshoot and settling time are modest, it also makes the boiler cost effective by achieving the target temperature in less time.

37 **Optimizing the power required in hyperthermia treatment** using magnetic nanoparticles.

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Abstract- Hyperthermia is the name given to the technique involving selective heating of magnetic particles using high frequency magnetic field. The present paper uses the fact that tumor in the affected area can be removed by heating it up to temperatures, in range of 41° C - 46° C. We propose the power range of 2.75W - 6.5W applied to the magnetic nanoparticles up to time intervals till 10 seconds for a tumor with diameter up to 5cm for its removal. Temperature in the affected area has been studied as a function of magnetic nanoparticle diameter, exposure time of nanoparticles by alternating magnetic field and power.

Message Aggregation in VANETs for Delay Sensitive Applications

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Abstract- A Vehicular Ad-Hoc Network (VANET) is categorized as a Mobile Ad-Hoc Network (MANET) which delivers wireless network servies with an aim to improve road safety and enhance driving comfort. Diverse applications of Vehicular Ad-Hoc Networks such as infotainment, road safety and public safety have made VANETs as a notable and emerging area of research and development. As of now, numerous vehicular ad-hoc network research projects have been mainly aimed at data security and routing. This has raised a critical problem of data congestion and loss of data accuracy in VANETs. A major challenge in VANETs is to provide efficient data communication and propogation for precise and valuable information. This paper presents a generalized framework for message aggregation. Message Aggregation can be used to transmit minimal data and to enhance the communication efficiency thus reducing the communication overhead in VANETs. This will help in reducing the redundancy in VANETs resulting in dissemination of precise information

Harmonic Minimization in a MPPT based MJSC photovoltaic Microgrid using Modified Cascaded H Bridge Multilevel Inverter

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Abstract- The renewable energy sources penetration has increased nowadays. Numerous techniques are developed for grid connected photovoltaic system for intensive penetration of photovoltaic (PV) production into the grid from various research papers. Several researches have been carried out in the field of PV design, but few work for grid connected multi-junction solar cell. Cascaded multilevel inverter provides many advantages over conventional inverters to improve the overall efficiency and reduce harmonics with the grid integration of renewable The paper proposes a design of multi-junction energy sources. photovoltaic solar cell with maximum power point tracking and a novel topology of cascaded multilevel inverters to improve power quality delivered to grid in terms of harmonics, by minimizing total harmonic distortion of microgrid (MJSC) interface. A model was developed and the system was tested for performance. The results found were encouraging as compared to the traditional methods.

MATLAB/Simulink platform is used to model and simulate the entire system.

PERFORMANCE ANALYSIS OF LSB BASED WATERMARKING FOR OPTIMIZATI PSNR AND MSE

hra Jindal¹, ShreyaGoel², Tanya Puri³, Asheesh Bhardwaj⁴, IshanMahant⁵, Sartaj Singh⁶, Dhairya ¹⁻⁷Gyancity Research Lab, Gurgaon, India ¹⁻⁷Chitkara University, Rajpura, India { sehrajindal6, shreyagoelsg, puritanya16, asheesh.bhardwaj3342, ishanm729, xssartaj, dhairyasood8 } @gmail.com

Abstract

This paper shows the synopsis of digital watermarking, an important solution used for ensuring and assisting data authentication, security of digital media and protection of copyright. The Least Significant Bit (LSB) algorithm is used for Image Watermarking. LSB embeds the image into the original image. In this paper, the original image is compared with the watermarked image using two parameters that are Mean Square Error (MSE) & Peak Signal to Noise Ratio (PSNR) . Further the image after watermarking is distorted with the Gaussian noise and then watermark is detected. Its analysis is done using MATLAB.

SSTL I/O based current Optimized Thermal Energy Efficient ROM Design on 28nm F

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Abstract-In this work, energy efficient ROM is being designed using Kintex 7 which is able the circuit to 28 nm. For Testing the ROM compatibility, ROM is operated on operating fre Hz, 15GHz, 20GHz, 25GHz). Whenever capacitance is scaled down from 15pf to 5pf, there r and total power reduction but it is observed that there is no reduction in Clock power, and a ve tion in leakage power.FPGA is an Integrated Circuit that comprises of input/output ammable interconnect structure and an array of configurable logic blocks, which featuris typing and consumer configurability which gives the advantage of short turnaround time(initialized from start of process till a functional chip is obtained).10MBits of on chip Memory is being Xilinx FPGA in 36Kbits blocks, which supports dual port operation. Stub Series Terminated Logic Input/output standard which is selected because it avoids the transmission lie reflection and r dissipation. The purpose of Voltage scaling is to reduce leakage power. When capacitance o is scaled from 50pF to 5pF, there are 32-37% saving in I/O Power, 0-0.1% Leakage Power savi e a 1-5% saving in Total Power.

46 Automatic Identification of Retinal Vessels using Line **Operator Approach** DivijSingla[1], DikshaSingla[2], TamannaArora[3], ShubhneetAulakh[4] 1-4Chitkara University, Punjab, India singladivij@gmail.com[1],singla145@gmail.com[2], tamanaa31@gmail.com[3], shubhneet1994@gmail.com[4] Abstract -Due to presence of foggy wounds in a retinal image, tracking down of blood vessels become very difficult. In this paper we are going to present the segmentation of blood vessels using line operator. Changes in blood vessels tells us about some serious diseases like cardiovascular disease and stroke which can help us to detect some diseases in patients at very early stage and it can help abundantly in medical field and will give birth to a whole new era of examining diseases. DRIVE and STARE databases are used for parting of blood vessels. MATLAB has been used for detection of blood vessels in retina using line operator technique.

Current Mode Logic Based Semiconductor Laser Driver Design for Optical Communication Systems

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Abstract - In optical communication systems, semiconductor lasers are widely in use as an optical source. The output of semiconductor laser is not stable, due to temperature variation, design incompetency and power consumption issues. The direct output of semiconductor laser may destroy the additional component attached in the system. Because all optical devices preferred to work on current rather than voltage, the slight change in current may damage the devices. In this research, semiconductor laser, driver is developed using current mode logic (CML) technique to control the output of semiconductor laser. CML is one of the compatible techniques to work integeratedly with optical components. CML based design of semiconductor laser driver, drives at current ranges from 5.5 mA to 6.6 mA and efficiently working up to 10 GHz frequency and consume 75% less power than typically available laser drivers. In future, the semiconductor laser may implemented using System on Chip (SoC) configuration to make the design more energy efficient, in terms of temperature sensitivity and power consumption

Design and Analysis of Optimal Controllers for Grid Connected Inverters for Photovoltaic Applications

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Abstract: The focus of this research article is to model and analyze optimal controllers for a two level, pulse width modulated, grid connected inverter using Matlab. The Proportional Resonant controller and Linear Quadratic Regulator are being investigated. The controllers are designed such that their performance is satisfactory. The simulation results are presented to illustrate the performance of the designed controllers under different grid conditions.

Composition of Optimized Assessment Sheet with Multicriteria using Evolutionary Intelligent Water Drops(EvIWD) Algorithm

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Abstract: At the present time, computerized tests are one of the most critical means to evaluate learning. Choosing tailored questions for each learner is a important part of such tests. Since, wide and varied learners with different abilities are involved, even randomized test cannot serve the purpose of assessment. Some form of personalized and intelligent testing is needed in E-Learning. One of the main components in composing intelligent testing is selecting the items from a huge Item Bank as the accuracy of the test depends on the quality of the assessment which in turn depends on the items selected for assessment. Furthermore, pickingappropriate items is critical in developing as assessment sheet that satisfies multiple criteria. It includes the number of test items, the definitedissemination of course concepts to be assessed, and the expected degree of difficultness and discrimination and exposure frequency. These tests, must effectively select questions from a large item bank, and to manage this problem an optimized assessment sheet composition system using the modified form of nature inspired Intelligent Water Drops optimization algorithm is proposed by embedding a local heuristic as evolutionary operator. Furthermore, the proposed approach is able to effectively generate near optimal items from large item bank that satisfy multiple constraints.

57	Canonical Correlation Analysis and Neural Network (CCA-
	NN) Based Method to Detect Epileptic Seizures from EEG
	Signals
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	<i>Abstract-</i> In this research, a novel method based on Canonical Correlation Analysis (CCA) and Artificial
	Neural Network (ANN) to detect epileptic seizures from EEG signals is proposed. CCA was applied on EEG signals and feature vectors corresponding to Figen values were extracted
	These Eigen values were fed as input to Artificial Neural Network (ANN)'s widely explored model Multilayer Perceptron Neural Networks (MLPNNs) for classification between
	occurrence of non-epileptic seizures and epileptic seizures. The extracted
	CCA proved to be a better epileptic seizures detector and provide average
	classification accuracy, sensitivity and specificity as 92.583%, 93.25% and 91% respectively.
	5170 respectively

Study & Analysis of Role of Li-fi in Future

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Abstract- In this hi-tech world, privacy is most important issue. Has anyone ever imagined why this problem arises? In the field of correspondence media or portable correspondence, web association is and innovation a spine of data correspondence which gives numerous administrations to client to these applications we need quick and headway of Internet integration innovation and vast range of channels[1]. Internet access speed or whether it is about downloading files, internet speed is big issue. Why not take a step further to resolve this problem? The answer to our problems is 'li-fi'. Have you ever wondered a city where internet access is wireless and without any interruption? Like other queries science has an answer to these questions also which is LIFI. LIFI is the new future. From sharing data to accessing it, can be done for laptops, smart phones, and tablets through transmitting light from LED bulb installed within the room. And for the security, if you can't see the light, you can't access the data[2].

59 High Performance and High Range Design of 100Gb/s Optical Differential Phase Shift keying Transmitter

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Abstract- The need of high performance and high range devices is increasing drastically as rapid growth is accumulating in Information and communication technology (ICT). In Gb/s transmission system high speed optical transmitter requires high power for transmitting information at long distance. The high power transmitters consumes enormous power and exhibits heating effect in devices, leakage power problems as well due to that the device response became slower. In this work, high performance and high range design of 100Gb/s optical DPSK transmitter is designed in 20 nm Field Programming Gate Array (FPGA) using multiple IO standards. The high performance and high range design is achieved using proposed technique by integrating the two IO Standards one is Pseudo Open Drain (POD) and other is Point- to-Point Differential Signaling (PPDS). The POD IO standards is consuming less power feature, while PPDS IO Standard provides the faster response time. It is determined that using proposed technique the 95% power consumption is recorded with

85% improved efficiency in response time for mid-range infrared frequencies such as 200 GHz, 500 GHz, 90 GHz, 5 THz and 20 THz. The designed energy efficient optical transmitter can be assimilate with further optical components in optical communication systems to high performance and high range future generation networks.

67 KUKA youBot Integration With LabVIEW For Industrial Application

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Abstract- In this paper, we are going to explore how we have successfully implemented the interaction of KUKA youBot with LabVIEW using NI hardware C-RIO 9025, ether CAT cable and VGA cable. KUKA has recently launched a major research and development effort towards designing a mobile manipulation platform. We have been able to control the movement of all the five axis of youBot and gripper control. With the help of VGA cable we were able to establish connection between the youBot and PC to align youBot in its "open arm position". Real time motion of youBot is achieved using C-RIO that is real-time embedded controller.

68 A Review of Training Methods of ANFIS for Applications in Business and Economics

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Abstract- Fuzzy Neural Networks (FNNs) techniques have been effectively used in applications that range from medical to mechanical engineering, to business and economics. Despite of attracting researchers in recent years and outperforming other fuzzy systems, Adaptive NeuroFuzzy Inference System (ANFIS) still needs effective parameter training and rule-base optimization methods to perform efficiently when the number of inputs increase. Moreover, the standard gradient based learning via two pass learning algorithm is prone slow and prone to get stuck in local minima. Therefore many researchers have trained ANFIS parameters using metaheuristic algorithms however very few have considered optimizing the ANFIS rule-base. Mostly Particle Swarm Optimization (PSO) and its variants have been applied for training approaches used. Other than that, Genetic Algorithm (GA), Firefly Algorithm (FA), Ant Bee Colony (ABC) optimization methods have been employed for effective training of ANFIS networks when solving various problems in the field of business and finance.

Accelerated Mine Blast Algorithm for ANFIS Training for 69 **Solving Classification Problems** Mohd Najib Mohd Salleh, Kashif Hussain Faculty of Computer Science and Information Technology Universiti Tun Hussein Onn Malaysia Parit Raja, Batu Pahat, Johor, Malaysia. najib@uthm.edu.my, hi130019@siswa.uthm.edu.my Abstract - Mine Blast Algorithm (MBA) is newly developed metaheuristic technique. It has outperformed Genetic Algorithm (GA), Particle Swarm Optimization (PSO) and their variants when solving various engineering optimization problems. MBA has been improved by IMBA, which is modified in this paper to accelerate its convergence speed furthermore. The proposed variant, so called Accelerated MBA (AMBA), replaces the previous best solution with the available candidate solution in IMBA. ANFIS accuracy depends on the parameters it is trained with. Keeping in view the drawbacks of gradients based learning of ANFIS using gradient descent and least square methods in two-pass learning algorithm, many have trained ANFIS using metaheuristic algorithms. In this paper, for getting high performance, the parameters of ANFIS are trained by the proposed AMBA. The experimental results of real-world benchmark problems reveal that AMBA can be used as an efficient optimization technique. Moreover, the results also indicate that AMBA converges earlier than its other counterparts MBA and IMBA.

A Review- On Different Types Of Displays

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Abstract -Display technology has evolved much lately. No wonder the quality of a device is best judged by its display. In today's time, displays have gone from miniature monochrome screens on huge devices to thinner screens on smartphones and from monochrome to millions of colors and from no touch to multi touch support. But the most important point to be pondered upon is that a new type of display technology is now being actively adopted with the first devices with flexible screens to be launched in the near future. But before making a leap into that future of new technology, one must know how the display technology evolved and where it stands now. Discussing the various types of displays and their pros and cons, the paper depicts the switching of technology from one to another.

Electronic component heat distribution optimization using MATLAB

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Abstract- High power electronic components of different power ratings generate excessive heat and damage the mounting board. The typically proposed approach is to use cooling devices to cool the power electronics. Further, repeated temperature variation of cooling and heating (thermal cycling) can cause strain to the power electronic device and lead to device failure as well. This increases power consumption and reduces the overall efficiency of the system. The most viable passive cooling selection is to locate components on PCB such that the aggregate temperature of the PCB is minimized. Electronic component heat distribution with difference equation was presented in early nineties. The computational power of computers in nineties was very rudimentary and high programming skills were required for numerical computations. In this paper, a mathematical thermal model of power electronic component was programmed and the component placement optimization was done using Simulated Annealing process in MATLAB environment to find the minimum temperature for the PCB. This thermal model can overall facilitate the computation burden for easier and wider application of this technique

Techno-Economic Evaluation of the Centralized Hybrid Renewable Energy Systems for off-grid rural electrification

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Abstract- Pakistan is an energy deficient country and the current power crisis of Pakistan is hampering its economic development. Pakistan is naturally benefitted with different renewable energy resources; out of which solar and wind energy are the main highlights. This research work will provide an assessment of the renewable energy potential of the Baluchistan region. A comparison of the economic and financial analysis for a centralized hybrid renewable energy system has been simulated by using Homer software. Three cases have been proposed in which centralized standalone solar PV system, centralized standalone wind energy system and a hybrid combination of both centralized standalone solar and wind energy system have been studied.

103 **Robust HEVC Video Watermarking Scheme Based on Repetition-BCH Syndrome Code**

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Abstract- High efficiency video coding (HEVC) was recently introduced two years ago as the new standard for video coding. This new codec will be the most widely prevalent standard. Because of the industry needs for authentication and copyright protection methodologies the robustness of this standard is required to be developed. This paper presents the first for the HEVC robust digital watermarking method based on Repetition-BCH syndrome code technique without intra-frame distortion drift. The objective of this article is to implement a new technique that can offer high robustness against noise channel errors and increase the error detection rate in the HEVC video sequences transmitted over noisy communication channels. The proposed technique does not significantly affect the video quality, nor does it escalate the bitrate.

Health Grid Network Topology Based on Province in Indonesia

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Abstract- Information and Communication Technology (ICT) has enhanced human life including in health care. Consequently, professional workers in the field of health services are required to improve productivity, accuracy, efficiency and service. The use of ICT for health purposes is known as e-Health. The development of e-Health can use the grid technology for resource sharing and interoperability. The technology can process a very large data for parallel computation. It can also be used to facilitate health practitioners and researchers in the field of health, including to find a new virus, discovery new drugs, disease, an image of organs and to determine the actions for a patient. As an archipelago country where many health services centers distributed in the country, Indonesia needs an appropriate model of e-Health Grid. AS preliminary study, this paper proposes an e-Health Grid network topology based on the province in Indonesia.

105 Digital Image Watermarking Based On Joint (DCT-DWT) and Arnold Transform

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Abstract -The researcher has adopted a digital watermarking technique which operates in the frequency domain: a hybrid watermarking scheme based joint discrete wavelet transform – discrete cosine transform – (DWT-DCT). Its main objective is to test whether this technique can withstand attacks (its robustness) and invisibility (its imperceptibility), achieved by taking DCT of the DWT coefficients of the LL mid-frequency sub-bands from its band. To ensure security, the secret code (watermark) is scrambled using the Arnold transformation which is embedded in the original host image; only gray-scale digital images are used. The results of this research reveal that the secret code (watermark) is strong enough against threats (noise). Comparative results are measured using signal-tonoise ratio criterions, mean square error and normalized cross correlation. Simulated experimentation is done in Matlab.

Non-linear Cost-sensitive Decision Tree for multiclassification

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Abstract- The motivation of this paper is based on a hypothesis that nonlinear decision nodes provide a better classification performance than axisparallel decision nodes do in many practical problems, such as image classification, and voice classification. The algorithm – MNCS_DT is introduced in this paper to create non-linear splits nodes by novel discriminant analysis in decision tree for multi-classification problem and take cost-sensitive problem into account when the features are selected. In experiment part, we use four UCI data sets to compare the performance of MNCS_DT and C4.5 CS by costs and error rates. The performance of MNCS_DT is better than C4.5 CS. And eight data sets from UCI are used to compare the performance of three different feature sets measured by accuracy, G-mean, and operation time. The performance of feature set consisting of features that follow multivariate normal distribution and altered information gain values higher than average one is better than two other feature sets in most data sets.

FSIT: FIRE SAFETY IN TRAINS

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Abstract: General incidents happening ongoing in trains nowadays happen due instant fire in railways because of multiple reasons resulting in health hazards and even deaths. This paper provides a remedy to reduce the losses of life occurring due to fire accidents in trains. In the past few years Indian railways has witnessed various forms of train accidents in which catching of fire is of serious concern. Fire on running bogie is severely dangerous than the stationary ones. The damage is severe because of lack of alertness and lack of communication which leads to the time delay in action. This project provides automation to the trains by applying automatic brakes and along with the ventilation in case of fire and smoke detection. The railway staff and passengers need to take all possible precautions in order to avoid any of the above mistakes so as to minimize the possibility of fire break out. The project consists of thermistor gas sensor, buzzer, fans, pneumatic actuators, solenoid pneumatic valve. Whenever the fire is detected with the help of fire sensors, thermistor and a safety circuit sends signal to solenoid valve and triggers the brakes and allows exhaust fans for proper air flow in and out of a chamber to avoid suffocation and it also starts the alarm to alert the authorities.

124 NETWORK SECURITY IN EMBEDDED SYSTEM USING TLS

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Abstract – Security in terms of Networks have turn out to be more significant to Organizations, Military and personal computer user's. Since various kinds of threats are for data from sending it from sender side over internet till it reaches to receiver. Here we will focus on SSL it is a technique used to give client and server authentication, data confidentiality and data integrity. It transform our data into unintelligible form, data which we will be sending can be text or no text form, by encrypting our data we can save it from attacks like eavesdropping, in which interception of communication by unauthorized person, he can either listen or can add malicious information in our data which can lead to catastrophic results. This technique of secure data transmission is very useful in securing the integrity of data sent by the Unmanned Aerial Vehicles in military application to commercially used Electricity meter. Since the above mentioned devices uses microcontroller to send data through internet hence this data is always going to be susceptible to above mentioned threats so it is important to ensure that it doesn't fall in wrong hands, our objective is that our microcontroller sends the data to remote location has authenticity, confidentiality and integrity.

137 Integration of RFID Network Planning with Xbee Network: A New Approach

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Abstract: Radio Frequency Identification (RFID) is a wireless technology used for real time identification and data capture of items. It replaces the traditional barcode at retail shop, warehousing, logistics and supply chain management etc. The basic requirements for deploying RFID network are to know the number of readers needed, location of the readers and the efficient power setting for each reader. The optimal solution of RFID network planning problems can be achieved by the implementation of newly developed Multi-Colony Global Particle Swarm Optimization (MC-GPSO) algorithm, which computes objective functions scientifically. However owing to the limited transmission range of RFID reader, it can track and identify items within specified range only. A novel approach to integrate RFID network planning with XBee wireless mesh network was developed. It could enhance the communication range and visibility of items identification and tracking activity faster and accurate. It also increases the tracking activity of multiple items as compared to existing barcode technology. RFID system is able to reduce the product loss or shrinkage and bullwhip effect resulting to reduce the overall cost. It also reduces the time of data transfer in global network.

139 The Organizational Factors that Influence the Adoption of Problem Solving Tools in Malaysia Small and Medium Enterprises

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Abstract - Organizational factors played important role in the adoption of many new innovations and technologies. Organizational factors such as Organization's Resources and Level of Comfortable of Using the Current Problem Solving Process help organizations by acting as guidelines to consider before adopting the technologies and make decisions to adopt new technologies. In Malaysia, Manufacturing Small and Medium Enterprises play an important role as they serve as the biggest GDP provider and backbone of Malaysia's economy. However the bankruptcy level of the Manufacturing SMEs is high and daily problems that happened are the main culprit. Hence Problem Solving Tools are introduced to them. 1000 sets of the questionnaires are sent out to the Manufacturing SMEs and 141 sets returned where the response rate is 14.1%. The data was analyzed using SPSS 19 where Discriminant Analysis is used. The results shown that both organizational factors are having significant values. The researcher suggested that the SMEs could use the factors to plan more before they adopt the tools.

UNDERSTANDING THE DETERMINANTS OF E-COMMERCE ADOPTION: EVIDENCE FROM MANUFACTURE SECTOR IN MALAYSIA

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Abstract - Nowadays e-Commerce plays important roles in developed countries and developing countries. However, there are some literature reviews claimed that Small Medium Enterprises in developing countries do not obtained any benefits from e-Commerce technologies. In year 2012, the Association Chinese Chamber of Commerce & Industries had carried out a survey, based on the report, 28% of 965 claimed that they are adopted e-Commerce and 24% claimed that they are planning to adopt. In this adoption research, there are six variables used to explore the relationship with using technological organizational environmental framework. There are total of 200 datasets used SmartPLS v2.0M3 to perform data analysis. Based on the model, it shows that three variables are significant which are top Management, competitor pressure and government. From the statistic result, it proved that this parsimony model has a strong prediction toward eCommerce adoption in Malaysia.

Sleep Apnea Detection using Cardioid Based Graph

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Abstract - In this study, the development of Cardioid based graph heart abnormalities classification technique is electrocardiogram presented. ECG signals in this work were attained from a public online database UCD Sleep Apnea database (UCDB) with sampling rate of 250 Hz. Each recording has 60 seconds of electrocardiogram signals. Unique features were extracted using the Pan Tompkins algorithm, later Cardioid based graph was formed as the result of the differentiation process. The various shapes of closed-loop created were then observed. From the Cardioid loop, we evaluated the area and standard deviation to differentiate between normal and abnormal heartbeats. As a result, the area, standard deviation, and mean values of abnormal heartbeat were twice the value of a normal heartbeat thus indicating the differences between two types of heart morphologies. Thus, the output of the study suggests the proof-of-concept of our proposed mechanisms to detect heart abnormalities and has the potential to act as an alternative to the current techniques.

Development of an Acceleration Plethysmogram based 142 **Cardioid Graph Biometric Identification** Khairul Azami Sidek, Munieroh Osman, Siti Nurfarah Ain Mohd Azam and Nur Izzati Zainal Department of Electrical and Computer Engineering, International Islamic University Malaysia P. O. Box 10, Jalan Gombak, 50728 Kuala Lumpur E-mail: azami@iium.edu.my Abstract: The increasing identity theft cases are alarming which puts biometric as the alternative solution to combat identity crime. Recently, bio signals are proposed as biometric modalities. Thus, in this study, the development of an Acceleration Plethysmogram (APG) based Cardioid graph biometric identification is presented. A total of 10 Photoplethysmogram (PPG) data from MIMIC II Waveform Database (MIMIC2WDB) with sampling frequency of 125 Hz were obtained. The datasets are later converted to APG signal by the second order differentiation and preprocessed with Butterworth filter. Then, Cardioid based graph of APG signal was generated. Its centroid and Euclidean distance are calculated. Finally, classification is done by applying these extracted features to Multilayer Perceptron (MLP) and Naïve Bayes neural networks classifiers. Our experimentation results show that subject recognition is possible by obtaining classification accuracy of 95% for APG based Cardioid graph for both classifiers while only 85% and 70% for PPG signal in MLP and Naïve Bayes classifiers. These outcomes indicate that APG based Cardioid graph biometric identification is a feasible solution to overcome identity fraud.

Development of a Photoplethysmogram Based Heart Abnormality Detection Technique

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Abstract: In this study, the development of Cardioid based graph photoplethysmogram heart abnormality detection technique is presented. PPG signals in this work were collected from an online public repository called MIMIC II Waveform Database, Version 3 Part 1 with sampling rate of 250 Hz. Each recording has one minute of PPG signals. Distinctive features were extracted, and then the Cardioid based graph was plotted as the result of the differentiation of the signals. In addition, the different shapes of closed-loop created were then observed and assessed. From the Cardioid loop, the area and standard deviation were computed to distinguish between normal and abnormal heartbeats. Based on the results, these values for abnormal heartbeat were higher than the value of normal heartbeat thus signifying the differences between two categories of heart conditions. Therefore, the results of this study suggest the capability of the proposed mechanisms to determine heart abnormality and act as an alternative to the current detection system.

Automobile Thermoelectric Exhaust Generator

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Abstract: This paper gives an overview on the use of thermoelectric materials to generate electricity through the waste heat of the exhaust gases of a vehicle. Various thermoelectric modules will be attached to the end of the exhaust of the vehicle. The exhaust pipe will act as the hot end. Fins will be used to provide a cold end for the module. By using Seebeck effect of thermoelectricity, a voltage difference will be generated which will be used to charge batteries. The batteries will be automatically charged when the vehicle runs and then, that power, generated free of cost, can be utilized further

165 Parametric Comparison of Multicast Support for Network Mobility Management: A Qualitative Analysis

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Abstract: Proxy Mobile IPv6 (PMIPv6) was initially introduced to assist unicast networkbased mobility. In recent years, new approaches have been introduced to provide multicast support in PMIPv6. IP multicast is an imperative mechanism for internet video provision. As the usage of internet data traffic remains to develop rapidly, there is a need to optimize and improve the performance of multicast service. Issues such as large overhead, high packet loss rate, single point of failure, service disruption time, handover latency, and non-route optimization needs to be tackled efficiently. To provide multicast services in PMIPv6, route optimization, global mobility, load balancing and context transfer approaches have been introduced. The foremost aim of this paper is to study and analyze these methods via qualitative analysis. This is to focus the advantages and the limitations of the current approaches.

Biogeography-based Interference Mitigation Scheme for 166 **Downlink in OFDMA based Heterogeneous Network** Mohammad Kamrul Hasan1, Ahmad Fadzil Ismail1, Aisha-Hassan Abdalla1, Wahidah Hashim2, Shayla Islam1 1Department of Electrical and Computer Engineering, International Islamic University Malaysia, Kuala Lumpur, Malaysia 2College of Information Technology, University Tenega Nesional (UniTen), Malaysia E-mail: hasankamrul@ieee.org, {af ismail, aisha}@iium.edu.my, wahidah@uniten.edu.my **Abstract:** In Heterogeneous Network (HetNet) the small base station such as femtocells are deployed in indoor and multiple business complexes in order to extend the coverage and capacity. The deployment of co-channel (i.e. shared channel) for femtocells along with macrocell induces the severe interference issues. This is because of effects on SINR and thereby capacity become deteriorated. Therefore, this paper investigates the interference mitigation techniques and come out with a proposal to improve the Signal to Interference Noise Ratio (SINR) performance as well as total capacity in Heterogeneous Network (HetNet). The simulation results show that the achieved capacity is maximized than the existing technique.

Handoff Performance Analysis for Multihoming-based Network Mobility Scheme

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Abstract: The necessity for Multihoming functionality emerged since the standard Network Mobility Basic Support Protocol (NEMO BSP) acquiesces the Mobile Router (MR) to bind single Care of Address (CoA) at once with its Home Agent (HA) only. Besides, NEMO networks are usually attached through the wireless which results in less stable links. There could also be several Mobile Network Nodes (MNNs) behind the MR. Thus, a loss of Internet connectivity has higher impact compared to a single MNN. To ensure a continuous Internet connectivity to mobile networks, it is preferable to use multihoming mechanism in which MR is equipped with multiple interfaces as well as technologies. This paper has proposed a multihoming-based scheme on Proxy MIP6 (PMIPv6) domain for handoff performance analysis relating to handoff delay, packet delivery ratio, as well as throughput at different number of MR, speed and time. After that, it has developed a simulation model to assess the proposed scheme as well as compared it with Network Mobility Basic Support Protocol (NEMO BSP) and multi-interfaced scheme. Results attained from evaluation will support the network engineer to pick a suitable multihoming-based scheme in mobile environment at different number of MR, speed and time

206 Clock Gating Based Energy Efficient and Thermal Aware Design of Latin Unicode Reader for Natural Language Processing on FPGA

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Abstract-In this paper we have aimed to design an energy efficient and thermally aware Latin Unicode Reader. Our design is based on 28nm FPGA (Kintex-7) and 40nm FPGA (Artix-7). In order to test the portability of our design, we are operating our design with respective frequency of different mobile architecture. For thermal analysis of our energy efficient design, we have taken temperatures of four different regions from reference. Latin Unicode reader

takes 16-bit hexadecimal code of alphabet and clock input. At the end we can conclude that the maximum power consumption is at 2.2GHz and minimum power consumption is at 1.2GHz. When we talk in terms of temperature we can see that maximum power is consumed at 329.85K and minimum power is consumed at 294.15K. And also the power dissipation is less in the case of 40nm (Artix-6) and is more in the case of 28nm (Kintex-7).

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