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Paper ID 7

Cognitive Radio Technology: System Evolution

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Abstract—Cognitive Radio is a novel method of radio communication which enables more efficient use of the frequency spectrum. This efficiency is achieved by dynamically allocating frequency bands within the spectrum to different users. Within the field of Cognitive Radio, many different aspects of the system must be considered in order to achieve an optimal system. This includes methods for sensing whether the spectrum is available, sensing which channel is best for use, determining the time required to transmit data, and determining protocols which ensure all users achieve an adequate quality of service. This paper reviews a section of current topics in Cognitive Radio research on how cognition is used to make optimal channel selection. Paper compares various methods and identifies significance of various options and their efficiencies.

Keywords — Cognitive Radio, Dynamic Spectrum Sensing, Opportunistic Spectrum Access

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Performance Investigation of OTDM-WDM System using Hybrid Modulation Format

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Abstract --In this paper, the performance of return-tozero/differential quadrature phase shift keying/polarization shift keying (RZ/DQPSK/PolSK) orthogonal modulation format is investigated in hybrid optical time division and wavelength division (OTDM-WDM) multiplexing technique to increase the spectral efficiency of the system. A 16×105 Gb/s orthogonal modulated OTDM-WDM signals are used for evaluating the system performance including BER, eye diagrams etc. The error free performance over 140 km transmission is achieved with the acceptable bit error rate.

Keywords -- Orthogonal modulation, OTDM-WDM system, high speed

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Mobile DDR Based Thermal-Energy Efficient Portable Unicode Reader on FPGA

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Abstract— Devnagari is used as a script in Hindi, Sanskrit, Marathi, Konkani, Nepali and at least other 18 languages of South Asia. But, no research is available in the field to design portable Devnagari Unicode Reader(DUR). This paper aims to fill this research gap and design a portable DUR as well as make it thermal and energy efficient. Thermal efficient DUR means this DUR is able to operate in the temperature range of 0oC- 125oC. Energy efficient DUR means that it would be able to run with the least amount of energy in compare to their traditional counterpart. Four different 28nm 7 Series FPGA and Xilinx ISE 14.6 were taken to verify the energy efficiency and thermal efficiency of a portable Unicode reader using MOBILE DDR input/output standard. Kintex-7 is more thermal efficient than Artix-7. Whereas, Kintex-7 Low Voltage(LV) is even more thermal efficient than general Kintex-7. Artix-7 is energy efficient than Kintex-7. Also, Artix-7 is more energy efficient than Artix-7 LV.

Keywords —Unicode Text Processing, Text Analysis, Text Recognition, Energy

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Paper ID: 5

Scrutinizing Elections Strategies by Political Parties via Mining Big Data for Ensuring Big Win in Indian Subcontinent

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Abstract— In simple words, big data can be defined as any data which challenges the currently existing techniques for handling it. Big data presents a grand challenge for database and data analytics research. In this research paper the central theme is to explain the use of big data concepts in such a manner that it would help the political parties in canvassing and targeting voters and on the other hand it would help electorates to appoint an efficient representative from their respective constituency. This paper includes discussion about the beginning of the era of big data in the Indian politics which has been utilized to maximum potential in 16th Lok Sabha national elections by BJP (Bhartiya Janta Party) to gain total majority. Election Commission of India (ECI) also made use of techniques associated with big data in mining the huge database of 118 million people of India for conducting effective and healthy elections. Among many, the real challenge was to extract voter info from 25 million pdf pages and transliteration of the same into English to fuse with other sources. A special infrastructure was built to handle this project via servers that processes master files containing 8 TB of data. It made use of Hadoop and PostgreSQL. Besides this testing and validation was another big task to be performed. Several heuristic algorithms were developed for people classification based on name, geography etc., which help in identification of religion, caste and even ethnicity. In addition to this, we would also discuss the logical challenges faced by big data in handling election process in India.

Keywords— **Big Data electoral, ECI (Election Commission of India), Map Reduce MPP (Massive Parallel Processing)**

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SSTL Based Energy Efficient ISCAS'99 Benchmark Circuit Design on FPGA

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Abstract – In this work, we are using frequency scaling as power optimization technique. In frequency scaling, frequency is scaled from 1MHz to 1THz, where intermediate values are 10MHz, 100 MHz, 1 GHz, 10 GHz and 100 GHz. In this paper we have measured the different power dissipation for different SSTL Logic families with the help of frequency scaling. If we are measuring the clock power, logic power and signals power for different logic families at one frequency then these powers comes out to be the same that concludes that these three powers are same for all the SSTL Logic families for some same frequency .But it had been observed that total power (including clocks, logic, signals, IOs, leakage powers) keeps on changing for different SSTL logic families even at one same frequency. If we are operating on frequency of 1MHz, there will be maximum power dissipation in case of SSTL2_II_DCI and minimum power dissipation in case of SSTL15. Similarly if we are operating on frequency of 10MHz, there will be maximum power dissipation again in case of SSTL2_II_DCI and minimum power dissipation in case of SSTL15. Similarly if we are operating on frequency of 100MHz, 1GHz, 10GHz, 100GHz and there will be maximum power dissipation again in case of SSTL2_II_DCI and minimum power dissipation in case of SSTL15 always. But in case of 1THz frequency the maximum power dissipation is in case of SSTL2_II logic family and minimum power dissipation in case of SSTL18_I_DCI.

Keywords—SSTL, Frequency Scaling, FPGA, VLSI, Device Operating Frequency

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Paper ID: 9

SSTL I/O Standard Based Low Power Vedic Multiplier Design on FPGA

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Abstract -- In this work, we are going to design thermal aware low power Vedic multiplier using Stub-Series Terminated Logic (SSTL). The design of Vedic multiplier is a part of Vedic arithmetic circuits design project. Vedic multiplier design is based on the formula “Urdhva-Tiryagbhyam”. SSTL135_R is minimum I/O power consumer. SSTL135_DCI is maximum power consumer. When we use SSTL135_R in place of SSTL12, SSTL12_DCI, SSTL15, and SSTL135_DCI, there is 42.5%, 82.7%, 28.12%, and 72.9% reduction in I/O power at 21oC, 40oC, 53.5oC and 56.7oC. This design is implemented on Artix-7 FPGA using Verilog as hardware description language and Xilinx ISE 14.1 as simulator

Keywords—SSTL, Low Power, Vedic Multiplier, IO Standard, FPGA.

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LOW COMPLEXITY DESIGN OF MIMO PRECODERS

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Abstract -- The problem in MIMO channels is the separation of the data streams which are sent in parallel. By the process of precoding at the transmitter, the data streams are sent in parallel independent sub channels. For that decomposition of channel into sub channels needs to be performed. With the aim to reduce complexity involved in precoding, MIMO precoder design using seven channel decomposition methods namely SVD, GMD, LDLH, LU, Schur, QR and Jordan decomposition have been designed, implemented and its BER performance, computational complexity is analyzed. While comparing with all other decomposition schemes, QR decomposition involves relatively lesser number of operations. The simulation results show that QR decomposition outperforms all the other channel decomposition methods in BER performance.

Keywords – MIMO, Precoding, Channel, decomposition, Sub channel.

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Low Voltage Complementary Metal Oxide Semiconductor Based Internet of Things Enable Energy Efficient RAM Design on 40nm and 65nm FPGA

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Abstract -- In this work, we are making Energy Efficient Internet of Things (IoT's) Enable RAM. In order to make it energy efficient, we are using low voltage complementary metal oxide semiconductor (LVCMOS) Standards. We are using the 3 different members of LVCMOS IO standards family at different FGPA (virtex-5 and virtex-6) and searching the most energy efficient among them. We are inserting 128-bit IP address in RAM to make internet of things enable RAM. Finally, we are operating our IOT's Enable RAM with different operating frequency of I3, I5, I7, Moto-E and Moto-X

Keywords – RAM, Internet of Things, FPGA, LVDCI, Thermal Aware Design, Energy Efficient Design

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Processor Specific Data Processing Device (DPD) Design For Energy Efficient Data Center

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Abstract-- In this work, we are going to design data processing device (DPD) for energy efficient data center. We are also testing the compatibility of our DPD design with the latest available processor. We have made the efficient data center by avoiding the data corruption by matching resistance of transmission lines, device and port. To optimize the performance LVCMOS I/O standards are used. We have applied different operations on DPD to measure the efficiency of different four processors. On 2.8GHz operating frequency, there is 45% reduction in clock power when we use Intel Xeon E7-8890 instead of AMD x2150 which is operating at 1.9GHz and on 2.8 GHz operating frequency, there is 42.8% reduction in logic power when we use Intel Xeon E7-8890 instead of AMD X2150 which is operating at 1.9 GHz. There is 45.4% reduction in signal power on 2.8 GHz operating frequency when we use Intel Xeon E7-8890 instead of AMD x2150, operating at 1.9 GHz. Reduction in DSP'S power is 50% at 2.8GHz frequency if we use Intel Xeon E7-8890. On 1.9 GHz frequency there is reduction of 27.03 % IO's Power while using AMD x2150 instead of 2.8GHz Intel Xeon E-7 8890.

Keywords -- Data Processing Device, FPGA, Energy Efficiency, Data Center, Processor.

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Harnessing Stray Energy from Computer Networks

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Abstract-- Energy, which is the basic necessity of life, plays key role in apparently anything we do. The scarcity of energy is not a new topic. This calls for innovative ways of conserving the precious energy which might be going waste. This paper deals with the idea of harnessing the stray energy from omnipresent electromagnetic waves as involved in computer networks, like the Wi-Fi and Bluetooth other electromagnetic signals. Although the field is yet confined to be able to harness only a limited amount of energy as the energy of these sources is meant for other purposes, it would still prove to be of great help when charging portable devices like cell phones or laptops. Gradually, it is to become a prominent methodology in energy conservation and green communication technology.

Keywords -- green computing, energy conservation, wireless networks, electromagnetic energy, network energy

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Electronic toll collection based on Category of Vehicle Using RFID

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Abstract— Electronic toll collection approach is based on Radio frequency identification is a contactless technique that uses the radio waves to identify the object uniquely. With the help of RFID Tag and Reader the Systems able to store the information about the object when enters in the range of the Reader. The paper focuses on automatic electronic toll tax collection based on category of vehicle. Everyone has to pay different payment to the authority according to the classification.

Keywords – RFID, Tag, Reader.

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Paper ID: 42

Design of a manual tracking arrangement to be used for solar tracking

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Abstract -- This paper aims to explain the construction of a manual tracking arrangement to track the movement of the sun. The tracking helps to improve the output from the PV panel by increasing the solar irradiation falling on the PV panel.

Keywords -- pv stand, pv panel, solar pv panels, manual tracking arrangement.

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Simulating and Analysing the Impact of Routing Protocols on Different Parameters of WSNs

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Abstract— Energy efficiency of Wireless Sensor Networks has become an essential requirement and is the main issue for researchers. Various routing, data dissemination and energy efficient protocols have been designed for Wireless Sensor Networks where energy issue has been given more stress. Sensors in wireless sensor networks work on battery and have limited energy. Hence, network has limited lifetime. Routing protocol plays a major role in deciding for how much time a network will survive. All routing algorithms tend to increase the lifetime of WSN while maintaining factors like successful and real-time delivery of a message. This paper aims towards studying different categories of routing protocols and finally four hierarchical routing protocols LEACH, EHRP, SEP and FAIR have been simulated. The performance of each routing protocol has been measured on some performance metrics like network lifetime, packets transferred to BS, number of dead nodes etc and finally concluded that how a routing protocol can impact the network lifetime.

Keywords — Hierarchical Routing Protocols, Wireless Sensor Networks, LEACH, EHRP, SEP, FAIR, Energy-efficiency, Network Lifetime.

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Performance Analysis of Indoor Optical Wireless Links

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Abstract -- Indoor wireless optical communication is a good alternative to existing mature RF technology. However various challenges in indoor optical wireless technology are due to free space loss, ambient light, and multipath dispersion causing inter symbol interference (ISI). The degradation in performance due to these facts is very much influenced by the channel topology. So in this paper the performance of indoor optical configuration has been analyzed using three types of channel topologies viz., directed (LOS), non-directed (LOS), and multi beam diffused link for various transmitter and receiver design parameters. The analysis has been carried using Optiwave simulation tools.

Keywords -- Optical wireless communication, BER, Q-factor, NRZ-OOK, LOS.

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Multi-Diagonal (MD) Codes for spectral amplitude coding-optical code division multiple access.

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Abstract -- A Multi-Diagonal (MD) code for Spectral Amplitude Coding-Optical Code Division Multiple Access (SAC-OCDMA) is proposed. Using MD Codes, the performance of the different systems containing different users is estimated. By analysis, it is shown that the MD codes exhibit zero cross correlation and hence cancels the effects of MAI (Multi-Access Interference).

Keywords -- MD code, OCDMA, MAI, and Zero cross correlation.

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A Review on Security challenges in VANET

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Abstract -- The Vehicular Ad Hoc Networks (VANETs) have grown out of the need to hold up the growing number of wireless products that can now be used in vehicles. These products contain remote keyless entry plans, personal digital assistants (PDAs), laptops and mobile telephones. As mobile wireless devices and networks turn out to be increasingly important, the demand for Vehicle-to-Vehicle (V2V) and Vehicle to-Roadside (VRC) or Vehicle-to-Infrastructure (V2I) Communication will maintain to grow. Through this paper we are going to throw some luminosity on the previous researches done in this area and will compare the a variety of drawbacks of these researches which is very important to impalement the security quantify.

Keywords -- Vehicular Ad hoc Network (VANET), attackers attacks, Security.

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Polyhouse marketing system for effective Web-based Agricultural Marketing using Big Data Analytics

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Abstract -- Agriculture, in its widest sense can be defined as the cultivation and production of crop plants or livestock products. With the advent of new technology in the field of agriculture a novel form of farming known as Poly house farming came into existence. Poly house farming is an alternative new technique which reduces dependency on natural processes that are very basic needs of agriculture i.e. rainfall, temperature, humidity and geographical conditions and makes the optimum use of land and water resources. Poly house evolved to create favourable micro climates, which favour the crop production by simulation of artificial environment using latest computer assisted technology. Yet poly house product marketing is an uncovered area which is still neglected and there is a strong need to for an effective marketing intervention or channelization. In general, the farmers continue to live in poverty. The liberalized trade environment has added another dimension to the poverty of farmers as the resource poor farmers are now uncertain about their future also. In this paper we explore the traditional approach of marketing concept of poly house agriculture and other agriculture sectors. We have detected various deficiency parameters, and identified the need of an effective poly house marketing system and propose a novel web based model for poly house marketing based on Big Data analytics.

Keywords -- Polyhouse farming, Electronic Polyhouse Agricultural Marketing, Market Channelization, Commodities

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Analysis of Selective Packet Drop Attack in MANET

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Abstract -- Wireless Networking is a technology in which number of mobile nodes can communicate with each other directly or indirectly through wireless links. Mobile Ad-hoc Network (MANET) is one of the types of wireless network. MANET is a self-configuring type of network in which mobile nodes can join or leave the network when they require. The wireless links in MANET are highly error prone and can go down frequently due to mobility of nodes, interference and less infrastructure. There are a variety of attacks which are possible to be triggered in MANET. In this paper, we will focus on selective packet drop of selective forwarding attack. Selective packet drop attack reduces the throughput of the network. Simulation results shows that the effects of selective packet drop attack in the light of packet loss, throughput and end-to-end delay in MANET.

Keywords – MANET, Attack, Selective Forwarding Attack

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Performance Analysis of Different Digital Modulation Techniques using Eye Opening, BER, Jitter and Q factor over 1000 km SMF

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Abstract-- This paper presents the comparative analysis among various digital modulation techniques used for high speed optical transmission. Comparative analysis has been presented using BER, Jitter, and Q factor. This work compares the performance of digital modulation formats including PSK, QPSK, QAM, and MSK with very low BER of e^{-013} for QPSK format.

Keywords – BER, Jitter, Q factor, PSK, QPSK, QAM, MSK

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Application of Artificial Neural Networks in Medical Science to lessen human death rate

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Abstract -- An artist is a person who can carry out something those others cannot, and that is exactly what a good physician does during a medical diagnosis procedure. He (or she) employs his educations, experiences, and talent, to diagnose a disease. A diagnosis procedure starts with the patient complaints and the doctor learn more about the patient situation by interacting with him and measuring some metrics such as blood pressure, body temperature etc. The diagnosis is then determined by taking the complete available patients status into the account. Then depending on that, a suitable treatment is prescribed, and the whole process might be iterated. In each iteration, the diagnosis might be reconfigured, refined, or even rejected. The concept of Artificial Neural Networks finds its roots from the subject of biology where neural network plays a key role in human body. Neural Network is a web of inter connected neurons which are millions in number. With the help of these inter connected neurons all the parallel processing is done in human body and is the best example of parallel processing. It is composed of a cell body or soma and two types of out reaching trees called the axon and the dendrites. The Neuron send signals at spikes of electrical activity through a long thin stand known as an axon and an axon splits this signals through synapse and send it to the other neurons. The combined network of all these neurons creates intelligent behavior that is unmatched and unsurpassed. Similar to biological Neuron, Artificial Neural Network also has neurons which are artificial and they also receive inputs from the other elements or other artificial neurons and then after the inputs are weighted and added, the result is then transformed by a transfer function into the output. ANN is currently a hot research area in medicine. The research is mostly being done on modeling parts of the human body and recognizing diseases from various scans like cardiograms, ultrasonic scans etc. ANNs are used to implement electronic noses. Electronic noses have several potential applications in telemedicine. In this research paper we would deeply explore the steps involved in building up an ANN, its versatile applications in medical science and propose a method for its effective and efficient use.

Keywords – ANNs, Electronic Noses, supervised learning, unsupervised learning.

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Drawbacks of 2D fingerprint recognition systems makes way for 3D fingerprint recognition systems

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Abstract -- Biometrics is the science and technology of measuring and analyzing biological data. In information technology, biometrics refers to technologies that measure and analyze human body characteristics, such as DNA, fingerprints, eye retinas and irises, voice patterns, facial patterns and hand measurements, for authentication purposes. In addition to security, the driving force behind biometric verification has been convenience. Among different available biometric techniques, fingerprint recognition is the most prominent one. Fingerprint authentication refers to the automated method of verifying a match between two human fingerprints. Fingerprints are one of many forms of biometrics used to identify an individual and verify their identity. Because of their uniqueness and consistency over time, fingerprints have been used for over a century, more recently becoming automated due to advancement in computing capabilities. Fingerprint identification is popular because of the inherent ease in acquisition, the numerous sources (ten fingers) available for collection, and their established use and collections by law enforcement and immigration. In this research paper we have studied about the different modules involved in fingerprint recognition system and discussed the steps involved in the process with algorithm analysis. In addition to this we studied about 3D fingerprint recognition technology and compared it with 2D fingerprint recognition system.

Keywords – Biometrics, minutiae, 2D fingerprint recognition, Contactless 3D fingerprint recognition

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Correlation between Brain Rhythms in Eye open - Closed state based on Power Spectral Density

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Abstract -- The spectral estimation method was used to analyze the electroencephalogram (EEG) signals in eye open and eye closed state. From the graphical representation of delta, theta, alpha, and beta average power spectrum, these two states can be clearly discriminated. In these two states, frontal areas were activated in alpha, delta and theta components whereas occipital areas were activated in alpha and delta bands. Except beta, all these bands had significantly higher power in frontal and occipital areas when eyes were open. After removing the motion artifacts, the results also implied that the average power spectral density of all the EEG components being varied.

Keywords -- POWER SPECTRAL DENSITY, EEG, DATA ACQUISITION, BIOPAC.

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Challenges and Issues of Secure Localization in Wireless Sensor Network

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Abstract -- Wireless Sensor Networks (WSNs) has now become one of the important areas of research in present time. A WSN is developed by deploying sensor nodes in adhoc manner. Sensors that are deployment in various tough, crucial and in remote areas are most of the times remain unattended once they are deployed in specific environment. So security of these nodes becomes the main challenge once the network is deployed. This makes the secure localization as the main objective and challenge in wireless sensor network. This research paper focus is on localization of nodes integrated with security as one of the factor. Some open issues and challenges which are still prevailing are also described with some suggestive solutions.

Keywords – localization, Quos, RSS, TDOA, TOA, wireless sensor networks (WSNs).

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A Comparative Approach to Feature Extraction Techniques for Human Computer Interface Systems

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Abstract -- Human computer interface (HCI) is combination of hardware and software systems that allows the disabled or paralyzed persons to communicate with their surroundings or care-takers. In recent years, SSVEP based HCIs are widely being used due to higher accuracy of the systems. Feature extraction and noise reduction are the one of the complexities in the SSVEP-HCI systems. In this paper a comparative analysis of these different approaches for eliminating hitches has been reviewed such as canonical correlation analysis (CCA), wavelet transform analysis and fast Fourier transform analysis.

Keywords – HCI, EEG, CCA, PSDA, SSVEP, FFT.

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TO DETECT THE LOCATION OF PACKET COLLISION IN WIRELESS SENSOR NETWORK

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Abstract -- A wireless sensor network is collections of sensing device that can be wirelessly communicate. Each device is capable of talk to its peer, sense, process. It is centralized system. It is inexpensive to install and no wiring is required for data transfer. The problem arises when two or more nodes send data at the same time over the same channel then packet collision problem is arises. The fixed path creates the problem because there is possibility because there is possibility that two nodes have same path. The RFID is used for channel sensing. The clocks of the cluster heads are not synchronized due to this packet collision takes place and throughput of the network reduced and energy of the network consumption increases and overall network life time reduces.

Keywords -- Wireless sensor Network (WSN), RFID Protocol, Related Work.

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A survey on Joint Source-Channel Coding and its applications in Image Processing

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Abstract -- Third generation wireless system has tremendous applications. High bandwidth multimedia system beyond any doubt is main application of next generation wireless system and hence bandwidth requirement is that the major issue faced by the technologies. Source coding (data compression) is used to reduce bandwidth demand .Also on the opposite side Channel coding (error prediction) is the basic methodology used for the enlargement of the bandwidth by reducing the bit error rates. Joint Source-Channel coding (JSCC) is a novel multimedia service which is introduced in commercial wireless communication systems. This paper will briefly introduce Joint Source-Channel cryptography (JSCC) and mainly focus upon its application in image process .Conclusion has been made within the finish of this paper.

Keywords -- Image Processing, Joint Source-Channel cryptography (JSCC), Source coding, Image compression, Channel Coding

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Vehicular Ad-hoc Network-A Literature Review on Simulation Tools

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Abstract -- Vehicular Ad-hoc network (VANET) provides smart transportation system owing to Vehicle to Infrastructure (V2I) and Vehicle to Vehicle (V2V) message dissemination with an objective to provide safety on roads. VANET in comparison to Mobile Ad-hoc Network (MANET) points to an exceptional kind of networking with high mobility nodes. Major applications of VANET include electronic brake light, parking management and point crash notification. Protocol stack for VANET vary according to vehicle movement scenario such as traffic light, highway and urban road scenario. The contribution in area of VANET by research community on various layers is on rise. The simulator close to the real time set up for VANET is preferred choice of researchers as it involves less cost in comparison to real set up. In this paper, we focus on various applications and challenges of VANET. We also provide step by step guide to simulate VANET environment with comparative analysis of various tools.

Keywords -- Mobile Ad-hoc Network (MANET), Motor Vehicle Emission (MOVE), NS-3, Routing Protocols, Simulation tools, Simulation in Urban Mobility (SUMO), Vehicular Ad-hoc Network (VANET), V2I, V2V

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Performance Evaluation of Free Space Optic Link at 1550nm over Varied Circuit Designs on the basis of BER and Quality Factor

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Abstract -- A comparative analysis of optical modulation and light source has been presented over Free Space Optics link at 1550nm over varied circuit designs. Two optical modulation techniques including; EML and DML schemes are discussed in this paper and analysis have been carried by varying the range of both systems, Q-factor and BER. The paper also compares the power spectra of light source and concludes a best light source with one which can be used for the longer distance with higher efficiency.

Keywords -- Performance Evaluation of Free Space Optic Link at 1550nm over Varied Circuit Designs on the basis of BER and Quality Factor.

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Paper ID: 94

General Framework of Compressive Sampling and its Applications for Signal and Image Compression: A Random Approach

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Abstract -- Compressive sampling emerged as a very useful random protocol and has become an active research area for almost a decade. Compressive sampling allows us to sample a signal below Shannon Nyquist rate and assures its successful reconstruction with some limitations on signal. In this paper we use compressive sampling for signal and image compression and successfully reconstruct them by solving l_1 norm optimization problems. We also show that compressive sampling can be implemented if signal is sparse and incoherent through simulations.

Keywords -- Compressive Sampling, Sparse, l_1 -norm, Incoherent

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AFTSMS: Automatic Fleet Tracking & Scheduling Management System

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Abstract -- With increasing numbers of fleets on roads, budget & time constraints, scheduling of fleets, security concern about driver over speeding of fleet, private use of fleet by drivers for their own benefits has led to devise of fleet management software solution system for vehicles owners. This helps fleet front office employees and administrator (owner) in effectively and efficiently controlling the fleets by integrating vehicle unit which consists of sensors, GPS receivers, GSM technology, small screen monitors & on-board equipments with reservation & scheduling management and central server. Fleet Management system allows transportation companies to eliminate or minimize the risks associated with vehicle, improving productivity, scheduling and reducing their overall transportation costs

Keywords -- Vehicle Unit, Longitude, Latitude, GSM, GPS, Sensors.

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Paper ID: 107

A Survey on Energy Efficient Techniques in Cloud Computing

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Abstract -- With the rapid growth of technology cloud computing has a great demand in business as well as web applications. The growth of cloud requires a powerful data centers (DC). These data centers consume a large amount of power. Therefore, the concept of energy efficiency is required to decrease the power consumption. In this paper, we consider different techniques i.e. DVFS, VM Consolidation, Resource throttling and DCD. A theoretical comparative study of all these energy efficiency approaches in cloud computing is done.

Keywords -- Cloud computing, Energy Efficiency, DVFS, VM Consolidation, Resource throttling

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Paper ID: 111

New Cluster Formation Scheme for Vehicle Authentication in VANET

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Abstract -- Vehicular ad-hoc network is an emerging technology that has high applicability in our day to day life. One of the most intriguing issues in the implementation of VANET is to provide security. Vehicles need to be authenticated to ensure that the right message is received and the communicating entities are the ones as claimed. This paper proposes a new cluster formation scheme for VANET. The generators of the group are calculated using cyclic additive group concept. Once, the group leaders are selected, vehicles forming part of the cluster will be determined based on Euler's totient function. Along with authentication, this scheme also preserves the privacy of the vehicles.

Keywords – GAP, OBU, PKI, RSU, VANET.

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Paper ID: 113

Algorithm for Teaching Measurement Errors using Virtual Instrumentation

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Abstract -- This paper introduces the concept of teaching errors in measurements through experiment using LabVIEW which will help the students to understand the concept efficiently. In this paper, algorithm is designed to calculate various measurement errors and perform statistical analysis. The NI ELVIS board is used for experimentation and measured values are used for simulations. Error measurement and calculation using hardware is complex and limited so using this algorithm, individual student can perform an experiment anywhere using virtual instrumentation.

Keywords – Algorithm, Elvis Board, LabVIEW, Measurement Errors, Statistical Analysis, Virtual Instrumentation

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Paper ID: 114

Hierarchical Approach for the Detection of DDoS attack in VANET

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Abstract -- Vehicular ad hoc network (VANET) provides efficient communication to the vehicles without any prefixed infrastructure and reduces the chances of traffic congestion. The main motive of network is to provide consistent communication for reliable traffic safety. The open architecture gives security challenges to the ad hoc network. This paper provides a strategy to detect DDoS attack in VANETs. In DDoS attack, the attacker mainly targets a specific victim to make resources unavailable for the victim. In our strategy, hierarchical network architecture is adopted and a protection node (LPN) is selected. When DDoS attack triggered into the network, PDR value is used to be compared with threshold. After this, monitoring message is sent to the vehicles and the attackers, who are flooding the network by sending false packets, will be then detected.

Keywords – VANET, RSU, LPN

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Paper ID: 115

A Reliable Distributed Mutual Exclusion Algorithm Using Token in MANET

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Abstract -- In Mobile Ad-hoc Network, mutual exclusion among the nodes starving for critical resources is identified as one of the major area of research. Distributed Mutual Exclusion (DME) allows mobile nodes to share critical resources among them. For node to node delivery of data, selection of intermediate node depends upon the formation of quorum. Formation of quorum depends on the fitness value, computed by applying Particle Swarm Optimization. During the communication phase, data transfer between two nodes, belong to different quorums, will be carried out by an arbitrator, which will act as a bridge between those quorums. The function of an arbitrator is to grant the permission to incoming requests for entering the critical section, by forwarding incoming requests to node, which owns the primary token, which in turn reduces response time and synchronization delay.

Keywords -- Distributed System, Critical Section, Mutual Exclusion.

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Paper ID: 116

Performance Analysis of Spectrum Sensing Techniques in Cognitive Radio

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Abstract -- The growth of wireless communication is increasing day by day and its applications have put a lot of restraint on the consumption of accessible radio spectrum which is limited. However, restricted spectrum leads to the underutilization of spectrum as a huge part of licensed spectrum is not properly utilized. Thus, for the efficient utilization of radio spectrum Cognitive Radio technology is introduced. Cognitive Radio is a promising technology which gives the efficient usage of spectrum. Spectrum sensing technique helps to detect the white holes in licensed spectrum which tends to lead in an efficient manner. This paper gives the performance analysis on comparison of different spectrum sensing technique

Keywords -- Cognitive Radio, Cyclostationary Detection, Energy Detection, Matched Filter

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Paper ID: 117

A Comparative Analysis of Adaptive IIR Filtering Techniques using LabVIEW

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Abstract -- Removal of noises from real-time speech signal is a typical problem. The signal interference initiated by background noise is a major problem in voice communication systems. Adaptive Filtering methods have emerged as an important technology for communication systems. This technique has been employed to improve the quality of the speech signal by cancelling the undesirable phenomenon such as acoustic noise. In this paper, for the removal of additional noise from speech signal an adaptive filter has been designed using LMS, NLMS, SLMS and VSS-LMS algorithms. This paper presents the instigation of Least Mean Square algorithm (LMS), Normalized Least Mean Square algorithm (NLMS), Sign Least mean square algorithm (SLMS) and Variable step size (VSS) algorithm on an infinite impulse response (IIR) filter using adaptive filter toolkit of LabVIEW software. User interface is designed using LabVIEW to obtain the learning curves for these adaptive algorithms. The final results show the comparison of the performance of the entire proposed algorithms with each other. The complete performance of the designed system in terms of stability and convergence rate has been observed.

Keywords -- Adaptive IIR Filter, Convergence Speed, LabVIEW, LMS Algorithm, Mean Squared error, NLMS Algorithm, Sign LMS Algorithm, VSS Algorithm

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Paper ID: 118

Interaction Techniques: helping user manipulate AR virtual content

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Abstract -- Augmented Reality is a technology that allows virtual world to combine with real world giving us a new experience. Although AR technology has been developed forty years ago but still advancements are going on in this field. One of the important facets of AR is developing suitable interaction techniques for manipulating AR virtual content so that end user can easily interact with the virtual content. In this paper we discuss various interaction techniques for user experience including tangible user interface, multimodal interface and mobile user interface.

Keywords -- **Augmented Reality, Tangible User Interface, Multimodal User Interface, Mobile/Handheld User Interface**

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Review of Graphical Rendering Software's for Creating Virtual Content for AR Applications

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Abstract -- The field of geographic information system deals with two methods of getting 3D virtual reality. The first method details the use of a 2D professional platform to obtain the virtual reality through secondary development technique and the second method details the use of 3D or 2.5D professional platform. This paper illustrates the different techniques such as CATIA for 3D modeling on Dassaults system , Designer's augmented reality tool kit(DART), FLAR Tool Kit, Unity 3D,3DMax, AR Tool Kit, Computer Aided Design(CAD); that can be used for AR applications. The sole motive behind this paper is to enhance the true instance environment for human and computer interaction. As Computer rendering is mesmerizing in recent years. The Augmented Reality (AR) technology is precedent of the real time conjecture technology. The succession of rendering software's and hardware makes AR more interactive with human being.

Keywords -- **Augmented Reality, Virtual Reality, Delineation Domain, create graphical content**

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AN OVERVIEW OF DISPLAY HARDWARE FOR MERGING THE VIRTUAL IMAGES WITH THE VIEW OF THE REAL WORLD FOR AUGMENTED REALITY APPLICATIONS.

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Abstract -- This paper presents the analysis of the changing trends in the display devices used augmented reality technology. The main focus of this paper is on the innovations in the hardware display device for merging the real world with the virtual world. It describes work executed by many different research groups, the rationale behind each new display system, and the difficulties and problems encountered while structuring some Augmented Reality applications using those hardware displays. This paper discusses the Challenges faced while implementing the applications as well as the future challenges are discussed.

Keywords -- Augmented reality, virtual environment, display hardware.

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On Security Analysis of recent Password Authentication and Key Agreement Schemes Based on Elliptic Curve Cryptography

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Abstract -- Secure and efficient mutual authentication and key agreement schemes form the basis for any robust network communication system. Elliptic Curve Cryptography (ECC) has emerged as one of the most successful Public Key Cryptosystem that efficiently meets all the security challenges. Comparison of ECC with other Public Key Cryptosystems (RSA, Rabin, ElGamal) shows that it provides equal level of security for a far smaller bit size, thereby substantially reducing the processing overhead. This makes it suitable for constrained environments like wireless networks and mobile devices as well as for security sensitive applications like electronic banking, financial transactions and smart grids. With the successful implementation of ECC in security applications (e-passports, e-IDs, embedded systems), it is getting widely commercialized. ECC is simple and faster and is therefore emerging as an attractive alternative for providing security in lightweight device, which contributes to its popularity in the present scenario. In this paper, we have analyzed some of the recent password based authentication and key agreement schemes using ECC for various environments. Furthermore, we have carried out security, functionality and performance comparisons of these schemes and found that they are unable to satisfy their claimed security goals.

Keywords -- Elliptic curve cryptography, Smart Card, Remote user authentication, ECDLP, User anonymity

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Paper ID: 126

Temperature Sensing Based Energy Efficient Vedic Multiplier Design Using Either Proportionality or Similarity

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Abstract -- In this project, an innovative design of energy efficient Vedic Multiplier using a prehistoric Vedic mathematics method known as “Anurupyena Shunyamanyat” have been implemented on FPGA. Anurupyena Shunyamanyat is a Sanskrit name which in simple words means 'proportionality' or 'similarly'. This Sutra is highly useful to find products of two numbers when both of them are near the frequent bases like 10, 50, 500 etc (multiples of powers of 10). Lesser time and energy efficient is today's world demand. Choice of IO Standard plays a very important role in power indulgence design. So, we have selected most energy efficient IO standard LVCMOS (Low Voltage Complementary Metal Oxide Semiconductor). Then, we try to achieve more energy efficiency with different technology (40nm and 28nm) based FPGA. Virtex-6 and Kintex-7 are the platforms which have been used in this project. In our paper we have implemented our code on Xilinx ISE Design Suite 14.2 were tested on 28nm and 40nm FPGA. In this project we have observed approx 87-88% decrease in leakage power dissipation when we shift from 40nm to 28nm technology based FPGA.

Keywords -- Anurupyena Shunyamanyat, Vedic mathematics, FGPA, Energy Efficient, LVCMOS, Virtex, Kintex

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Paper ID: 131

Performance Analysis of DCT Based Colored Watermarking for Optimizing PSNR and MSE in Frequency Domain

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Abstract -- In this work mean-square error and peak signal - to - noise ratio is calculated by varying coefficient of watermarked strength 'g'. Watermark strength is added into the watermarked image so as to increase the security and reliability if an information which is being embedded into the original image using a watermark. Hence the watermark consists of the secure information. The technique applied is Discrete Cosine transformed in frequency domain.

Keywords – Watermarking, Discrete Cosine Transform, Mean Square Error, Peak Signal to Noise Ratio, Security.

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Paper ID: 135

Design and analysis of a novel microwave frequency voltage controlled oscillator in CMOS technologies

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Abstract -- In this paper, voltage controlled oscillator (VCO) operable at microwave frequencies is designed using Complementary metal oxide semiconductor technology. Circuit decreases the power dissipation. The voltage controlled oscillator (VCO) is mainly used in phase lock loop (PLL) to generate local oscillation frequency as a frequency synthesizer. Power dissipation is one of the most important performance parameter; The CMOS technique is applied in this paper to diminish the power dissipation. The simulation and performance analysis of proposed circuit is evaluated in Cadence virtuoso tool. In this simulator 180nm standard CMOS process technology. Simulation provides relative study of different analysis. This technique provides 11.43 μ w static power and 7.9mw dynamic power for the 1.8V supply voltage at room temperature.

Keywords -- Voltage controlled oscillator (VCO), Power dissipation, PLL, CMOS.

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Paper ID: 136

Comparative Analysis and Power Efficient Design of Differential Operational Amplifier in CMOS Technologies

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Abstract -- This paper presents a new configuration for linear MOS operation trans-conductance amplifier based on a standard deep submicron CMOS technology. The proposed circuit represents operational amplifier which consume very less power directly used for transducers and filter circuitry and also combines previously reported techniques source degeneration and selective linearization. Measured results show that the proposed circuit uses rail-to-rail differential input range. Total DC gain of the proposed circuit is more than 75 dB for 0.75-V_{pp} differential input voltage while dissipating only 250 nW from 1 V supply.

Keywords -- Cmos integrated circuits, operational amplifier, rail to rail inputs.

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Paper ID: 138

Pixel-Based Skin Color Classifier: A Review

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Abstract -- Vision based computer interface systems provides an easy way for human to communicate with computer or machine. At an early stage of development of these system i.e. detection and tracking of objects, some parameter or feature of human body are utilized for this purpose. Skin color has proven to be the most useful and robust parameter for detection and tracking of objects in real time. Skin color detection is basically divided into two class pixel based and region based. This paper presents an overview of pixel based skin color classifier proposed by various authors with their advantages and disadvantages. The performance assessment of these methods given by various authors is also discussed here

Keywords – Explicit, Parametric, vision based, skin color classifiers, Bayes, Gaussian, Elliptical

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Paper ID: 139

Performance Analysis For Recognition Of Image With Alphanumeric Characters Under Different Environmental Conditions

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Abstract -- In this recent era of technological development, innovation advances in every aspect of life can be easily seen. Automatic systems were developing at very fast pace. Automatic license plate recognition is one of the systems that help in developing intelligent transport system in a city or country. This also finds application in the areas of vehicle surveillance, border security, toll tax management etc. This paper evaluates the performance analysis for recognition of image with alphanumeric characters under different environmental conditions. The overall performance recognition rate was 97.57%,

Keywords -- image extraction, Segmentation, contrast, night vision.

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Paper ID: 143

Microwave Absorption Study of Nano Synthesized Strontium Ferrite Particles in X Band

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Abstract-- Microwave ferrites require high coercivity, for their use as microwave ferrites. Strontium hex ferrite is one of the best material available for the use as microwave components specifically microwave absorber due to its magnetic properties , high intrinsic coercivity, large crystal anisotropy and low cost. Strontium hex ferrites were successfully synthesized through chemical co-precipitation method. The synthesized nanostructure was characterized by X-Ray powder diffraction (XRD) and fourier transform infrared spectroscopy (FTIR).The XRD result shows the shift from amorphous to crystalline after the calcinations of sample at 6000C.The behavior of ferrite as microwave absorber for X band of frequencies was also determined.

Keyword: FTIR , Hex ferrites , Microwave absorption , Nanostructure , XRD.

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Paper ID: 91

Design and Implementation of Efficient Scheduling Algorithm for High Performance Cloud Computing

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Abstract -- Cloud computing is technology that provides access to the services anywhere, anytime and paying for the services that are being used. This allows cloud users to use the data and application, if needed anywhere but must have access to the internet. The main task to be handled is the services arriving at the server for service. It is necessary to handle all services by doing proper scheduling mechanism so as to provide them service in well maintained manner. Better Quality of Service has to be provided to all clients. This strategy is used to schedule multiple users' services which start at any time and the Quos requirements are main consideration. Two scheduling algorithms i.e. First Come First Serve and Round Robin have been executed. Experiments have been done to schedule services of fixed length as well as variable length. In both the cases this has been proved that First Come First Serve shows less average waiting time as compared to Round Robin Scheduling.

Keywords -- Cloud Computing, Scheduling, First Come First Serve, Round Robin

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VoIP based IEEE 802.11g MANETs under Diverse Routing

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Abstract -- A demonstration of VoIP routed MANET ad-hoc network is carried out through reactive-, hybrid- and geographical- ad hoc routing protocols such as AODV, DSR, OLSR and GRP. Subsequently, a performance contrast is drawn amid assorted ad hoc protocols for optimum QoS via VoIP traffic with G.729A codec having incoming- and outgoing- talk spurt length of e0.352. A quick divergence in interconnections among mobile nodes in MANETs results in route failures. In view of that, mobility-induced route failures necessitate to overcome to provide effective internet access along with optimum QoS. Consequently, diverse MANET scenarios are demonstrated at optimum mobility variation range of [0.6-1.4] m/sec with unlike network sizes through diverse traffic load.

Keywords -- MANET Network, Node Speed, Quos

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Comprehensive Analysis of Resource Allocation Algorithms for OFDM Based Wireless Systems

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Abstract— the intensifying demand for high rate data transmission over wireless mediums requires judicious usage of electromagnetic resources considering limitations like power consumption, spectrum efficiency, robustness against multipath propagation and implementation complexity. Orthogonal frequency division multiplexing (OFDM) is a promising technique for next generation wireless communication systems. For such high rate data transfers there is requirement of proper allocation of resources like power and capacity amongst the sub channels. This paper studies various available methods of allocating power and the capacity requirement with the constraint of Shannon limit.

Keywords -- Orthogonal Frequency Division Multiplexing (OFDM), Signal to Noise Ratio (SNR), Bit Error Ratio (BER), Water Filling, Power Allocation

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Paper ID: 134

Analytical Modeling of a Vibrational MEMS Energy Harvester: A Critical Review

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Abstract -- In this work the primary focus of is to study the variation in electrical properties of piezoelectric because they determine the actual output power of these harvesters. The energy harvested is also significantly dependent on the volume of the device that is why reducing the size causes reduction in power harvested but on the contrary its energy density increases.

Keywords -- Analytical Modeling of a Vibrational MEMS Energy Harvester: A Critical Review

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System Analysis of multifunctional Solar Mate

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Abstract -- To cope up with the sustainability and conservation needs, solar technology is currently under rapid evolution. A number of innovations in recent years have given solar panels a different identity as well as a wide range of design options. This paper gives a brief overview of the developed as well as emerging advanced solar technology. The physical structure and energy performance are discussed and compared through numerical computations. Then the innovative concept of solar mate is introduced and the potential areas of applications are discussed. The result indicates that this new design is able to operate various appliances on run time as well as with stored energy and thus contributes a new innovation in solar technology.

Keywords – thermonuclear, Photoelectric, photovoltaic, fluorescent.

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Survey of Association rule hiding algorithms for Privacy Preserving Data mining

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Abstract -- Data mining and hiding are the upcoming research areas in the field of knowledge engineering. The main challenges in data mining are discovering the sensitive association and hide them without enlightening sensitive information. The association rule hiding is a procedure in which the novel database is customized in such way that particular sensitive rules are departed. In this paper, a survey of various recent approaches of association rule hiding has been described along with the comparison between them.

Keywords – Data Mining, PPDM, and Association rule hiding.

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Comparative Analysis of Indoor and Outdoor Tracking Techniques for Augmented Reality Applications

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Abstract -- Amalgamation of Real and Virtual Worlds that aims to enhance the physical information by exact super-imposition of Computer generated content on it is called Augmented Reality. This is one of the most fundamental enabling technologies in which our perception is modified to such an extent that we are able to see, hear and feel the ordinary everyday objects in a new and enriched way. Development of a typical Augmented Reality application not only requires the integration of hardware and software but factors such as Tracking, Registration, Interaction and Display also play an important role in the system design, thereby enabling the human users of this system to sense the physical world around them augmented with computer generated virtual information. The focus of this paper is specifically around survey of various Tracking Techniques available for Indoor and Outdoor applications of Augmented Reality.

Keywords -- Augmented Reality, Indoor and Outdoor Tracking, Sensor Based Tracking, Vision Based Tracking, Hybrid Tracking.

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Design and Simulation of CMOS Inverter Based Fully Digital Flash ADC for Biomedical Applications

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Abstract -- System on Chip (SoC) has become the current state of the art for use in biomedical applications. The size of the biomedical implants is shrinking along with the CMOS technology. CMOS technology is suitably placed for biomedical applications due to its low power consumption. In order to utilize the robustness and other strengths of digital signal processing designers are pushed integrated the ADCs on chip with other digital circuits. The emphasis is on reducing the analog circuit components with the emphasis on replacing the analog circuit components with the digital ones. Flash ADC being the basic component of all other types of ADCs, we designed the 3-bit, 4-bit, 6-bit using threshold inverter quantization approach. These TIQ based ADCs are designed and simulated with the 130nm, 100nm and 70nm technologies. Due to increasing number of CMOS transistors with increasing resolution there is an exponential increase in the power consumption. It has been concluded that to increase the speed and the resolution one has to compensate for the input range and the common difference of the comparison voltages. By adjusting these parameters TIQ ADCs with resolution of 3-bit, 4-bit, 6-bit and 8-bit have been designed with sampling rates of 330MSPS, 1066MSPS and 111 MSPS respectively for a fixed input range.

Keywords – ADC, SOC, TIQ, CMOS Inverter, Low power design

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Optimization of Power and Delay in SRAM:A Review

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Abstract -- The Complementary MOS devices are scaled down from many decades to achieve the better performance in terms of size, power dissipation and speed. Since on chip memories determine the power dissipation of SoC chips. Hence it is very important to have low power and stable Static random access memory which is mainly used for on chip memories. In order to have electronic devices such as computer more efficient in terms of size, speed and leakage power dissipation, memories are optimized and made power efficient and faster. Various techniques adopted in the last decade, for the optimization of power and delay, have been studied.

Keywords – SRAM, Power-delay product, Read, Write.

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Paper ID 34

Performance Analysis of LSB based Watermarking for optimization of PSNR and MSE

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Abstract -- In this paper, Image Watermarking using Least Significant Bit (LSB) algorithm has been presented for embedding the watermark image into the original image. Its performance is evaluated by calculating the Mean Square Error (MSE) & Peak Signal to Noise Ratio (PSNR) of the watermarked image with the original image. Parametric analysis of watermarked image with various types of distortions like salt & pepper noise, Gaussian noise, poisson noise and speckle noise has also been done. MATLAB has been used to implement this work.

Keywords – Watermarking, Least Significant Bit (LSB), Mean Square Error (MSE) and, Peak Signal to Noise Ratio (PSNR).

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Paper ID 144

Survey of Clustering Algorithms for Heterogeneous Wireless Sensor Networks

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Abstract- All sensor nodes in a homogeneous wireless sensor network are assumed to have similar capabilities in terms of energy, computation, communication and mobility. Most of the clustering algorithms in the literature are thus designed to work with homogeneous sensor nodes. However most real-time applications require some Quality of Service (QoS) guarantees with regard to the link availability and data rate allocation. The Heterogeneous Wireless Sensor Networks (HWSNs) are considered more suitable for provisioning of the QoS requirements of real-time applications as compared to their homogeneous counterparts. The main idea is to use a small number of advanced nodes with more resources to improve the lifetime, reliability and capability of the sensor network. This paper presents the survey of clustering algorithms proposed by the research community for heterogeneous wireless sensor network. Simulation results using MATLAB software for Stable Election Protocol (SEP) and Distributed Energy Efficient Clustering (DEEC) protocols for HWSN's are also discussed.

Keywords—Heterogeneous nodes, Clustering algorithms, Wireless sensor networks

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Paper ID 137

Effect of Finite Glass Boundary for measurement of fringe field Outside Parallel Plate Capacitor using COMSOL Multiphysics

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Abstract— In order to measure accurate capacitance of capacitor, effect of fringe field has to study. Fringe field is a field which is different from electric field existed in between plates of capacitor, which changes capacitance according to domain size of periphery or boundary conditions. This paper describes effect of fringe field on capacitance by considering the finite size of glass boundary. This paper also shows how electric field lines are confined in the defined size of domain and their trajectory Modeling of MEMS module and Statistical analysis has been carried out using COMSOL MULTIPHYSICS.

Keywords —Normalized Electric field, glass boundary, fringe field, Capacitor modeling, PPC

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Paper ID 16

A Comprehensive search algorithm for cell selection and synchronization in LTE-A

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Abstract -- Cell search and synchronization process is one of the fundamental tasks of any cellular system after initial power-up, during which timing and frequency synchronization is obtained between the mobile unit and network. This paper describes the affluent execution of the cell search process as well as obtaining preliminary system information in Long Term Evolution (LTE) for the user equipment (UE) before taking next steps to communicate with the network. With the aim to attain good timing detection performance with less complication, it is designed to sanction the robust detection of symbol timing, frame timing and frequency reference to obtain the synchronization with the preeminent cell by the use of time domain processing. The detailed procedure of performing a cell search and synchronization using primary and secondary synchronization signals (PSS & SSS) is described and the simulation results are provided to illustrate the cell search for no offset and frequency offset.

Keywords -- LTE, LTE-A, cell search, synchronization, PSS, SSS

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Paper ID 104

Enhanced Gain Two-Stage Folded Cascode Amplifier for Neural Signals

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Abstract— In this paper, a fully differential Two-Stage folded Cascode Operational Amplifier is presented. The designed circuit is simulated in 180nm CMOS technology using Cadence Spectre tool. By using Folded Cascode design a significant improvement in gain has been achieved with respect to standard Op-amp without body bias and cascoding. The results show that using folded Cascode design the gain has improved up to 15dB. This enhancement in gain leads to the use of Folded Cascode topology for amplification of the weak neural signals. Transistor sizing and bias circuits play a critical role in improving the gain of the Op-amp.

Keywords—Op-amp; Folded cascode; Neural amplifier; Gain; Cadence.

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Paper ID 125

Comparative Analysis of Two Stage Cascade and Body Bias Operational Amplifier

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Abstract— This paper presents a comparative analysis of various parameters necessary in the designing of two stages Operational Amplifier. The Operational Amplifier has been designed using two approaches- Cascade and Body Bias structure. Both the design models have been implemented using Cadence Virtuoso Analog Design Suite in 0.18 μ m CMOS technology and the corresponding Gain, Bandwidth and Common Mode Rejection Ratio (CMRR) have been computed. To obtain the desirable CMRR, Gain and Bandwidth, focus has been laid upon transistor sizing for designing. The simulations have been analyzed in detail. A gain improvement of 13.04%, and bandwidth improvement of 24.02% has been observed in the circuit design with Body Bias as compared to the basic Operational Amplifier design.

Keywords— Operational Amplifier, Body Bias, Gain, CMRR, Bandwidth

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Paper ID 15

Thermal Aware Energy Efficient Forest Fire Fighter Robo Design On FPGA

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Abstract— In this work, we are integrating thermal aware and energy efficient design approach in robot forest fire fighter on FPGA. In the beginning of this universe, Veda describes heat receiving from the Sun god as Suryamrit (Surya i.e. Sun +Amrit i.e. Nectar= Suryamrit i.e. nectar coming from the Sun God). Now, whole world is feeling anxious about temperature. To reduce CO2 emission and control other green house gases and save the human life and green earth, it is necessary to protect forest and habitat of wild life. This paper deals with that question and the whole work is going in direction to get solution of this problem with mechanism of ambient (room) temperature scaling and airflow and low profile, medium profile, high profile and custom Heat sink. In order to test the thermal sustainability of our forest fire fighter robot, we are testing it in four different ambient temperature 25oC, 50oC, 75oC, and 85oC.

Keywords— Thermal aware, Forest Fire Fighter, Airflow, Heat Sink, Energy Efficient Design

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Paper ID 109

Performance Evaluation of Different Modulation Formats in single span S-band 16×10 Gbps WDM System over SMF-28 fiber

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Abstract— In this paper performance evaluation of different modulation formats like Non- return to zero (NRZ), Return to zero (RZ), Carrier suppressed return to zero (CSRZ), Single side band (SSB), and duobinary in S-band 16 × 10Gbps wavelength division multiplexing system has been done over SMF-28 fiber on the basis of minimum BER. It has been found that the duobinary modulation comes out as the best modulation format as it has lowest BER among all modulation formats considered. For duobinary modulation format BER remains greater than 10⁻⁹ for all 1st, 8th and 16th channel, at 140 km BER values are on 1st channel is 1.64×10⁻⁹, 8th channel is 1.25×10⁻¹² and at 16th channel is 8.38×10⁻¹². It has also been found that 140 km amplifier spacing is found to be optimum for duobinary modulation format as the BER variation among the channels is very low at this distance.

Keywords — NRZ, RZ Duobinary CSRZ, SSB, S-band ,WDM.

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A REVIEW ON DATA CENTER SERVICES AND CLOUD COMPUTING

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Abstract— This electronic page is the expression of work experience gained during these months at NxtraData Ltd. Data centers are now seen as a key business parameter, and not as an external facility for storage of information and business operation models. The various services in the Data center are very important and valuable for an engineer to learn such as colocation, managed services, concept of virtualization, cloud computing etc.

Keywords—SLAs (Datacenter Helpdesk Service Levels), EUEM (End user experience monitoring), CRM Tool (customer request management tool)

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PAPER ID: 152

Satellite communication using Iridium Go

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Abstract-- We report a detailed analysis on the satellite communication using satellite phones and its latest technology that is IRIDIUM GO. As GSM phones can't be used everywhere or where mobile tower is not present, there satellite phones are very useful. And the latest technology in Satellite phones, IRIDIUM GO is a very useful product of the IRIDIUM which can be used to make a normal smart phone to a Satellite phone. This paper shows the wide use of satellite phones for different purposes in various fields. In today's competitive world the demand for GSM based phones is increasing day by day. Cellular phone can make and receive calls over a radio link while moving around a wide geographic area.

Keywords—IRIDIUM GO, Satellite phones, GSM.

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A Review on Blue Eyes Technology (Giving the computer the power of a human being's senses)

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Abstract-- This paper gives a insight into the main idea behind blue eyes technology(giving the computer the power of a human being).As human beings can understand one another's feelings, can guess the state of the another person by observing his/her facial expressions. Similarly, this technology aims at giving the computer the perceptual abilities like those of humans, that is giving the computers the ability to interact with we humans, that is the computers will be able to understand our state of mind through our facial expressions, saccadic activity. The technology uses many different types of emotional sensors like emotional eyes, expression glasses and many more.

Keywords— blue eyes, perceptual, saccadic, emotional sensors, jazz multisensory

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PAPER ID: 154

A Review on Programmable Logic Control

(SUPERVISORY CONTROL)

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Abstract— Industrial Revolution has witnessed a huge change since last decade. Advancement in technology has been phenomenal in bringing this change. Earlier all the processes were manually controlled by human beings which required huge manpower and couldn't even completely rely on human as far as safety is concerned. Following all these drawbacks many technologies are being combined to develop solution to industrial control. PLC's are one of the most successful and effective industrial control system (ICS) which stands for supervisory control and data acquisition. This system operates with coded signals which control the equipment. PLC systems are used in a variety of industries such as traffic systems, electric power utilities and mass transit systems where equipment functions must be closely monitored and controlled automatically.

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PAPER ID: 155

A Review Paper on Tele - Immersion

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Abstract— Technology is improving day by day and so is the quality of video conferencing but why to stop at just video conferencing if it can be taken to a whole other level. Virtual reality as we all know is a pre-programmed 3D holographic image of something and Tele-immersion is an application of virtual reality which allows its users from different parts of the world to interact with each other using real time simulated environments henceforth making the users feel as if they were in same room. This simulated environment is created using a "tele-cubicle" equipped with large screens, scanners, sensors, and cameras. The tele-cubicles from different users are linked together in real-time so that they form one larger cubicle. With the help of this virtual environment users are able to interact with other group members.

Keywords- Tele-Immersion, Video-Conference, 3D Holography, Real time Simulations

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PAPER ID: 156

Stand-By Dynamic Symbology Generation For Avionic Display System

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Abstract— This paper describes the generation of dynamic symbology for Avionic Display System (ADS). An ADS is a device which gets input information from aircraft sensors through the display processor and superimposes all the critical data on the ambient of the pilot. However situations may arise when the display processor is unable to deliver required signals to the ADS. In this case, the ADS would go blank leaving the pilot without the real time information. Traditionally, optical stand-by solutions were provided which are static in nature. However with the headway of Digital Signal Processing (DSP) internally generated dynamic symbology has been developed aiding the pilot in taking informed and split second decisions in the tactical arena.

Keywords—Avionic Display System (ADS), Digital Signal Processor (DSP), CRT

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REVIEW ON UPCOMING TRENDS IN TECHNOLOGY

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Abstract-- The smallest of trends can be quite useful in winding up and transforming our lives. The ever changing technology and the enhancement of society are making it extremely difficult to keep pace with the changing trends in technology. Some technologies have the potential to change the world as we know it. Some of these will make way to the future. Some of the recent launched products in the marketplace such as Google's Driverless Car, Eye Tribe and Drones are the brilliant developments which are surely going to see a massive success in the near future. Though these concepts might still be in its infancies, these are certainly the ones to look for in the nearby future.

Keywords—Drones, Eye Tribe, Google's Driverless Car, Trends in Technologies, Future Technologies

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PAPER ID: 158

Bio-inspired Hybrid Thresholding Techniques Using Particle Swarm Optimization (PSO) and Ant Colony Optimization (ACO)

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Abstract-- Image thresholding is an important operation in many analyses which is used in many applications. The selection of optimum thresholds has remained a challenge over decades. In this paper, image thresholding using swarm intelligence is presented for image segmentation. Swarm intelligence algorithms have been widely used in various applications based on clustering e.g. image segmentation which is one of the fundamental components in medical image analysis and pattern recognition domains. In this paper, we review a novel method for image thresholding using a hybrid algorithm based on Particle swarm optimization (PSO) and Ant colony optimization (ACO). The proposed method along with other comparative studies has been applied for benchmark images. Efficiency of proposed method has been compared with that of other methods.

Keywords-- Image thresholding, Image segmentation, Particle swarm optimization, Ant colony optimization.

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A Review on Underwater communication Technology- SEATOOTH

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Abstract--In this review paper, the use of electromagnetic techniques to help wireless positioning, communication and power transfer with subsea modems is explored. This work mainly concentrates on why technology evolved from Bluetooth to Sea tooth for underwater communication. This paper also discusses methods employed to use induced electromagnetic fields to facilitate both positioning, communication and also supplement the ability to transfer power with subsea AUV's across an inductive link. It highlights the working of Seatooth wireless technology, profiles and specifications needed for transmission and some of the devices using Seatooth. Work done by WFS and other companies in this domain is also included in the paper.

Keywords – Subsea Communication, Bluetooth Wireless Communication, Electromagnetic Modelling

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PAPER ID: 160

Comparative Analysis of Wi-Fi(Wireless Fidelity) and Li-Fi (Light Fidelity)

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Abstract— Radio spectrum is becoming saturated day by day. Conventional wireless data transmission techniques are not reliable and so another way for wireless data transmission is required. The demand for wireless data has become more of a basic necessity. Visible light communication overcomes that demand. Li-Fi or Light Fidelity is a term used for this type of communication so as to sound like Wi-Fi or Wireless Fidelity. Li-Fi uses visible light spectrum for transmission of data by using LED and photo detector as transmitter and receiver respectively. It is a bidirectional and fully networked wireless communication system having very high speed. It uses light, thus, it is an optical wireless communication. It can be said that Li-Fi is the future for wireless data communication. This paper focuses on advantages of Li-Fi over Wi-Fi and its potential applications.

Keywords—line of sight; visible spectrum; radio spectrum; visible light communication (vlc); wireless data transmission; LEDs.

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A Review on Wireless Communication and Networking

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Abstract— This paper deals with the design & development of a wireless internet network system which is being used to provide fast and easy internet service to the customers. A wireless LAN or WLAN is a wireless local area network that uses radio waves as its carrier. The last link with the users is wireless so as to give a network connection to all users in a building or campus. The backbone network usually uses cables and radio links.

Keywords— Ultra High frequency (UHF); Very High frequency (VHF); Shielded twisted pair (STP); protocols; Quality of service (QoS).

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A Review Paper On Claytronics

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Abstract-- A new technology is introduced in this technical paper "programmable matter". Claytronics uses the concept of programmable matter. Claytronics is an abstract future concept which uses claytronic atoms or catoms to interact with the physical world by creating 3D tangible objects. It uses the concept of nanotechnology and computer science. It's a big step beyond virtual reality and into synthetic reality where every object present in the environment can be actualized physically.

Keywords- Claytronics, Catoms, Macro, Nano, MELD, LDP

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Electronic document on the technical study of Mars Orbiter Mission

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Abstract—This document is based on the technical study of the Mars Orbiter Mission also called Mangalyaan, a spacecraft orbiting Mars since 24 September 2014. The Mission Objectives, spacecraft specifications, payload, telemetry and command and Trans-Mars injection are discussed. The Mission is technology demonstrator project to develop the technologies for design, planning, management, and operations of an interplanetary mission. It carries five instruments that will help advance knowledge about mars to achieve its secondary, scientific objective.

Index Terms—Objectives, payload, spacecraft specifications, launch, trans-mars injection.

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A Review Paper on Emerging 5G Mobile Technology

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Abstract—The word wide emerging technology in mobile is changing our standard in the way we work, learn and interact. As the customer is becoming more and more aware of mobile technology, he or she will be looking for a decent package all together, including all the advanced features a cellular phone can have. Hence the search for new technology is the focusing motive of leading cell phone giants. In this paper, an attempt has been made to review various existing generations of mobile wireless technology in terms of their portals, performance, advantages and disadvantages. Hence a light on the evolution and development of various generations of mobile wireless technology along with their intelligent and efficient advantages of one over the other is thrown by this paper. This paper explained different technology which would make future mobile technology more powerful and more in demand that would be free from limitation and hindrance of previous generations. This paper has been focused on how more efficient approach could be provided to common man to avail his possessions in an intelligent way to support his real life progression. Currently 5G term is not officially used. In 5G researches are being made on development of World Wide Wireless Web (WWWW), Dynamic Adhoc Wireless Networks (DAWN) and Real Wireless World [5].

Keywords— Radio access technology, mobile wireless technology, cloud computing, master core, 5G technology, WWW, Adhoc, crazy cell phone user.

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A Review Paper on Feeding Techniques of Patch Microstrip Antennas

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Abstract— The paper focuses on the microstrip antennas and the various different techniques of feeding microstrip antennas. There are two schemes which are utilized for feeding the antennas namely, contacting scheme and non-contacting scheme. Line feed and coaxial plane feed come under the contacting scheme and Proximity and Aperture coupled feeds are non-contacting schemes. Feeding techniques play an important role in transfer of power efficiently between the radiation patch and transmission line. Such techniques are very helpful in demonstrating antenna design framework and studying their effect on physical parameters such as return loss, resonant frequency, bandwidth and VSWR.

Keywords— **Feeding, Aperture Feed, Coaxial Feed, Microstrip feed, Proximity Feed, VSWR, Return Loss**

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Multiple Human Face Detection Based on Local Genetic Algorithm Clustering Using Mobile iPhone Platform

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Abstract-- This paper discusses the role of evolutionary computation in visual perception for partner robots. The search of evolutionary computation has many analogies with human visual search. First of all, we discuss the analogies between the evolutionary search and human visual search. Next, we propose the concept of evolutionary robot vision, and multiple human face detection method based on local genetic algorithm clustering. Finally, we show experimental results of the multiple human face detection using mobile platform iPhone platform to discuss the effectiveness of our proposed method.

Keywords— Visual Perception, Face Detection, human Visual Search

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Reviewing the working of Inertial Micro Electromechanical Systems & Illustrating principle of Flight Dynamics using Digital motion Processing

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Abstract— Inertial MEMS is the miniaturization of mechanical and electro mechanical systems that helps in the sensing and control of different types of motions in static as well as dynamic state. This technology is used in different types of applications such as gesture controlled robots, mobiles etc. Sensing and actuation is based on three principle motions (pitch, yaw and roll) commonly known as flight dynamics. Different sensors sense and analyze these type of motions. The paper reviews study of motions performed by a fixed wing aircraft and the basic working principle of these Inertial MEMS sensors (Accelerometer and Gyroscopes) also their integration on single chip called as the IMU (Inertial measurement unit) and a system model that uses embedded and java programming and a technique called with Digital Motion Processing (DMP) create and control graphic geometry in a calibrated manner using one of the IMU's and demonstrate the principle motions of Flight Dynamics.

Keywords—Inertial MEMS ,accelerometer,gyroscope, IMU(Inertial measurement unit),Digital Motion Processing(DMP)TM,Motion processing unit (MPU).

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A Review Of Organic Light Emitting Diodes (OLEDs) Technology

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Abstract- The paper presents a short review of OLED (Organic Light Emitting Diodes) Technology. OLEDs have been seen as one of the most promising technologies for future flat panel displays. Numerous materials have been developed and improved in order to fulfill the requirements of this application. It summarizes OLED types, working, features, advantages, disadvantages and challenges.

Keywords -- organic light-emitting diode(OLED); flat-panel display; passive matrix; active matrix and electroluminescence.

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A Review Paper On - FLEXIBLE ELECTRONICS

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Abstract- Every evolving advance in thin-film materials and devices have fueled many of the developments in the field of flexible electronics. These advances have been complemented with the development of new integration processes enabling wafer-scale processes to be combined with flexible substrates. This has resulted in a wealth of demonstrators in recent years. This paper is about flexible electronics which reviews thin-film materials and technologies for flexible electronics and considers future applications in healthcare, the automotive industry, human-machine interfaces, mobile devices, and other environments.

Keywords: Flexible electronics, Roll to Roll process, Soft Lithography , Flexible Circuits , OLEDs , Human- Machine interactivity, Wireless Networks

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A Review Paper on - SMART CARDS (FUTURE LIFE)

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Abstract- This paper is about smart cards that are similar to credit card and how these smart cards were discovered. The paper is about the history, physical structures, security features, vulnerabilities, and current and future uses. In addition, a brief description on the working along with the overview of the need for developing the smart cards will be included. The urge for smart card technology came because it could carry large amount of data in megabytes. These cards could escort various issues related to cryptography and biometrics which is the main base of this paper. The block diagram and the pin configuration of a chip are also being discussed. There is an analysis which is being carried out showing the comparison between different types of smart cards on the basis of the memory used, their usage, their physical structure that is thickness and their reading range.

Keywords: Smart cards; Biometrics; PKI; E governance; IFDs; Banking.

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Wireless Charging of Mobile Phone Using Microwaves : A Review

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Abstract - Charging of mobile phone has always been a problem during travelling or at the places where charging facilities are not present. Due to this there has been a large increase in the use of portable electronics devices such as power banks for charging mobile phones when the charging point or supply is not available. Another alternative for this problem is to have more than one batteries but this doesn't solve the problem because still batteries need to be charged using power bank when supply is not available. So charging of batteries is always a problem especially when there is no power outlet. In this paper a new proposal has been made with which mobile phones can be charged automatically without any wired charger thus providing a solution to all the above problems. This is done by the use of microwaves. Using this technology charging of mobile phones is done wirelessly during the call without the need of any supply or power bank thus saving a lot of time.

Keywords— *Microwaves, Magnetron, Rectenna, Slotted waveguide antenna*

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Study Of Embedded Software And Hardware Development Using 8051,AVR.

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Abstract-This paper deals Embedded system require a design which combines hardware and software. The key of Embedded system is Embedded microcontroller. The concept underlying in embedded hardware i.e. microcontroller and microprocessor platform and embedded software i.e. programming in c, c++, java etc require challenging tasks. The purpose of this paper is to present our approach in learning software and hardware solution. Summarized progress and trying to provide new comparative insight using 8051, AVR and ARM embedded microcontrollers.

Keywords— ARM, AVR, Embedded system, microcontroller, 8051.

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PAPER ID 173

A Review on the Applications of LASER Communication

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Abstract— In the past years wireless technology has grown at a formidable rate. There has been an exponential growth in the users on air. More so, each user wants flawless quality of transmission and limited interference with maximum connectivity. Advances in architecture of system, technology in components and formatting of data have made laser communication system incredible in space and also in inter - satellite applications.

Keywords—lasers, laser diodes, receiver, transmitter, UART, ADC, DAC

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A Review to Design an Efficient Mobile Site

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Abstract- The World Wide Web is an important tool used for a number of purposes, from entertainment-based browsing and casual scientific and shopping to technical research. The objective of this paper is to review studies that have been done in the field of effective design of mobile site. In particular, this paper is to review and present the important guidelines for designing a mobile site. This study serves reference for researchers who conducted research in field of web development and design related to mobile sites.

Keywords: ACM; WWW; CSS; IoS.

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New Age Design of Body Mass Index (BMI) Machine for every Household

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Abstract— The aim of the project was to design a ATMEGA 328 based Body Mass Index (BMI) calculator, which calculates the body mass index using the two basic parameters that are weight and height. The hardware of the project consists of four load cell, which is used to calculate the body weight of a person and a built in height calculating mechanism, which is use to calculate the height of a person. The weight of the person is calculated in Kilograms and the Height in meters in accordance of the BMI standard formula. The ATMEGA 328 based automated Body Mass Index calculator is a useful device when it comes to controlling your weight and maintaining a healthy life style. The calculated weight of the person through four load cell, which converts the mechanical force into electrical signals that can be easily obtain after processing through Instrumentation Amplifiers. While for height we are implementing rotary encoder, we have calculated the rotation of the shaft precisely and programmed ATMEGA 328 accordingly to obtain the 0.0001m accuracy. All this data will be manipulated through ATMEGA 328. Our BMI machine is a modern, elegant, and importantly an accurate electro medical device that will measure accurately one's height and weight then calculates body mass index and displays the result. It is easy to operate with minimum user interactions and always give accurate results. Also the aim was achieve a product that can be consumed by general market and can be brought to each and every household.

Keywords— **Body Mass Index (BMI) calculator, Height and Weight, Instrumentation Amplifier, Rotary encoder, Load cell, Healthy life style**

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**Patents in Engineering Intellectual Property
Rights.**

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Abstract— Intellectual Property Rights refers to the exclusive set of rules given to a person protecting products of human intelligence and creations of their minds. These are rights granted to creators and owners of works that result in intellectual creativity for a certain period of time and as a result they get many advantages for being the inventor of such a novel idea.

Keywords— Design, Invention, IPR, Patent, Prior art, Trade mark, Trade secret

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A Review paper on Sixth Sense Technology - An interface

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Abstract- This technical paper tells about the new evolving technology named “Sixth Sense Technology”. It is a device that is wearable and will provide the interface between the world of physical objects and digital information. It enables human beings to interact with the digital world made by them in the similar way in which they interact with their physical world. This paper tells about the interaction of these two worlds and integrates them into a single entity. With the help of this technology, we need not to sit in front of the computer or laptop for many hours and does not even need to carry a mobile phone in our pocket and taking it out again and again for different tasks. Without the use of any mouse or keyboard, everything will be done in front of our eyes on the physical objects, walls, etc., for keeping us in touch with our physical environment created beautifully by GOD. This paper also tells about the advantage over conventional technologies and its impact in our real life.

Keywords- Gesture, Mobile computing device, Speech IC, Gesture recognition, Computer vision technique.

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A Review on Economics of Patents

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Abstract— This paper deals with the recent research on the economics of patents. The topics covered include theoretical and empirical evidence on patents as an incentive for innovation, the effectiveness of patents for invention disclosure, patent valuation, and what we know about the design of patent systems. We also look at what is known about some current policy areas, including software and business method patents, university patenting, and the growth in patent litigation.

Keywords: World Intellectual Property Organization (WIPO); European Patent Office (EPO); European Patent Convention (EPC); United States Patent and Trademark Office (USPTO).

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A Review Paper on Network Fundamentals

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Abstract: Computers that are linked together for the purpose of sharing the information and resources need a network for this purpose. Network protocols are the standard set of rules that help in sharing of the information even through long distances. Here, the difficulty is to track the location of information because the data is located on multiple computers. This makes it difficult to backup critical business information as there are multiple versions of same file on different computers in the workgroup. As, there is no central hub which computers in the workgroup has the shared resources or information that can be accessed. Light pulses move easily down the fiber- optic line because of the principle known as the total internal reflection. Transparent glass or the plastic fibers allows the light to be guided from one to the other with minimal loss. There are two types of fiber-optic cables that are commonly used single and multi-mode.

Keywords— Network Protocol, Internal Reflection, Plastic Fiber

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**STUDY TEST SEQUENCE GENERATION FOR JAVA7 FORK/JOIN
USING INTERFERENCE DEPENDENCE**

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Abstract—Test sequence generation through code is mainly done by using some sort of a flow graph viz. Control Flow Graph (CFG), Concurrent Control Flow Graph (CCFG), event Graph etc. Approaches that use UmL also need flow graph an intermediate representation for final test sequence generation. In the present approach, a Flow Graph for a new concept i.e. Java7 Fork/Join is constructed and hence, by traversing the graph, test sequences generated on the basis of all path and all node coverage criteria considering interference dependence. Further, interference dependencies are also represented in the form of a directed graph to aid the analysis of Java7fork/join programs.

Keywords— Test Sequence Generation, Java7 Fork/Join, JFJFG, Interference Dependent

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**Using LabVIEW to Measure Impedance and Reflection Loss Through Smith
Chart**

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Abstract— During handling of the practical execution of RF applications, there are always some lurid tasks. One is the need to match the various impedances of the interrelated blocks. For proper transmission of signal and energy from a "source" to a "load" the matching task is necessary. As it is a burdensome job, LabVIEW has been used to do all the calculations, and finally make it effortless.

Keywords- *Impedance matching, signal reflection, digitizer, smith chart, radio frequencies.*

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EMBEDDED SOFTWARE AND SYSTEMS

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Abstract— This paper deals with the design & development of a grating light valve. It is a micro mechanical light valve intended for display applications. As a light valve for display, the GLV has a number of interesting properties. GLV fabrication is fairly simple, requiring only one mask step for basic devices and only three or four for complete array fabrication. This should translate into low production cost. The GLV is capable of either black-and-white (BW) or color operation with white light illumination. The pixels of the GLV are extremely fast, switching in under 25 ns. Furthermore, the pixels are bi stable with applied voltage.

Keywords— **Grating Light Valve (GLV); Micro-Electromechanically-Systems (MEMS); Liquid Crystal Display (LCD)**