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ICCI 2019

2019 IEEE INTERNATIONAL CONFERENCE *on* INNOVATIONS IN COMMUNICATION, COMPUTING AND INSTRUMENTATION

23rd MARCH 2019

Organised By

DEPARTMENTS OF ELECTRONICS AND COMMUNICATION ENGINEERING
AND
ELECTRONICS AND INSTRUMENTATION ENGINEERING

EASWARI ENGINEERING COLLEGE

APPROVED BY GOVT. OF TAMILNADU AND AICTE / AFFILIATED TO ANNA UNIVERSITY
ACCREDITED BY NAAC WITH 'A' GRADE / ISO 9001:2015 CERTIFIED

Ramapuram, Chennai 600 089, India



ORGANISED BY



DEPARTMENT OF ECE AND EIE

About the college

EASWARI ENGINEERING COLLEGE (EEC), a unit of SRM Group of Educational Institutions for higher learning is functioning under the aegis of ‘Valliammai Society’. The society was found in the year 1975, for promoting the cause of Quality Education, by Dr.T.R.Pachamuthu, an Academician and Educationalist. EEC was instituted in the academic year 1996-1997, with the approval of AICTE, New Delhi. The college is affiliated to Anna University, since 2002 and accredited by NAAC with ‘A’ grade. The college offers eight Under-Graduate Programmes and six Post Graduate Programmes, of which six UG programmes have been accredited by NBA. The College has a Strong Industry – Interaction with reputed National and International organizations. The college has obtained ISO 9001: 2015 Certification from TUV South Asia.

About the Departments

The Department of Electronics and Communication Engineering was established since inception of the college in 1996. In addition to UG in ECE with 180 sanctioned intake, the department offers M.E. Communication Systems and M.E. Embedded System Technologies. The department has secured permanent affiliation from Anna University and is accredited by NBA. In pursuit of excellence, the department is recognised as nodal centre by Anna University to pursue Ph.D & M.S (By Research).

The Department of Electronics and Instrumentation Engineering offers B.E degree program in EIE. The department has secured permanent affiliation from Anna University and it is accredited by NBA. The EIE department has become a model department through development of minds, advancement of knowledge and professional skills to meet the global demands. The department has received grant under AICTE, FDP from DRDO, DIT, MOES, ICMR, DBT, Anna University and BRNS.

About the Conference

The basic premise of industrial automation and overall development is to pass on the intelligence to a system with the objective of making it efficient and economical using advancement in communication, control and automation which helps in creating a real time multi-processing, complex adaptive, intelligent, power efficient and safe system for more productive environment in multiple industry verticals. This conference aims to bring together researchers, industry experts, scientists, educators, policy makers and all other related parties to exchange knowledge, experience and discuss current issues, recent developments, standards, techniques, challenges, theories and good practices in engineering and technology.



Chairman

Dr. R. Shivakumar

I am delighted to know that the departments of Electronics and Communication Engineering and Electronics and Instrumentation Engineering, Easwari Engineering College are organizing IEEE sponsored International conference on “Innovations in Communication, Computing and Instrumentation” (ICCI) on 23rd March 2019.

The magnitude of development in the field of digital technologies over the past two decades is astounding. Disruptive technology innovations related to AI powered robots, crypto-anchors, lattice cryptography, quantum computing, wearable technology etc., is seen as the next big evolution. Hence new, state-of-the-art equipment is required to satisfy the new standards, the emerging environmental requirements and the stringent quality systems. Moreover, key features related to enhancing automation levels, miniaturization, intelligence, and reducing cost should be the crucial focus.

With so many innovations happening around us today, it is imperative that a conference on this topic has been planned by the two departments. I am confident that the conference will provide an extra ordinary platform for participants to engage in constructive exchange of thoughts and ideas that will generate remarkable initiatives and contribute towards societal development.

Best Wishes!



Principal

Dr.K.Kathiravan

உழுவார் உலகத்தார்க்கு ஆணிஅஃ தாற்றாது
எழுவாரை எல்லாம் பொறுத்து.

-குறள் 1032

**உழுவு செய்ய முடியாமல் உயிர் வாழ்கின்றவர், எல்லாரையும் தாங்குவதால்,
உழுவு செய்கின்றவர் உலகத்தாற்கு அச்சாணி போன்றவர்.**

Agriculture is the main stream of the Indian economy. It directly regulates the growth of economy. The main occupation of rural people is agriculture. Since the scope for bringing more area under cultivation is limited, the only possible way to increase the yield through the adoption of new and improved agricultural practices and techniques, so as to meet out the long term food grain requirement of the country. In order to achieve better last mile connectivity with the farmers and administrators the Rural e-Governance applications have demonstrated the important role the Information and Communication Technologies (ICT) play in the realm of rural development. Several e-Governance projects have attempted to improve the reach, enhance the base, minimize the processing costs, increase transparency, and reduce the cycle times.

With the evolution of the computer age, Electronics Engineering has crept into every sphere of human life, thus increasing its scope manifold. Electronics is now a part of our everyday life, from your pocket FM radio to televisions, computers, mobile phones and even the high-end satellites that are helping us in building strong economy of rural India. Taking educational scope into consideration, today's world is coming up with new technological advancements every day. These new developments are done by the engineers turned scientists. In bringing your own thoughts in the world's next brilliant technological advancement will amaze you and this path can be achieved by conducting various technical events like "2019 IEEE INTERNATIONAL CONFERENCE ON INNOVATIONS IN COMMUNICATION, COMPUTING AND INSTRUMENTATION (ICCI 2019)".

The International Conference "**ICCI 2019**" of the Department of Electronics and Communication Engineering and Electronics and Instrumentation Engineering, Easwari Engineering College is an important annual event for the students, staff and faculty of the department. It serves to showcase the Technical talents, foster interaction amongst the various very diverse groups and is also an occasion where they interact socially.

I am glad to note a new feature this year. This is an event organised and run by the Departments with great effort. On behalf of the staff and faculty I wish them the best for successful conduct of "**ICCI 2019**".



Head of Department

Department of Electronics and Communication Engineering

Dr.K. Murugesan

Since its inception, the Department of Electronics and Communication Engineering of Easwari Engineering College has been on the frontier of research in communication and automation. Industrial automation is a field that is quickly gaining traction within both the industry and academics alike due to the rapidly evolving technologies. In the spirit of the same, we have organized the conference to serve as an incubator for emerging ideas in feedback loops between academia, industry and professional practice. By innovative teaching-learning process, a teamwork approach and leadership building experience, guide our students to gain vital communication and critical-thinking skills. This International conference will act as a platform for various researchers, developers and students towards exploring and achieving their research target in the field of Electronics and Communication Engineering. Hoping that students and researchers utilize this opportunity.

All the best!



Head of Department

**Department of Electronics and Instrumentation
Engineering**

Dr.S.Nagarajan

I am extremely privileged to organise IEEE International Conference on Innovations in Communication, Computing and Instrumentation (ICCI) on 23rd March 2019.

As technology blooms through the ages, there are several advancements in every field of engineering. These new innovations from Communication, Computing and Instrumentation bring out the societal and technical basement.

I am sure this conference will be a platform to bring out the creativity and technical talents for a better future. I would like to thank all the organising committee members and delegates for their continuous support in making this event a grand success.

Advisory Committee

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Dr. R. Shivakumar

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Conference Speakers

Invited Talk 1



Dr.R.Sittalatchoumy

Dr.R.Sittalatchoumy has 20 years of experience in the field of academic and is actively involved in research and development activities. She obtained her B.Tech., (Electronics and Communication Engineering) degree from Pondicherry University, Puducherry and M.E., (Communication Systems) degree and Ph.D.,(Wireless Sensor Networks) from Anna University, Chennai. Presently she is working as Assistant Professor in Anna University, Chennai. Her field of interest is Wireless Sensor Networks, Microprocessor and Microcontroller, Communication Networks, Linear Integrated Circuits. She is a Life Member of ISTE.

Invited Talk 2



Dr.G.Nagarajan

Professor, Department Computer Science and Engineering School of Computing Sathyabama Institute of Science and Technology (Deemed to be University)

Dr G Nagarajan is a Professor in the Department of Computer Science at Sathyabama Institute of Science and Technology, where he has been since 2006. He received his Diploma in Electronic & Communication Engineering from Directorate Of Technical Education, India, 1997. He had received his BE degree in Electrical & Electronic Engineering from Manonmaniam Sundaranar University, India, 2000, ME degree in Applied Electronic Engineering from Anna University, India, 2005 and He also received his ME degree in Computer Science Engineering from Sathyabama University, India in the year 2007. He obtained his Ph.D. degree in Computer Science Engineering from Sathyabama University, 2015. He has totally 20 years of teaching experience in various colleges in Tamil Nadu, India. His areas of expertise include machine vision and applications, quantum computing, Internet of Things, and image processing and visualization. Dr.G Nagarajan has co-authored numerous highly cited journal publications, conference articles and book chapters in the aforementioned topics. He is the life member of (IAENG) International Association of Engineering, Hong Kong. Senior member in (IACSIT) International Association of Computer Science and Information Technology, Singapore and (IACSE) International Association for Cyber Science and Engineering, Hong Kong. He has been reviewer of journals such as Elsevier Journal on International Journal of Electrical Power and Energy Systems, Springer Wireless Personal Communications, Taylor & Francis International Journal of Computers and Applications, IGI-Global - International Journal of Grid and High Performance Computing, Inderscience International Journal of Enterprise Network Management.

Invited Talk 3

Dr.Vydeki



Dr. Vydeki graduated from Government College of Engineering Tirunelveli in the year 1997. She received her post-graduation and Doctoral degrees from Anna University. Her research areas include wireless networks, Ad-hoc networks, Internet of Things, Security for Wireless networks, IoT Security, Medical Image Processing, Machine learning. She has got more than 15 years of teaching experience in reputed institutions. Presently she is working as Associate Professor in the School of Electronics Engineering, VIT Chennai.

Dr. Vydeki is also an active volunteer of IEEE Women in Engineering and currently she is the Chair of Madras Section WIE.

Invited Talk 4



Dr. P. Augusta Sophy Beulet

Being a lecturer for more than 25 years, have developed a passion towards teaching Engineering subjects and guiding projects. The passion has naturally been extended towards the development of my students too. Have handled more than 20 different subjects in Electronics and Communication Engineering and guided more than 50 projects in UG and PG levels. I have published 20 research papers in International Conferences and Journals. With my research work carried out in the field of VLSI Signal Processing in Anna University, currently I am guiding 3 Ph.D. scholars.

Invited Talk 5

Dr. SABITHA RAMAKRISHNAN



Dr. Sabitha Ramakrishnan obtained her B.E (ECE) from College of Engineering, Guindy, with GOLD MEDAL for Academic Proficiency; M.E (Electronics) from MIT campus, and Ph.D in Wireless Sensor Networks from Anna University. She has 16 years of teaching experience. Apart from her regular academic work, she is currently serving as the Deputy Director of Internal Quality Assurance Cell of Anna University. She was the Organizing Secretary for the International Conference TIMA-2017 held in Jan 2017.

She was adjudged the Best Out-going Student in her Diploma course in Govt. Women's Polytechnic, Tharamani. She also received the National Merit Scholarship Scheme Certificate in her SSLC. She was honoured with IEEE appreciation certificate by the Chairman, IEEE Madras Section for arranging and delivering Technical Lectures as an IEEE ExeCom member during 2013-14. She received Dr. APJ Abdul Kalam award for teaching excellence from Marina Labs R&D, Chennai, in 2016 and SIIP-SEED award for Best Quality Assurance Cell Coordinator in 2017.

She has published 8 papers in international journals and 14 papers in international / national conference proceedings. She received Best Paper Award twice in two international conferences. As a Co-Investigator, she has completed one AICTE (RPS) project worth Rs.12 lakhs in 2009. Currently, she is a Co-Investigator in the ongoing DST project titled "Design and Development of Automated External Defibrillator" worth Rs.32 lakhs. She is one of the Principal Investigators in the most prestigious UGC-UPE project of Anna University which is worth Rs. 75 crores totally. She is part of a Rs. 5.15 crore project module in UPE involving FPGA based automation. She has mentored six Student Innovative Projects sponsored by CTDT, one of which received the Second best student project award.

Technical Session

Topic: Design and Implementation of Smart Tracking Ambulance System

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Abstract — With a large population and increasing vehicle road traffic congestion has become an issue for highly crowded metropolitan cities. There is a delay in first aid services due to these overcrowded roads. This paper describes a solution in the form of “Intelligent Ambulance” with automatic traffic control which ensures that ambulance gets freeway from the congested roads in order to provide first aid as fast as possible to the patient. In traffic control-system an IR transmitter on the ambulance will communicate with the IR receiver mounted on the signal post. Coding is used to control the traffic signals automatically based on the button pressed by the driver from the dashboard in the ambulance. If the vehicles in the other lane as of the ambulance tries to jump the signal by misusing the system then with the help of the magnetic sensor the buzzer will notify that the system has been misused and will be displayed on the LCD display. After the ambulance has passed the sensor would reset the traffic signals to work normally.

Keywords — Robust; Sensors; Automatic Traffic control; IR Sensor.

Topic: A Self Powered Long Range Real-Time Water Quality Monitoring System by IoT

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Abstract — Water quality monitoring and inspection is an essential aspect in every part of the world. The startling situation of water quality is based on the fact that the lack of clean drinking water has put over 12 million people of India at a high probability of dangerous and deadly diseases caused due to water such as Hepatitis B, Typhoid, Cholera, Guinea worm disease, Dysentery and many more serious illnesses. In a global environment, the water quality is needed for agriculture, aquaculture, industry, ecological environment and most importantly for human life. So, to maintain the quality of water resources, we must conduct the water quality monitoring and inspection. In this paper, the IoT (Internet of Things) technology is used to provide the real-time water inspection – like checking the water temperature, turbidity, and conductivity and pH levels. The hardware is made up of Arduino, sensors and Node MCU. The sensor receives the data and transmits the data to gateway through the Node MCU platform. The gateway in turn sends to Database through the MQTT and finally the real-time monitoring data is displayed on webpage.

Keywords — Water Quality monitoring; Internet of Things; Temperature; Turbidity; pH levels.

Topic: Performance Evaluation of Solar Energy Conversion System Having Seven-level Cascaded H-bridge Inverter

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Abstract — This paper presents solar energy conversion system having distributed MPPT controller and cascaded H-bridge multilevel inverter. The availability of multiunit dc voltage source and its control makes the cascaded multilevel inverter most suitable one. The single-phase output of the inverter is integrated to grid. Distributed MPPT control is incorporated with each PV panel to extract the optimum power from solar panel. For smooth switching operation of H-bridge inverter Sinusoidal Pulse width Modulation (SPWM) technique is used. As solar radiation is variant in nature the performance of the overall system is evaluated for both steady and dynamic environmental conditions. MATLAB / Simulink platform is used to validate the proposed scheme along with their THD analysis. It is found that the proposed scheme gives satisfactory performance and can be applied to real system under both normal and varying conditions.

Keywords — Solar System; Multilevel Inverter; Incremental Conductance Algorithm (INC); SPWM; Distributed Controller; Total Harmonic Distortion.

Topic: Simulation of a Compact Bidirectional On-board Charger for Battery Electric Vehicles

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Abstract — This paper discusses the simulation of a compact bidirectional on-board charger for battery electric vehicles (EV) using MATLAB/ simulink. The main advantage of on-board charger is that wherever AC supply is available EV battery can be charged. Also the battery can be charged through regenerative braking. Conventional on-board battery charging requires a diode bridge rectifier followed by a DC- DC converter and a bulky DC link capacitor. Regenerative braking method requires an additional DC -DC converter to boost the back emf of motor to the voltage level required to charge the battery. These charging methods require an extra DC - DC converter which increases the cost and weight of overall EV charging system. The bidirectional charger is implemented by using the existing power train components of EV, BLDC motor and three phase inverter. By suitably controlling the switching states of the three phase inverter, it can be transformed to a DC - DC boost converter which can be used to charge the battery from AC source and from regenerative braking. BLDC motor winding is used as a coupled inductor for charging. Therefore a single inverter circuit can be used to charge the battery from the AC source and from regenerative braking. The power factor and THD are measured and it is within the permissible limits.

Keywords — On-board charger; Electric Vehicle(EV); Brushless DC (BLDC) motor; Power factor ; Total Harmonic Distortion (THD); Regenerative braking

Topic: Solar Assisted Induction Motor Drive for Electric Vehicle

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Abstract — This paper discusses the simulation of a solar powered induction motor for electric vehicle application. This is done with the help of a SEPIC convertor, bi-directional convertor and a hex bridge inverter. Considerable efforts are being created in electrical vehicles for best choice of motors support needed specifications like high torque/inertia and power/weight ratios, high efficiency, low price and high reliability. previous works suggests that PMSM, BLDC, switch reluctance motor (SRM) and induction motor (IM) are smart choices, with induction motor an honest alternative thanks to its reliability, low cost, low maintenance and is quickly accessible. For software simulation a SEPIC device and Bi-directional device is employed to offer supply to the Three half bridge electrical inverter from solar supply. An electrical circuit is meant to regulate the V/F constant quantitative relation for the motor drive. Through an electrical circuit, the speed of induction motor may be modified with the modification of modulation index.

Keywords — Bi-directional converter; Electric Vehicle; SEPIC converter; Induction Motor; V/F control; Regenerative braking.

Topic: Operation and Control of Non-isolated Interleaved Bidirectional DC-DC Converter Integrated with Solar PV system

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Abstract — The renewable energy sources supplying power to the microgrid can have fluctuating power characteristics depending on the environmental conditions. As renewable sources and connected loads have varying power nature, voltage instability conditions arises. To provide a stable voltage at a nominal level as per the standards is the main concern of any power supply network. This paper focuses on Non-isolated Bidirectional Interleaved DC-DC Converter (NIBIC) with battery storage. The NIBIC is controlled based on the voltage of the DC bus, connected to photovoltaic sources with maximum power point tracking technique (MPPT) via boost converter and load. The control circuit of bidirectional DC-DC converter includes current and voltage loop for operating the converter under different operating modes. This paper elaborates the operation of the system in the varying load conditions as well as in the varying irradiance conditions. The simulation model is built in Simulink (MATLAB) environment and the results of the simulation shows the effectiveness of the control strategy.

Keywords — Photovoltaic system; Perturb and Observe technique; Bidirectional DC-DC converter; Interleaved converter; Battery storage

Topic: Tri Axis Positional and Acceleration based Safety device for building construction workers

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Abstract — Security measure and avoidance from Accident is real test in nation at various improvement or building destinations. Presently building site work does not have adequate security gear or it's not all around created. To defeat this issue, this paper proposed an undertaking in which we will utilize arduino and sensor to give satisfactory security at exceptionally moderate expense. In our venture we will utilize air pack which will get open when individual tumbles from height. With the goal that effect of Collision gets minimized. This framework will have high weight air smaller scale chamber which will move the air into inflatable air pack when valve gets open which will be constrained by microcontroller. There will caution framework which alarms the colleagues using GSM, so auspicious help and backing can be given.

Keywords — Security; GSM; Arduino.

Topic: Reflectarray Antenna based on Vertical polarized Square Patch Unit cell for Ku-Band Application

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Department of ECE, SSNCE ,Chennai, India.
⁸Milind Mahajan, ⁹Sagi Sravankumar
Scientist, Space Applications Centre, ISRO, Ahmedabad

Abstract — A single layer tiny reflect-array antenna is presented her based on square patch for Ku-band applications which operates at the frequency band from 10.7GHz to 11.7GHz. Initially the microstrip patch unit cell element is designed for the center frequency of 11. 2GHz. Then, the phase optimization is done by varying the length of patch to obtain the linear phase range of 0° to 360°. A 11×11 reflectarray antenna is designed using a single layer microstrip array with the size of 165mm×165mm. The Computer Simulation Technology (CST) software is used for the simulation of the whole reflectarray antenna on the Taconic RF-35 substrate with dielectric constant 3.5. The designed reflectarray antenna is validated by analyzing 2-D and 3-D radiation pattern and gain.

Keywords – Reflectarray; single layer; CST, Microstrip

Topic: Mapping and Motion of FPGA based Mobile Robot

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Abstract — This paper proposes the design of a mobile robot to traverse a given track utilizing an optical sensor array and implementing a PID controller. The system is enabled to remember the trajectory and replicate the motion despite the absence of the track. The trajectory data is also sent to another robot which also follows the same trajectory as the master robot. The Field Programmable Gate Array (FPGA) has been interfaced with Infrared (IR) sensor module array and differential driver circuit. FPGA acts as the central control unit and the IR sensor array acts as an input unit while the differential drive circuit controls the speed and direction of the DC motor. The speed and direction of the robot are based on the error values calculated from the IR sensor output which is then fed to the PID controller to generate the corresponding duty cycle.

Keywords — Differential drive control; Field Programmable Gate Array; MATLAB Simulink System generator; IR sensor array; PID controller.

Topic: A survey on Face Recognition Technique

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Abstract — Face recognition has attracted tremendous notice since it has numerous applications in computer vision, communication and automatic control systems. Face recognition frameworks either perform face verification or face identification. Face Detection is the first and most fundamental step in face recognition, and its essential point is to decide if there is a face in an image or not. Be that as it may, automatic face discovery is a mind boggling issue in image and video processing. Anticipating facial features is another major task in facial analysis and is an important step in face identification. Both these tasks are challenging because faces differ in size, shape, colour, due to messy background, different face orientation and large fluctuations of the features in different images etc. The main objective of this paper is to provide an overview of some of the popular face recognition approaches and techniques and to compare them.

Keywords — face recognition; feature-invariant; template; eigen-faces; fisher-faces.

Topic: A survey on Speech Emotion Recognition

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Abstract — People are exchange information and emotions through speech. Emotion recognition from speech is used in many applications such as education, customer service, speech synthesis, medical analysis and forensics etc. The main aim of speech emotion recognition system is to predict the emotions correctly. Many frameworks have been proposed to recognize the emotional content of a speech. The current available speech emotion recognition methods are analyzed in this survey. The evaluating parameters are feature extraction and classification methods. Also evaluates the limitations and accuracy of available methods in this survey.

Keywords — Features; MFCC (Mel Frequency Cepstral Co-efficient); LPCC (Linear Prediction Cepstral Coefficients); LPCLinearPredictionCoefficients); Classifier; GMM (GaussianMixture Model); HMM (Hidden Markov Model); KNN (K-Nearest Neighbors).

Topic: Malware Variants Detection Methods

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Abstract — Malware industry is growing exponentially and the Internet is used as an entry point by most of the malwares. Thus the Internet security have been severely affected by the drastic growth of malwares. Malware detection is critical for protection against data theft, security breaches and other dangers. But the detection techniques continue to be challenging, as the attackers invent new techniques in order to resist the detection methods. It is reported that over 98% of the new malwares are exactly the derivatives of already existing malware families. Thus efficient techniques are required for the identification of malware variants or samples. This paper aims to overview various techniques developed so far for malware detection. Each of the examined techniques relies on either static, or dynamic or a combined approach.

Keywords — Malwares; variants; classification; static; dynamic; integrated

Topic: GPS based Sentimental Analysis on Twitter

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Abstract — Twitter is one of the Social media which act as a platform to share our information and to express the opinions, sentiments about a particular product or a person. Nowadays the volume of the data is increasing. The rate of the data increasing is higher than the rate of computational performance. Data preprocessing in such volumes then faces the problem of their processing and storage. Preprocessing and analysis of large volumes of the data also produces new data. On the other hand processing of large volumes of data often requires parallel and distributed computation to achieve results in reasonable time or just to process the amount of data. The main objective of this paper is analyzing the tweets through sentiment analysis and visualization of the data using R. Sentimental analysis means analyzing the person's opinions, taste, views and their interest. In this paper we classify the expression of a person in various categories such as anger, anticipation, trust, joy, surprise, sad and also categorize whether the tweet as positive, negative or neutral. For which Twitter API is used for collecting the tweets from twitter. Also twitter package is used for classification. Finally to visualize and finding location, we have used Google map API that used to represent the location of the twitter data efficiently.

Keywords — Data processing; sentimental analyzing; Twitter API

Topic: Design and Implementation of Soft Switching based Push Pull Converter for LED Application

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Abstract — This paper represents soft switching based push-pull converter for LED application. This prominence of this topology is to reduce conduction loss, higher efficiency and low switching loss. This topology use zero voltage switching to reduce conduction loss. The push pull converter is used as a DC-DC converter very appropriate for low and medium power application. High efficiency, reduced ripple, low switching loss predominance of this application. Here increasing the switching frequency achieve high power density and reduce complexity of the circuit and also they have less component used .Here lower switching loss can be obtained by ZVS method. Here 48 V dc is converted into 12 V dc and switching frequency take 100 KHz, resonance frequency take 300 KHz to obtain soft switching. Here LED application used as a load. This topology is simulated in PSIM.

Keywords — DC-DC Converter; Closed Loop control; Push Pull Converter and ZVS.

Topic: Significance of Capacitor Voltage Balancing in Multilevel Inverter

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Abstract — In the recent trends, the use of multilevel inverter is rapidly increasing due to its good performance compared to conventional inverter. In this paper, the performance of Nested Neutral Point Clamped Multilevel inverter (NNPC) is presented. NNPC is a Hybrid type of Multilevel inverter which is nothing but the combination of two classical topologies that are Neutral Point Clamped(NPC) and Flying Capacitor(FC).As this Hybrid inverter involves Capacitor in its configuration therefore, there is an issue of Capacitor Voltage Balancing(CVB).Hence the necessary condition arises that is to maintain $V_{dc}/3$ voltage across Flying capacitors inorder to obtain perfect four level output[8].Hence the performance of Nested Neutral Point Clamped Multilevel Inverter is observed in MATLAB Simulink by using simple pulse triggering without Capacitor Voltage Balance control and its simulation is also done with capacitor voltage balancing control, further its performance is also analysed by implementing it with level-shift Sinusoidal Pulse Width Modulation technique(Phase-Disposition) with capacitor voltage balancing control technique in MATLAB simulink.

Keywords — Nested Neutral Point Clamped Multilevel inverter; Capacitor Voltage Balance; Phase Disposition Sinusoidal Pulse Width modulation

Topic: Study of Different State of Charge (SoC) Estimation Techniques used in Electric Vehicle

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Abstract -- In this paper, new and current developments in state of charge (SOC) estimating methods for battery is given. As the battery SOC is an important parameter, which reflects the battery performance, so accurate estimation of SOC cannot only protect battery, prevent overcharge or discharge, and improve the battery life, but also let the application make rationally control strategies to achieve the purpose of saving energy. This paper gives an overview on the categories and mathematical methods of SOC estimation. Based on the assessment of SOC estimation methods, the future development direction of SOC estimation is proposed.

Keywords — Open Circuit Voltage (OCV); State of Charge (SoC); ElectroChemical Model (ECM)

Topic: Real-Time Wastewater Microbial Fuel Cell Stack with the Ability of Driving Low Power Electronic Load

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Abstract — Microbial Fuel Cell (MFC) uses bio-electrochemical process to generate electricity. It is considered as a new approach in renewable energy generation. However, due to low output voltage and current, supplying power to loads from MFC is quite challenging. Research so far done on MFC mainly focused on material analysis, creating new designs, bacterial activity in MFC and so on. But very few attempts have been done on delivering power to loads from MFC. In this research, using waste water as input, three Double chamber MFCs and two single chamber membrane-less MFCs have been constructed using Aluminum as anode and Copper as cathode. Constructed MFCs were connected in series which generated maximum 2.6 V. The MFC combination could light up a small Light Emitting Diode (LED).

Keywords — microbial fuel cell, wastewater, bacteria, double chamber microbial fuel cell, single chamber membrane-less microbial fuel cell .

Topic: A Comparative Stability Analysis of Wind Farm using SVC and STATCOM

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Abstract — Stability in terms of Voltage and Power is the major issue for the stable operation of grid connected to wind farm under faulty conditions and grid disturbances. This paper presents a comparative stability analysis of the wind farms based on fixed speed induction generators (FSIG) which are connected to the grid, before and after a severe disturbance occurring Static Synchronous Compensator (STATCOM) and Static VAR Compensator (SVC). As the fixed speed induction generator has asynchronous characteristic, the instability after the fault in wind farms is severely created by the absorption of extreme reactive power by FSIG. This phenomenon is a result of increase of rotor slip of FSIG during the fault and the consumption of reactive power is controlled. A comparison based performances analysis of the wind farm equipped with SVC and STATCOM to improve the stability during and after the fault is presented. The simulation results show that both the devices can improve the system stability during and after the fault, but the wind farm equipped with the STATCOM have better performance as compared to SVC and provide better reactive power support to the network.

Keywords — Fixed Speed Induction Generator (FSIG); SCIG; Power System Stability; FACTs; STATCOM; SVC; PCC.

Topic: The Early Prediction of Alzheimer's Disease using MRI Features

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Abstract — Dementia of Alzheimer's type (DAT), a progressive neurodegenerative disorder, is the most common cause of dementia in the elderly population. Previous clinical and histological studies suggest that the neurodegenerative process, which affects the brain, may lead to complete amnesia of DAT subjects. If we develop a system for the early diagnosis of the disease, treatments can be done effectively. After searching different related works, a definite prediction cannot be done. Therefore, a new technique should be developed for the prediction. By using the different imaging modalities with the help of Biomedical Engineering technology, a new system can be developed. In this paper, we have focused on imaging modality, Magnetic Resonance Imaging (MRI) with the help of Biomedical Engineering technology for the early prediction of AD. For this purpose, we have proposed a method based on Discrete Wavelet Networks (DWNs) for the prediction of the disease. This method provides reliable and validated results for MRI images.

Keywords — *Dementia of Alzheimer's type; Early Prediction; Dimensionality reduction; Feature Selection; MMDWNS; and MRI.*

Topic: Design of an IOT approach for Security Surveillance system for Industrial process monitoring using Raspberry Pi

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Abstract -- The industrial environment presents unique fire protection and security challenges. The machinery used gases and the concentration of stored assets result in high risks. This system is capable of detecting fire and provides an alert to the workers. Raspberry Pi 3 has been used which is integrated with a couple of sensors and a camera. The system uses gas sensor to detect gas leakage, PIR sensor detects intrusion and the flame sensor detects fire. The sensors constantly sense and keep on transmitting values to the online web server over a Wi-Fi connection. If fire due to an intruder is detected, the camera captures the image and the system will immediately send an email alert along with the image of the affected spot to the industry owner. Once the fire is detected by the flame sensor, fire alarm will be generated to alert the workers, the sprinkler motor will be activated. The server can be viewed from anywhere for sensor information such as concentration of gases, fire and motion detection. With such intelligent information, safety managers, workers, and fire fighters will also be able to make better decisions for fire response.

Keywords — *industry, IoT, raspberry pi, sensor, security.*

Topic: Wide Null Control of Time Modulation Based Linear Antenna Arrays using Moth Flame Optimization Technique

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Abstract — This paper proposed the method of improving wide nulls for the far-field radiation pattern for broadside Time Modulated linear antenna array structures with isotropic elements using Moth Flame Optimization technique. The structure considered here is the symmetric Time Modulation based linear antenna array. Wide Nulling is improved with the smallest possible sacrifice in the first null beamwidth (FNBW). Two sets of array structures are taken, and each of them is analyzed, and then the optimal designs with deeper nulls are found considering symmetric geometries. Excitation amplitudes are considered as the variables to modify the radiation pattern as required.

Keywords — *Linear antenna array; Time Modulation; Moth Flame Optimization; Wide Null; First null beam width*

Topic: SPWM Based Multi-level Inverter with Reduced Component

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Abstract — Multilevel Inverters (MLI) enthrall the researchers in industry and in academy for low voltage and high power control application. The desire outcome of inverter is generating stepped wave with lower harmonic content. Traditional topology is being used to realize the MLI. The limitation of traditional topology is that it convey more number of devices which increase the complexity of gate pulse generation, which result in increase in overall cost. To solve these, a hybrid configuration is suggested in this paper. This MLI is capable to generate seven levels of output voltage levels using calculation and Derived seven level inverter topology was verified by Simulink software/MATLAB simulation. In this paper author proposed a Single Phase Seven Level Inverter with Capacitor Voltage Control balancing Using Power Devices for Photovoltaic apparatus. The proposed inverter topology gives an improved voltage regulation, efficiency and smooth result compared to conventional MLI topology.

Keywords — *Modulation Index; Multi-Level Inverte;, Pulse Width Modulation (PWM); Total Harmonics Distortions (THD).*

Topic: An Investigation on various Lung Cancer Diagnosis Mining Techniques

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Abstract — Today with the huge population growth which is coupled with the growth in diseases has demanded the presence of data mining in diagnosing disease to excerpt the fundamental pattern. Of all the diseases, cancer is one of the prevalent diseases that claims million lives each year and of that it is the lung cancer accounts for 18% of the death. It is also noticed that the survival rate of the patients suffering from cancer is very less. As far as lung cancer is concerned, it is a disease that is highly dependent on historical data for early diagnosis. If the disease is diagnosed early then the five year survival rate of the patients can be increased to 70%, when the tumor has not yet spread. Lot of existing medical techniques are present but require complex equipment and is very expensive. Moreover, these techniques are efficient only during stage 4, when the tumor has spread to other parts of the body. This paper does an examination on the numerous techniques for lung cancer diagnoses and finally comes to a conclusion that Artificial Neural Networks can be used for this purpose.

Keywords — Artificial Neural Networks; Biomarkers; Data Mining; Pattern Evaluation

Topic: Speech Based Examination Android App

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Abstract — The main challenging task for the virtually and physically challenged students is to take their exams. Volunteers are required for writing their exams on behalf of these students. These volunteers must be confidential and should not involve themselves in any kind of malpractices. These students are in need of a technology that makes their task easier. We have developed an Android application that conducts the exam, evaluates it and displays the result. This application reads the given questions from the soft copy to the students, their answer in the form of speech is captured and converted into text. This text is evaluated and marks are calculated. In this paper , we have reduced the workload of the virtually and physically challenged students with the help of the Android application.

Keywords — Android; Firebase; Speech engine; Google cloud API

Topic: Real Time Gait Phase Analysis for Robotic Knee Orthosis

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Abstract — The act of walking involves the complex interaction of muscle pressure on bones, rotations through various joints, and physical forces that act on the body. One of the major requirements of Walking involves motor control and motor coordination. Many orthopaedic surgical procedures are implemented to improve ambulation by optimizing joint forces, thereby preventing pain and ameliorating energy conservation. Gait analysis, implemented by either simple observation or three-dimensional analysis with quantification of joint angles (kinematics), joint forces (kinetics), muscular activity, foot pressure, and energetics (measurement of energy utilized during an activity), allows the physician to design measures based on the individual needs of the patient. Gait analysis provides objective preoperative and postoperative data for evaluation of results. Introducing gait data in treatment plans has resulted in changes in surgical guidance and in postoperative treatment. Use of these data also has contributed to the growth of orthotics and new surgical expertise.

Keywords — Ambulation; Pre-operative and Post-operative assessment; Orthotics; Motor Control; Motor Coordination; Surgical guidance.

Topic: Directional Assistant for the visually impaired with Data Logger for anti-trafficking

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Abstract — Mobility is an important aspect of life, for day to day responsibilities, taking care of oneself, and for getting through life in general. While most people are blessed with the ability to do so, a few unfortunate ones face a lot of problems, and have to go through life while being assisted in some way or the other by people around them. The main inspiration behind this idea is to minimize the dependability of the visually impaired people, so as to help them move around a little bit easily than usual. This paper proposes a model and a system to navigate through unknown roads with safety and also provides an option of storing the user's location into a cloud for tracking purpose, which could also fight the problem of human trafficking.

Keywords — data logger; ultrasonic waves; GSM module.

Topic: Error estimation in ballistic missile trajectory using Kalman Filter

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Abstract — The Kalman Filter is a very successful and popular tool for the estimation of posterior information of several engineering and non-engineering applications. In engineering applications, the estimation of the state of a ballistic missile is an important requirement for the reliable deployment of an anti ballistic missile (ABM) system. But during the measurement of its flight through radar there are many disturbances that tend to add significant amount of error in its readings thus reducing the effectiveness of ballistic missile defense system. Many researches conducted in the field estimated the state of the missile and tried to minimize the error by using various techniques such as Bayesian theorem, Kalman filter and extended Kalman filter. This research examines the Radar related errors, studies the extent of its impact on ABM system and proposes a solution to minimize the errors and increase the effectiveness of the system. The results obtained are used for error estimation in the filtered radar data and theoretically predicted trajectory of the missile. This approach considerably reduces the error and achieves a high level of accuracy in target interception.

Keywords—*Kalman filter; anti ballistic missile (ABM) system; Radar; defense; target interception; error estimation.*

Topic: Line to line voltage based sensorless control of Brushless DC Motor for high speed application

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Abstract — This paper introduces a novel type line to line voltage based sensorless control for BLDC (Brushless DC) motor used in high speed and high power applications. The commutation signal for the inverter is generated from the line to line voltage. In each phase of commutation, two switches are conduct corresponding to the truth table logic. Speed delay is compensated by the new proposed compensation method. Selection of commutation logic in a parallel mode improves the efficiency of the system. Compared to the existing control methods, the torque ripple and current ripple of the BLDC motor can be significantly reduced by this proposed method. The whole system is evaluated in the MATLAB- Simulink platform.

Keywords — *BLDC motor; sensorless control; commutation.*

Topic: Web Automation in Health Care

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Abstract — Today's business applications are widely structured on web-based systems that involve information which is dense and demands extensive processing. Many of the tasks involved are repetitive, tedious that take up lot of time and money. Tasks which are periodical like form filling, screen scraping, data extraction and transfer between applications, website testing and periodical report generation are the major tasks that are readily benefitted from web automation. Our project aims at automation of web using RPA technology in healthcare industry, where a software robot or bot that mimics a human worker, logging into applications, entering data, calculating and completing tasks, and logging out.

Keywords — *web automation; screen scraping; data scrapping; RPA.*

Topic: A Study on Pulmonary function influenced by occupational exposure using Spirometric parameters

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Abstract -Work associated lung diseases becomes more prevalent and detrimental in some work environments. The main source for such diseases is the continuing exposure of certain elements (cement, silica, stone, concrete, wood, asbestos) in the work place that enters into the lungs. Construction is one notable sector which influences more. Research says that for construction workers the rate of lung cancer is 50% higher than the normal population and hence it becomes obligatory to analyse the respiratory parameters of the construction workers to undertake some clinical measures. The study was performed on 95 construction workers in which 78 were male workers and 17 were female workers. The main aim of this work is to formulate the predictive equation for the significant spirometric parameters using multiple linear regression and to check the goodness of fit of the predicted model. The increased exposure to pollutants in the construction sites resulted in decreased spirometric parameters among construction workers.

Keywords — *Spirometer; Construction workers; Predictive model; Multiple linear regression.*

Topic: Condition Monitoring of Machine Winding using SFRA with Statistical Parameters

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Abstract— Advancement in technology and automation has drastically increased the usage of electrical machinery of various rating and types and the reliability of such systems depend on the condition of the electrical machines. So, irrespective of the power rating and design, all the electrical machines need condition monitoring for its reliable operation. Sweep Frequency Response Analysis (SFRA) is one of the proven condition monitoring technique to detect the winding deformations in power transformers. But interpretation of SFRA data to diagnose the faults requires the expertise as there is no standard methodology for fault diagnosis. This paper uses statistical parameters to support the Frequency Response Analysis (FRA) based condition monitoring for winding fault detection and location on a commonly used lumped parameter model of continuous disc winding transformer prototype using circuit simulation package. A methodology is developed to detect and locate the winding faults in the transformer. Experimental verification is done using the same continuous disc type winding prototype and stator winding of a single phase induction motor.

Keywords — Fault Detection; Statistical parameters; SFRA; condition Monitoring; winding faults

Topic: Comparative Analysis of Performance of Different Controllers for a Continuous Stirred Tank Reactor

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Abstract — The main aim of this paper is to develop different control strategies for a jacketed continuous stirred tank reactor. Continuous Stirred Tank Reactor (CSTR) is one of the most important unit operations in chemical industries which exhibits highly non-linear behaviour and usually has wide operating ranges. In this work, performance of different controllers such as Proportional-integral-derivative controller (PID), Internal model controller (IMC) and model reference adaptive controller (MRAC) have been evaluated.

Keywords — Continuous Stirred Tank Reactor; Internal Model Control; Model Reference Adaptive Control; Massachusetts Institute of Technology rule; Integral Absolute Error; Integral Square Error.

Topic: Fault code classification in ECU system testing using NLP and LSTM neural network

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Abstract— Almost all the vehicles that are running on the road today have some type of ECU (Engine Control Unit) in them. Specifications of the ECU can vary from OEM (Original Equipment Manufacturer) to OEM. But the thing that is common among all is that each ECU has to go through a lot of testing processes before releasing into the market. One such test is ECU system testing that is done just before the series release of the ECU. System testing of ECU involves subjecting ECU to various environmental and electrical conditions. Depending on the software and hardware calibration of the ECU, it may throw some kind of fault code due to the subjected condition. The fault code is read in the form of a label. There are hundreds of such fault code labels. Recognizing the fault code is a very cumbersome process during the analysis phase of system testing. So with this project we are trying to ease the task of recognizing the fault code by the use of Natural Language Processing techniques. Based on the description of the fault code, the reason why it occurred and the test case in which it occurred, we would be able to classify the fault code to its correct label. This is the first work of its kind in the field of ECU system testing.

Keywords—NLP; TF-IDF; ECU system testing; LSTM; Word2Vec; Fault code classification

Topic: Design and analysis of single switch dual output DC-DC SEPIC converter for PV applications

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Abstract—This paper deals with multiplier SEPIC converter with photovoltaic panel as the source. The multiplier SEPIC can achieve high voltage gain with devoid of extreme duty cycle and transformer. It experiences low voltage stress when compared with other buck boost converter. This is very important aspect for renewable energy sources. Further the voltage gain can be extended with the addition of diode and capacitor to the basic SEPIC structure. The basic SEPIC structure is known as 1x level. The converter works with 22V, 100W as input voltage and input power. The operating switching frequency is 20 kHz. This converter aims for regulating the output voltage to 48V by PI controller for different temperature and irradiation level. The multiplier SEPIC is simulated and the output is validate using MATLAB/SIMULINK.

Keywords—Photovoltaic panel; multiplier SEPIC; renewable energy application; PI controller

Topic: Efficiency Enhancement of Isolated Quasi Y-Source DC/DC Boost Converter for EV Battery Charging Application

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Abstract — In this paper, an electric vehicle battery is charged from a renewable energy source such as solar photovoltaic using highly efficient power converters is proposed. In order to overcome the power losses at various conversion stages, ZVT is preferred at the phase shifted full bridge converter. The extracted system voltage from SPV is 22V and it is further boosted to 55V for charging a battery of 12V, 7Ah with a specified power range of (330-400) W. The switching frequencies at the boost stage as well as PSFBC stage are 50 kHz and 100 kHz respectively. The preferred MPP technique adopted for this proposed work is Incremental Conductance for tracking maximum power from the SPV for having better solar conversions.

Keywords — *Quasi Y-source boost converter (QYSBC); Solar Photovoltaic (SPV); Phase Shifted Full Bridge Converter (PSFBC); Maximum Power Point (MPPT); Zero Voltage Transition (ZVT); Proportional and Integral controller (PI).*

Topic: Design of Coaxial Fed Synchronous Microstrip Patch Antenna Array with Circular Polarization

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Abstract — The paper deals with a method for designing a patch antenna with circular polarization to be resonant at 9.5GHz (X-band) for RADAR applications. It aims at overcoming the drawbacks of a single patch antenna. The existing single patch antenna resulted in a gain of 6dB. To improve the gain further, the proposed model consists of a synchronous array of 4 linear elements designed to produce circular polarization at the desired frequency. The simulation of the array antenna resulted in a gain of 8dB with an axial ratio of 2.9dB. The return loss of the patch antenna was found to be -20dB at 9.5GHz.

Keywords — *Patch antenna, circular polarization, RADAR, phase shift, sequentially rotated patches, power divider.*

Topic: An Efficient Image Enhancement Algorithm For Corrupted Images

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Abstract— Image enhancement improves the perception of information in image for humans. The main objective of image enhancement is to modify the attributes of an image for a specific task or application. There are many enhancement techniques to enhance a digital image. The algorithms used for enhancement are Dark Channel Prior (DCP), Histogram of Oriented Gradients(HOG), Depth estimation and colour based histogram. In the formulated methods, it gives the best adequate method for a given input image. The given images are rainfall, and fog. It is estimated by PSNR and MSE parameters.

Keywords— DCP, HOG, Depth Estimation, colour based histogram ,PSNR and MSE

Topic: Geospatial Artificial Intelligence: The power of ‘Where’

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Abstract— Geospatial artificial intelligence, a niche area, promises a new innovative approach to exploring the power of ‘where’. The analytics over geospatial data would yield higher comprehension of data in regards to discovering detailed information pertaining to a location, gain insights over hidden correlations and unexplored data. In near future, with applications evident in all the sectors of the industry, an evident use of geospatial artificial intelligence would be to predict a potential business location for an enterprise. The objective of this paper is to overview the concept of geospatial artificial intelligence and present an application with results in the domain of potential location recommendation for business by combining Location Based Intelligence and Business Intelligence..

Keywords— *Geospatial data; Location-Based Intelligence; Artificial Intelligence; Visualization.*

Topic: Malicious Webpage Detection Using Machine Learning

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Abstract— Due to rapid growth in internet there are more malicious webpages are grown, So it is important to detect and control such malicious webpages to avoid problems in Social Networks, Net-Banking, Business and so on. The dangers of these websites have created a demand for safeguards that protect end-users from visiting them. In an existing technique they detect webpage using uniform resource locator (URL) by using random forest and decision trees to automatically identify and classify malicious webpages. We are going to utilized the cookies, HTTP Headers, Lock Icon, Privacy Policy, SSL Certification, Badge Verification, URL Query Strings for malicious webpages classification using (Support Vector Machine) SVM classifier.

Keywords: *Malicious webpage, URL detection, SVM Classifier, Machine Learning*

[Type text]

Topic: Design and analysis of slot loaded E shape reflect array unit cell element for satellite Application

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Abstract- This paper focuses on reflect array antenna element design using a slot loaded E shape resonator for Ku band satellite applications. This element operates at the frequency range from 12.75GHz to 14.5GHz. At first, the E patch element is designed to operate at the mid frequency of 13.6GHz. Then the rectangular slot is loaded to achieve the linear horizontal polarization. The phase optimization is done by varying the length of patch so that the wide phase range of 0° to 360° is obtained. The Computer Simulation Technology (CST) software is used for the simulation of the reflect array antenna element using Taconic RF-35 substrate with dielectric constant 3.5.

Keywords- reflectarray , polarization, resonator

Topic:Students Result Analysis And Gradewise Chart As Data Visualization Using Tableau Application

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Abstract— Data analytics had become a major part in analysis of different forms of the data. This paper insist about the tableau tool which is used for both the data analytics and data visualization. This paper conveys about the students result analysis and their grade wise chart as the data visualization. The process of data analysis used in student results helps to provide the clear view of the results delivered by the students and also department wise grade chart is being visualized. This makes a good comparison of the various department and also the overall pass percentage and fail percentage of the college. This application will be more useful in various visualization of the data of different structure. For the data visualization the vizQL server is being used for the successful creation of the graphical representation based on visualization.

Keywords: Data visualization , visQL server , Data analytics.

[Type text]

Topic: Design of 11x11 Reflectarray antenna using Square patch with Square slot unit cell for Ku-Band Application

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Abstract- This paper confers a reflectarray antenna designed on a single layer based on square patch with square slot for Ku-band applications which designed to operate on the frequency band from 10.7GHz to 11.7GHz. At first, the microstrip patch unit cell element is designed for the center frequency of 11.2GHz. Then, the optimization for the phase is achieved by varying the dimension of patch to attain the linear phase range from 0° to 360°. A 11×11 reflectarray antenna is designed using a single layer microstrip array with the size of 165mm×165mm. The Computer Simulation Technology (CST) software is used on the Taconic TLT-6 substrate with dielectric constant 2.65 to simulate the entire reflectarray antenna. The designed reflectarray antenna is validated by analyzing the gain and radiation pattern of 2-D and 3-D.

Keywords-reflectarray, single layer, linear phase

Topic: Underwater Image Analysis and Classification with Neural Network Model

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Abstract— A substantial attention has been received by the Underwater Image Processing area in recent times. In this paper we have worked on processing of underwater image using DEHAZING algorithm. When the light radiates through water, poor vision in underwater is resulted due to effects such as selective attenuation and scattering and some limitations in these images are shown when they are analyzed. In addition to the poor vision tasks, the quality of underwater image is also affected. To correct the color distortion a weakly supervised color transfer method is being used . Also we feed the enhanced image as input to neural network, from which botanical name of plant can be obtained.

Keywords— Underwater Image Processing, neural network

Topic: Design And Implementation Of Air Selection Based Athynos Game For Learning Capability Analysis

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Abstract- In today's world various technologies have been developed, Augmented Reality is one of them. Therapist analyses the relation between two therapies, manual method and ATHYNOS. In manual method the alphabets will be shown for the recognition of certain objects or things by the inactive children who suffers from Dyspraxia whereas in ATHYNOS different animated characters will be used for the identification of particular character among the given characters. Hence ATHYNOS will provide better performance when compared to manual method based on their response time.

Keywords – Manual method; Dyspraxia; ATHYNOS.

Topic: Multifunctional Smart Wheelchair Using Voice, Joystick And Touch Control With Real-Time Patient Condition Monitoring

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Abstract—A handicapped person with physical disabilities needs a wheelchair to perform functions that require him/her to move around.. However, it is not easy for the disabled and elderly people to maneuver a mechanical wheelchair. Hence it is desirable to provide them with a motorized wheelchair that can be controlled through voice commands, joystick or a mobile phone with real-time obstacle avoidance capability. Such an independency would instill confidence and drive the reliability on others to almost nothing. This can be achieved at a cost that is affordable for handicapped people, as well as for organizations that support them. This wheelchair uses the captured signals from the user's choice of action and processes it to control the movement of wheelchair. The signals which are captured and translated are converted into movements by the microcontroller which in turn moves the wheelchair. The wheelchair can be operated in four ways like forward, reverse, left and right with voice commands. But in case of noisy environments or people with the inability of speech, voice commands cannot be provided. For such cases, joystick is used to operate the wheel chair. The wheelchair can also be operated with the help of android mobile touch commands with emergency stop. The physical parameters such as heartrate of the patient are monitored and an alert signal is sent in cases of emergency to the concerned guardian and medical consultant through text message using Internet of Things (IOT).

Keywords:Microcontroller, voice controlled, Obstacle avoidance,IOT, Mobile operated, Joystick.

[Type text]

Topic: Realization and Systematization of Brain Metastases

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Abstract— Tumors are the disease which has taken the world by storm for several decades now. There has not been any treatment to cure the tumor completely but to control it from spreading to other organs. The existing diagnosis methods take prolonged period of time to analyze, locate and specify the tumor type such as benign or malignant. Among the various types of tumors, brain tumors are commonly found as it can also be metastasized from other organs. Metastatic brain tumors are developed widely from breasts and lungs. Magnetic Resonance Imaging (MRI) is more effective as it does not produce ionizing radiation like other imaging techniques and it can be an effective tool for the diagnosing the cancer cells as well as monitoring it thoroughly by using imaging modality, high spatial resolution, and better contrast of soft-tissue. The proposed methodology consists of four stages which includes preprocessing segmenting the MRI image of metastatic brain tumor, classifying the cancerous cells using Support Vector Machine(SVM) and Convolutional Neural Networks(CNN) and to compare the efficiency and accuracy of the classifiers used.

Keywords— *Brain metastases, Magnetic resonance imaging, K means clustering, SVM, CNN.*

Topic: Faster R-CNN Based Ship Detection for Military Application

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Abstract— The detection of inshore and offshore ships is very important in military applications. It is used for supervisory purpose. The ship dataset is collected on a large scale and is used for training and testing ship detection algorithms. The images are collected from the segments of real time videos at different angles so that they can cover all types of variations like hull parts, illuminations, occlusions and backgrounds. Fine-grained classification which jointly integrates two level attention models: Object-level localizes object of images and Part-level selects discriminative parts of objects is being used.

Keywords - *IOT, Dataset, Accuracy, Ship detection, Feature extraction, Pre-processing, Segmentation*

Topic: Position Location And Navigation Aid For Blind Using RFID And IR Sensor

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Abstract— The motivation behind this project is to aid the visually challenged to navigate indoor environment with considerable ease. The system is designed on the premise that the user's movements are confined to well-defined locations that can be studied and modelled with reasonable accuracy. The objectives of this system are to help the user reach a destination and keep him informed on his current location while alerting him on any obstacle or hazard on his path. This project is implemented based on the RFID technology and IR sensor. In this application we are arranging RFID tags in each room. Whenever the person is in a room, the reader will detect that room and he can reach another room by giving voice commands or by pressing switches. The MATLAB environment identifies the voice command and then generates proper voice command for the user to follow to reach the destination.

Keywords — ARM, RFID reader, IR sensor, MAX232.

Topic: Automatic Replenishment of Intravenous Fluid preventing Death Choke

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Abstract - Considering that intravenous in blood infusion, usually applied without a proper control of the progress and velocity under unreliable manual monitoring practice, is the most popular and frequent clinical activity throughout the world, which can potentially endanger a patient's life, leads to a huge burden as patients, relatives and nursing staff can cause serious cases of medical negligence. In order to resolve this problem and provide a networkable solution we hereby present the design and implementation of an Automatic Replenishment of IV fluid using a DC pump motor, microcontrollers, and sensors and also enables health monitoring using a software mobile application. This eliminates the need for an assistant/nurse to check constantly upon the drying of IV fluid bags. It eliminates the risk of excess fluid or decrease in the fluid injected in the veins.[1] It also helps doctor or the nursing staff to monitor the effects of drips in the body from any place in the world and warns during abnormal conditions of the body.

Keywords- Health Aid, Automatic IV fluid process, Intelligent IV fluid refilling, Microcontroller, Human Aid, Thinkspeak

Topic: Performance Evaluation of Secured Co-operative Networks using Diversity Combining Techniques

Vineetha Mathai¹ A.Sathiarani chithra² P Indumathi³
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Abstract—The Spectrum scarcity is a major issue faced in wireless communication nowadays. To mitigate this problem, cognitive radio technology is the solution since utilizes the spectrum in an adaptable manner. The security of the cognitive radio was achieved by implementing relay selection scheme in the Physical layer. In underlay cognitive network due to the coexistence of primary user and secondary user, The Secondary user must in turn guard the primary user from the Eavesdropper. Here Cooperative diversity combining is incorporated with relay nodes in multipath fading environment to improve the secrecy performance in terms of Secrecy Outage Probability and Bit Error Rate (BER). The secrecy rate of the cognitive radio network has been analyzed with and without relay. It is obvious that Maximal ratio combining outperforms Selection combining scheme since the signals from each channel are added together. From the numerical results it is evident that BER comes down to 10^{-3} which is the required standard value for the wireless fading environment. Also the Outage probability with Amplify and Forward (AF) plus direct transmission gives the best performance compared to direct transmission.

Keywords— *Physical layer security, Cognitive radio networks, Secrecy Outage Probability, Diversity combining.*

Topic: Boiler Tube Leakage Detection Using UAV

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Abstract—Detection of boiler tube leakage is a very important factor for the efficient running of power plants, as nearly 60% of the boiler outage is caused due to the leaks in the boiler tubes. Traditional methods of boiler tube leakage is rudimentary and has many disadvantages. This method incorporates the use of a thermal camera sensor, which is used to capture the thermal images of the boiler tubes. The captured thermal images are then processed, using OpenCV and python, in Raspberry Pi microcontroller. The processed images are then stored and transmitted to the monitoring PC or device. It emerges that this method of detection is easier and less time consuming than the traditional methods.

Keywords—Boiler tube leakage , Thermal camera sensor , Thermal Image processing

Topic:Detection of Myocardial Infarction using Convolutional Neural Network

[Type text]

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Abstract- Cardiovascular disease is the most common threat to humanity. According to published reports this disease is considered to be the first cause of mortality in developing countries. Myocardial Infarction (MI) or its serious form Acute Myocardial Infarction (AMI) is the medical term for a heart attack. Existing technique uses Heart Rate Variability (HRV) –Based Ischemic Stroke Detection which uses heart rate variability that reflects activities of the autonomic nervous function. This technique is implemented during the acute stage. But the stroke detection accuracy is low and time consuming is more in this technique. In this paper, Convolutional Neural Network (CNN) is proposed which is a type of deep learning based on Artificial Neural Network theory. The ECG image is processed and the ECG characteristic points such as PQRST are plotted. The wave intervals of RR, QS and PR signal are calculated with respect to the heart rate. Samples of signal are given to CNN classification process for training process. Then the testing is done where the normal and abnormal images are detected.

Keywords- *Myocardial Infarction, Ischemic Stroke, Heart Rate Variability, Convolutional Neural Network.*

Topic:Implementation of Super Twisting Speed Controller and Loss Minimization Controller for Induction Motor Based on SVM-DTC

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Abstract— SVM-DTC (Space Vector Modulation -Direct Torque Control) control method for induction motor is proposed to reduce torque and flux ripples at constant switching frequency. In conventional DTC, has high torque and flux ripple at variable switching frequency. Control performance is improved by introducing a second order super twisting controller after the replacement of PI controller. This controller improves the speed regulation and it is based on second order sliding mode control. This method provides a super dynamic and an uplifted robustness across the peripheral disturbance. The second objective of this paper is the induction motor energy optimization. A model with Loss Minimization Strategy is proposed for efficiency optimization.

Keywords— *Direct Torque Control (DTC), Induction Motor (IM), Space Vector Modulation (SVM), Second Order Sliding Mode, Efficiency Optimization, Loss Minimization Strategy.*

Topic:Multi-Input Transformer Coupled DC-DC Converter For Rural Electrification Using Renewable Energy Sources

[Type text]

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Abstract—the objective of this paper is to propose a multi-input transformer coupled DC-DC converter for a stand-alone hybrid system consisting of PV and wind in rural areas where access to the main grid is not reliable. The locally available renewable energy sources are integrated into a system to accomplish the needs of the rural community with energy-efficient DC technology. The propound converter consist of a bidirectional buck-boost converter which harness power from the PV panel along with battery control and a transformer coupled boost half bridge converter which harness the power from the wind. The suggested architecture is more advantageous to the current stand-alone topologies as it has less component count, reduced power conversion stages and lesser losses. These characteristics enhance the efficiency and reliability of the presented scheme. MATLAB/Simulink studies are performed to acquire simulations for the different operating modes of the proposed control strategy.

Keywords—battery charge control; bidirectional buck-boost converter ; hybrid system; transformer-coupled boost half bridge converter; solar photovoltaic(PV); wind energy.

Topic:Implementation of Internet Access in MPLS-VPN Technique On ISP

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Abstract- This paper proposes internet access along with MPLS VPN network to provide internet connectivity. MPLS VPN network are service provider that provide MPLS Layer 3 VPN service connectivity for customer. Usually customer request internet access from the service provider that contains access. It is possible, that in case of MPLS VPN service provider can provide internet access for customer as well. Internet access for VPN can customer can be providing by a variety of way with the MPLS architecture. Here internet access is provided to customer through internet service provider in ISP router. In proposed system using two internet service providers. One ISP is used to provide MPLS VPN service to the customer and the other ISP router is used to provide internet access for the customer who also has MPLS VPN service. This session describes (or) how to design an MPLS CORE for internet access such that VPN remains secure. The implementation of internet over MPLS VPN is simulated by using a software GNS3 (Graphic Network Simulator) tool this provide internet access by implementing internet in MPLS VPN technique on ISP's.

Keywords- MPLS, VPN, Internet access, VRF

Topic:PID Controlled Zeta Converter for Pv based DC Supply

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[Type text]

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Abstract- This paper proposes a simple and cost efficient spv fed bldc motor fed drive. A zeta converter is used to extract the maximum power from the spv. Many new dc-dc coversion topologies are created every year. Zeta converter is such a new topology which provide a regulated output voltage from an varying input voltage. Pi controller is used to control the zeta converter for obtaining desired output voltage. Focv type of mppt is used for extracting maximum power from the spv. Vsi is used to convert the dc voltage obtained from zeta converter and feed the bldc motor. The speed is controlled through a variable dc connect voltage of VSI. The proposed control system wipes out use of current sensors and adjusts a crucial recurrence exchanging of the voltage source inverter (VSI), in this manner staying away from the power misfortunes due to high recurrence exchanging. No extra control or hardware is utilized for speed control of the bldc engine. The simulation of the proposed system is exhibited through results using matlab/simulink in the paper.

Keywords- *FOCV(fixed open circuit voltage), BLDC(brushless DC), SPV(solar photovoltaic), VSI(voltage source inverter), PWM(pulse width modulation)*

Topic: Unmanned Aerial Vehicle for Agriculture and Disaster Management

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Abstract— This paper describes the design, construction and validation of a mobile sensory platform for crop management by sprinkling irrigation and disaster fields. The goals of this system include taking measures of poisonous gas leakage detection and flame detection using sensors. Agriculture is essential in life and one of the diminishing fields also. The farmers cannot stand in front of the huge markets. The cost of yield is increased while the ROI is less for the farmers. There are significant technologies have been developed to automate agriculture in order to decrease the production cost and to increase profits of the farmers. The study reveals that the importance of drone and the necessity to do more R&D of drone in agriculture. The sensors have been selected by considering the climate and plant growth models and the requirements for their integration on board the quad rotor. The primary contributions of this paper are the validation of the quad rotor as a platform for measuring environmental variables and the determination of the optimal location of sensors on a quad rotor. And here we present the same quad rotor for the disaster field managing by using gas sensor for monitoring the poisonous gas was leaking or not and flame detection.

Keywords-Future Agriculture, Drone, Micro-Controller, relay, Water Tank, Dc Pump Motor, Camera, gas sensor, flame detector Neurons.

Topic:An Upgraded Binary Grey Wolf Optimization for Optimal Allocation of PMUs to obtain Complete Network Observability

[Type text]

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Abstract- The blackouts in north India, USA, and due to failure of power grid protection led to the development of synchrophasor technology which can provide dynamic accurate measurements. Phasor Measurement Unit (PMU) synchronizes the bus measurements at different places of Grid network with GPS satellite. The cost increases with increase in installation of PMUs at every bus. The PMUs should be located in optimal way that complete network observability is obtained. In this paper, An Upgraded Binary Grey Wolf Optimization (UBGWO) method is proposed for optimal allocation of Phasor Measurement Units (PMU) for complete grid network observability. The Bus redundancy index (BRI) at every bus is considered to assess performance of every bus connected to the system. Complete Network Observability (CNOI) is proposed to evaluate the complete performance of the network with optimal PMU locations. The proposed UBGWO is programmed in MATLAB software and examined, IEEE 14, 30 and 57 bus networks to obtain complete network observability with optimal allocations. To validate the proposed method, the results are compared with standard methods available.

Keywords- BGWO, Blackouts, Branch Redundancy Index, Complete Observability, Phasor Measurement Units.

Topic: Navigation of Robot and Control of Devices Using Virtual Reality

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Abstract- In industrial environment the controlling of large equipment is a difficult task as it involves lot of wiring and connections which is strenuous. Voice recognition based controlling is also not possible due to the deafening sound of the working machines. Moreover the radio frequency signals like infrared signals or a remote cannot be used in the EMI testing areas. So we need to come with a suitable method for controlling industrial devices in such an environment. In this paper, we aim to focus on one such method using the Virtual Reality concept. It reduces the effort needed for the operation of these devices. This method is a reliable and a simple method. This paper is aimed at coming up with a solution to the above explained problems by creating a model of the system discussed below. The basic idea is to project virtual buttons using the virtual reality projector which can be used to operate an industrial device. Once the virtual button pertaining to a particular device.

Keywords- Virtual reality, RSSI, PIC 16LF1526 Microcontroller, Visual Basic (VB)

Topic: Colour Based Segmentation of Satellite Images for Precision Farming using Artificial Neural Network

[Type text]

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Abstract- Cardiovascular disease is the most common threat to humanity. According to published reports this disease is considered to be the first cause of mortality in developing countries. Myocardial Infarction (MI) or its serious form Acute Myocardial Infarction (AMI) is the medical term for a heart attack. Existing technique uses Heart Rate Variability (HRV) –Based Ischemic Stroke Detection which uses heart rate variability that reflects activities of the autonomic nervous function. This technique is implemented during the acute stage. But the stroke detection accuracy is low and time consuming is more in this technique. In this paper, Convolutional Neural Network (CNN) is proposed which is a type of deep learning based on Artificial Neural Network theory. The ECG image is processed and the ECG characteristic points such as PQRST are plotted. The wave intervals of RR, QS and PR signal are calculated with respect to the heart rate. Samples of signal are given to CNN classification process for training process. Then the testing is done where the normal and abnormal images are detected.

Keywords- Myocardial Infarction, Ischemic Stroke, Heart Rate Variability, Convolutional Neural Network.

Topic: Kidney Stone Classification Using Deep Neural Networks And Facilitating Diagnosis Using Iot

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Abstract- kidney stone is a hard piece of solid formed due to minerals in urine. these stones are formed by combination of genetic and environmental factors. it is also caused due to overweight, certain foods, some medication and not drinking enough of water. there are 5 different types of kidney stones. every kidney stone crystal has its own distinctive illness and entails specific treatment. there have been many research projects to determine the existence of kidney stones. to immediately classify the type of kidney stones is what we have proposed to do. a matlab model which efficiently classifies the kidney stone images using weight estimating classifier is to be determined. the kidney stone images are acquired and preprocessed initially. the image is converted into a gray image and only the area of study is cropped out. the textures features are segmented by active contour segmentation method and the features are classified using the deep neural networks model. then, using iot the data is sent to the cloud from which it can be accessed by doctors and patients, alike.

keywords: image processing, kidney stone classification, deep neural networks.

Topic: Reduction of Standby Leakage Current by Implementing Tri-mode Power Gating

[Type text]

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Abstract— With the evolution of VLSI technologies, static power reduction is an area of major concern. The efficiency of a circuit is directly affected by the power requirements. Old models of power gating technique reduce power leakage during short periods of inactivity. Power gating is able to handle subthreshold current without sacrificing performance. The new power gating method will be tolerant to the process variations and has more than two intermediate power-off modes. The modes are namely: snore mode, dream mode, and sleep mode. Each mode has varying leakage current and wakeup time. Thus depending upon the application different modes can be implemented. In addition, it can be combined with existing techniques to offer further static power reduction benefits. Analysis and extensive simulation results demonstrate the effectiveness of the proposed design

Keywords—*Tri-mode power gating, leakage current, static power, mode transition.*

Topic: Comparative Analysis of Performance of Different Controllers for a Continuous Stirred Tank Reactor

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Abstract— The main aim of this paper is to develop different control strategies for a jacketed continuous stirred tank reactor. Continuous Stirred Tank Reactor (CSTR) is one of the most important unit operations in chemical industries which exhibits highly non-linear behaviour and usually has wide operating ranges. In this work, performance of different controllers such as Proportional-integral-derivative controller (PID), Internal model controller (IMC) and model reference adaptive controller (MRAC) have been evaluated.

Keywords— Continuous Stirred Tank Reactor, Internal Model Control, Model Reference Adaptive Control, Massachusetts Institute of Technology rule, Integral Absolute Error, Integral Square Error

Topic: DE-DUPLICATION OF PRICE LIST (PL) NUMBERS

[Type text]

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Abstract— : Data De-Duplication is specific of necessary information pressure systems for allocate with copy equal of reuse information. All regularly purchase items in Indian Railways are usually allotted a unique code called Price List (PL) number. Since, the activity of PL number allotment has now been made centralised, there is a need to correct the old data by eliminating the duplicate PL numbers. We need an application which will suggest duplicate PL numbers to the users by finding similarities in the PL description field of different PL numbers.

Keywords— Specific Keyword/phrases, Generic Keywords, Naïve Pattern Search.

Topic: Vehicle License Plate Recognition Using Machine Learning

P.Praveen Kumar¹,J.Meena², A.Sandhiya³,L.Ponni⁴, R.Srilakshmidevi⁵

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Abstract—: Transportation is increased in day to day life and its security measures taken for the vehicle is also importance as well. In recent years, LPR (License Plate Recognition) becomes a challenging task in Image Processing methods which includes many obstacles like poor quality cameras, noisy images etc. So to enhance the security, we detect, extract and recognize the vehicle's Number Plate with Machine Learning concepts. The number plate recognition is done by using the KNN (K Nearest Neighbor algorithm which helps to display the character and number in the terminal. To increase the efficiency, we imitate various methods for LPR to improve the accuracy of images by using Grayscale Conversion, Bilateral Filters, Contours Tracing technique along with the Canny Edge method which is used for detection and sharpening of edges. These methods are used in the detection where the accuracy of input images are improved.

Keywords— KNN, Contours, LPR, Canny Edge Detection, Grayscale, Bilateral Filter.

Topic: Analysis of Estimated Distance Measurements using RSSI based CFT for Different Environments

[Type text]

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Abstract—: In this modern society, WiFi (Wireless Fidelity) is an important part of each human life. All smart phones have the WiFi facilities. For this reason, the Wireless Sensor Networks (WSN) gaining its maturity and the data traffic demand is also being increased. Therefore, the problem of network localization became challenging. For localization of distance measurement using Received Signal Strength Indicator (RSSI) is a key factor. In Internet of Things (IoT) applications, WiFi is also an essential part. In this work two NodeMCU (ESP8266 WiFi IoT module) have used, which are easily programmable. Which operated in GHz bands. One node used as an Access Point (AP) and another as a STATION (STA). There exists lot of technique to find out the distance between two nodes. In each technique there are always some errors between actual and estimate distances. This work has done for reduction of errors using proposed CFT function. This work compared and analysis the error percent in three circumstances, i.e. Outdoor, Corridor and Indoor. Also discuss about different environmental effects. And point out how CFT is better estimation than other existing formulas/equations for different environments.

Keywords— WiFi, Error, ESP8266, NodeMCU, AP, STA, CFT, ESS, FTE, RSSI, IoT, WSN.

Topic: Quasi-Z-Source Bidirectional DC–DC Converter for Electric Vehicle Applications

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Abstract—: Electric traction is a most promising and innovative technology that can bring out significant enhancement in power utilization, fuel efficiency and performance in vehicle. A quasi-Z-source bidirectional dc–dc converter is proposed for electric powered vehicles. It has several advantages such as, wide voltage gain range, a decrease voltage stress throughout the power switches. For battery charging and discharging applications these bidirectional dc–dc converters are frequently used. The converter can be operated in step up and step down mode. This paper specifies the modelling and simulation of fuzzy logic controlled quasi-Z-source bidirectional dc–dc converter and closed loop proportional integral derivative control of the proposed converter- Inverter fed Induction motor drive.

Keywords— Bidirectional dc–dc converter; Fuzzy Inference System (FIS), Fuzzy Logic; Continuous Conduction Mode(CCM); Induction Motor Drive(IMD); Voltage Source Inverter(VSI).

Topic: Implementation of Super Twisting Speed Controller and Loss Minimization Controller for Induction Motor Based on SVM-DTC

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Abstract—: SVM-DTC (Space Vector Modulation -Direct Torque Control) control method for induction motor is proposed to reduce torque and flux ripples at constant switching frequency. In conventional DTC, has high torque and flux ripple at variable switching frequency. Control performance is improved by introducing a second order super twisting controller after the replacement of PI controller. This controller improves the speed regulation and it is based on second order sliding mode control. This method provides a super dynamic and an uplifted robustness across the peripheral disturbance. The second objective of this paper is the induction motor energy optimization. A model with Loss Minimization Strategy is proposed for efficiency optimization.

Keywords— Direct Torque Control (DTC), Induction Motor (IM), Space Vector Modulation (SVM), Second Order Sliding Mode, Efficiency Optimization, Loss Minimization Strategy.

Topic: Design and optimization of various shapes of inductors using HFSS.

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Abstract—: This paper gives a clear view of how various shapes of inductors are compared with each other on bases of constant spacing, width, number of turns, diameter, radius and to determine which shape gives better Q-factor in minimum size and better inductance value for impedance matching.

Keywords—Design procedure, FHSS

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Topic: Two-Bit Magnitude Comparator Design Using Gate Diffusion Input Technique and Static CMOS Logic

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Abstract—: Magnitude comparison is an elementary operation of Arithmetic Logic Unit (ALU) of modern processors. Due rapid increased use of portable devices, circuit designs having optimal performance level have become crucial. A novel design of a two-bit magnitude comparator is presented in this paper using Gate Diffusion Input (GDI) technique and Static CMOS (S-CMOS) logic. To determine the performance aspects, the proposed circuit was implemented and simulated in Cadence Virtuoso environment. The proposed work showed 0.212 ns propagation delay and 7.801 μ W average power (AP) In order to compare the proposed work, the existing two-bit magnitude comparators were also simulated using Cadence software. 90 nm technology with a supply voltage of 1.0 V have been used in all simulation cases. In accordance to simulation result, the magnitude comparator presented in this paper displayed notable enhancement in all performance aspects.

Keywords— magnitude comparator, gate diffusion input technique, static CMOS logic, high performance.

Topic: Performance Enhancement of Conventional Design of 4-Bit Carry Look-ahead Adder

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Abstract—: Magnitude comparison is an elementary operation of Arithmetic Logic Unit (ALU) of modern processors. Due rapid increased use of portable devices, circuit designs having optimal performance level have become crucial. A novel design of a two-bit magnitude comparator is presented in this paper using Gate Diffusion Input (GDI) technique and Static CMOS (S-CMOS) logic. To determine the performance aspects, the proposed circuit was implemented and simulated in Cadence Virtuoso environment. The proposed work showed 0.212 ns propagation delay and 7.801 μ W average power (AP) In order to compare the proposed work, the existing two-bit magnitude comparators were also simulated using Cadence software. 90 nm technology with a supply voltage of 1.0 V have been used in all simulation cases. In accordance to simulation result, the magnitude comparator presented in this paper displayed notable enhancement in all performance aspects.

Keywords—adder, carry look-ahead, AND gate, XOR gate, gate diffusion input.

Topic: Reflectarray Antenna based on Vertical polarized Square Patch Unit cell for Ku-Band Application

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Abstract—: A single layer tiny reflect-array antenna is presented her based on square patch for Ku-band applications which operates at the frequency band from 10.7GHz to 11. 7GHz.Initially the microstrip patch unit cell element is designed for the center frequency of 11. 2GHz.Then, the phase optimization is done by varying the length of patch to obtain the linear phase range of 0° to 360°. A 11×11 reflectarray antenna is designed using a single layer microstrip array with the size of 165mm×165mm. The Computer Simulation Technology (CST) software is used for the simulation of the whole reflectarray antenna on the Taconic RF-35 substrate with dielectric constant 3.5. The designed reflectarray antenna is validated by analyzing 2-D and 3-D radiation pattern and gain.

Keywords—reflectarray, single layer, CST.

Topic: Foetal Distress Classification by Unsupervised Clustering and Supervised Classifiers

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Abstract—: Many procedures are being used in the monitoring and prevention of foetal hypoxia, but most of the diagnostic decisions that affect a foetus's health are conducted after the delivery and depends widely on the physician's experience. The normal human foetus is adapted to survive labor and has reliable mechanisms that can tolerate even severe hypoxia and acidosis for short span of time. But a new born baby may need special attention if it is born abnormal due to poor supply of oxygen when it was inside the womb .In this project we use machine learning as a medium to classify 552 recordings of dataset obtained from Physionet database to differentiate a foetus as “normal” and “distress” by clustering and classification algorithms. This is done through two main analysis by labeling the sample Fetal Heart Rate time-series as originating from within Stage I and stage II of labor. The objective is to provide a system that takes time series data as inputs while clustering and comparing unsupervised and supervised techniques to know which algorithm provides higher results with accuracy. And based on the benchmark values we have concluded that Random forest classification algorithm gives the highest accuracy in terms of performance.

Keywords— Cardiotocography, Random Forest Algorithm, Classification, Clustering.

Topic: REAL-TIME TRESPASSER DETECTION USING GPS BASED UAV

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Abstract—: In counter-knowledge, reconnaissance the looking at of direct works, or other changing data to affect, managing, arranging, or ensuring people. This can combine insight from a segment by procedures for electronic gear, (for example, shut circuit TV (CCTV) cameras or catch try of electronically transmitted information. It is vital for keeping up control and respectability inside an office where inquiries about could be in progress. This paper depicts real-time trespasser detection utilizing unmanned aerial vehicle which is commonly a drone. This work has been built using DIY quadcopter fitting alongside the GPS which gives an exact area of UAV. The sensors fitted at the passage which is an IR sensor will transmit the information including the scope and the longitude could be seen with the assistance of the framework interface. The motive of this work is to provide real-time surveillance technology.

Keywords: —Surveillance, quadcopter, IR sensor, UAV.