Proceedings of the Fifth National Conference

on

Innovations and Advancements in Electrical Sciences

NCIAES'20

28th March, 2020

Organized by

DEPARTMENT OF
ELECTRICAL AND ELECTRONICS ENGINEERING

KPR INSTITUTE OF ENGINEERING AND TECHNOLOGY

(Autonomous)

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PREFACE

The Fifth National Conference on Innovations and Advancements in Electrical Sciences (NCIAES'20) is organised by Department of EEE, KPR Institute of Engineering and Technology (KPRIET) in association with ISTE, IEEE Madras Section, IE(I) and IETE. KPRIET promoted by KPR groups, is a renowned institution that focuses to offer quality education to the younger generation to strengthen our nation in the field of Engineering and Technology.

The NCIAES is emphasis on "Greener Energy for future Generation". The conference accomplishes on recent trends in the field of Electrical, Electronics, Communication and Computer Science Engineering. A substantial number of technical papers has been received in variety of disciplines for deliberations, the outcome of which is aimed at emerging trends in the respective field.

More than thirty presented papers maintained the high promise suggested by the full length papers and the programme was chaired in a professional and efficient way by the session chairmen. We are indebted to those who served as session chairs. We would like to thank all participants for their contributions to the conference and for their contribution to these Proceedings. It is appropriate that we record our thanks to our fellow members of the organizing committee for their support to make the conference highly successful. We would also like to bestow our appreciation for all the faculty members in making excellent logistical arrangements. The efforts set has made a great contribution to the success. The continuing success of conference like this will lead for fruitful upliftment in a continuous series.

Dr. V. KUMAR CHINNAIYAN, HoD, EEE

MESSAGE FROM CHAIRMAN

I am pleased to invite you for the upcoming Fifth National Conference on Innovations and Advancements in Electrical Sciences (NCIAES'20) with the theme "Greener Energy for future Generation" on 28th March 2020. I am happy to know that through this conference, the college proposes to showcase the current and emerging trends in the engineering and technology. As the topic for the conference discusses the recent trends in the field of Renewable Energy and allied sectors, definitely creates a forum for young budding engineers and research scholars. I congratulate the organizers for taking the initiative to host this national conference. I am confident that this conference will be a grand success, and that all participants will enjoy a fruitful and enlightening discussion. I wish the participants, all the very best in their future endeavors.

Dr.K.P.Ramasamy
Chairman, KPR Groups

MESSAGE FROM PRINCIPAL

It is my pleasure and honour to invite the technocrats for Fifth National Conference on Innovations and Advancements in Electrical Sciences (NCIAES'20). I appreciate the organizers for choosing the theme of national importance, "Greener Energy for future Generation". I am very much happy to note that this conference is organized in association with ISTE, IEEE Madras Section, IE(I), IETE. I am sure that the conference would set the stage for academicians across the spectrum of technology and industry to discuss and review the status of technological advancements in the country in renewable energy sector. I hope, this would go a long way to set a frame work to upgrade and improve the ever changing panorama of power generation, distribution and utilization. I wish the organizers of the conference the best in their endeavors to make the conference a grand success.

Dr.M.Akila
Principal

MESSAGE FROM ORGANIZING SECRETARIES

On behalf of the Organizing Committee, it is our pride and privilege to invite you for Fifth National Conference on Innovations and Advancements in Electrical Sciences (NCIAES'20) to be held in KPR Institute of Engineering and Technology, Coimbatore. All the faculty members of our department are eagerly looking forward to welcome delegates from various part of the country. Our college has sprawling lush green lawns and is spacious with buildings of architectural excellence. Coimbatore, Manchester of South India is known for its textile, motor industry, auto component industry, medical tourism and hospitality. Apart from this, the city has more than 50 engineering colleges and five universities and has become an education hub of Tamilnadu.

Improving quality in Engineering is the dream and aspiration of all Engineers. This kind of conferences will definitely create a forum for young budding engineers and technocrats to discuss the advancements in the various fields of engineering. Amidst the power packed technical sessions, we, the organizing committee is committed to host a conference conducive to a plethora of knowledge sharing through key note addresses of eminent personalities. We hope that this conference will be a positive contribution towards building the youngest generation with good quality of technical skills.

We look forward to welcoming you to KPRIET, Coimbatore and assure that your stay would be pleasant and productive.

Prof.S.VIVEKANANDAN
Prof.G.SARAVANAN
Organizing Secretaries

ORGANIZING COMMITTEE

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ABOUT THE INSTITUTION

KPR Institute of Engineering and Technology (KPRIET) is a new generation engineering college established in the year 2009 at Avinashi Road, Arasur, Coimbatore District, Tamil Nadu under KPR Educational Trust of KPR Group, one of the largest industrial conglomerates and vertically integrated apparel manufacturing companies in India.

KPRIET is approved by AICTE, New Delhi and affiliated to Anna University, Chennai, is dedicated for an unparalleled learning experience. The Institution has been accredited by NAAC with 'A' grade and 5 UG programs (CIVIL, CSE, ECE, EEE and Mechanical Engineering) have been accredited by NBA, New Delhi. The college is recognized under 2(F) and 12 B.

KPRIET offers seven undergraduate programmes (4 years) in Bachelor of Engineering namely

- Biomedical Engineering
- Chemical Engineering
- Civil Engineering
- Computer Science and Engineering
- Electrical and Electronics Engineering
- Electronics and Communication Engineering
- Mechanical Engineering

And four post graduate programmes (2 years) in Master of Engineering namely

- Structural Engineering
- VLSI Design
- CADD / CAM
- Computer Science and Engineering.

Ever since the inception, KPRIET is committed to holistic education and making the teaching – learning process more meaningful. The zeal and dedication with which KPRIET revolves is well depicted in its motto "CELEBRATING KNOWLEDGE", making it different from many institutions offering engineering education at large.

This commitment to excellence is supported by a strong team of experienced professionals and is best reflected in its goal to become a globally recognized institute of engineering and technology. The KPR group of companies has established a lead position in South India with interests in Textiles, Wind energy and Sugar. The companies are threaded by a unified code of values: commitment to excellence, quality and the willingness to give back to the environment.

Vision of the Institute

To become a premier institute of academic excellence by imparting technical, intellectual and professional skills to students for meeting the diverse needs of the industry, society, the nation and the world at large.

Mission of the Institute

- Commitment to offer value based education and enhancement of practical skills.
- Continuous assessment of teaching and learning process through scholarly activities.
- Enriching research and innovative activities in collaboration with industry and institute of repute.
- Ensuring the academic process to uphold culture, ethics and social responsibility.

Quality Policy

- To impart education to bring academic excellence.
- To ensure students upholds moral and ethical values.
- To cater the demand driven needs of various stakeholders.
- To promote research and facilitate technology transfer of societal significance.

VISION OF THE DEPARTMENT

To be the centre of higher learning in the field of Electrical and Electronics Engineering by educating the students to meet the global challenges with professional ethics and social consciousness.

MISSIONOF THE DEPARTMENT

- Providing technical, intellectual and ethical environment to the students through knowledge centric education and research.
- Collaborating with industries in the vicinity, nationally and internationally for exposure and innovation.
- Enabling the students to serve the society through prolific ideas

Department of Electrical and Electronics Engineering

PROGRAM OUTLINE   **28th March, 2020**

09.00 am – 10.00 am	Registration
10.00 am – 10.45 am	Inauguration
10.46 am – 11.00 am	Networking Tea/ Break
11.01 am – 01.00 pm	Parallel Sessions
01.01 pm – 02.00 pm	Lunch
02.01 pm – 03.30 pm	Parallel Sessions
03.31 pm – 03.45 pm	Networking Tea/ Break
03.46 pm – 04.30 pm	Valediction

SESSION DETAILS

Paper ID	Title
1001	Wireless Sensor Network Based Water Distribution System
1002	Brainwave Controlled Wheelchair
1003	Driver Drowsiness Detection for Vehicle Safety
1004	Periodic Guidance for Women in Their Rural Language on Financial Tools
1005	Smart Digital Meter
1006	High Frequency Quadrature Correction Loop for Digital Multiphase Clock Generation Circuits Using 90-nm CMOS
1007	Power Loom Automation Using PIC Microcontroller to Avoid Warp Error and Detection of Thread in Weft
1008	GSM Based Home Automation Using Arduino
1009	Automatic Yeast Filling and Sealing Machine Using PLC
1010	Wireless Sensor Networks for Post-Stroke Healthcare Using Fugl Meyer Assessment
1011	Pattern Recognition Technique Using DIP
1013	Mitigation of Harmonics in Power Network with Real Time Data Based on ETAP
1012	Hybrid Electric Charging Station Using Raspberry PI
1014	Aid for Visually Challenged People - Ultrasonic Sight
1015	Automated Attendance System Using Kodular
1018	Sewage Monitoring System Using IoT
1016	Automatic Switching of Three Phase Induction Motor during Fault Condition
1017	Brand Site Development Using Microservices
1020	Effective and Efficient Wind Power Generation using Bifarious Solar PV System
1021	Analysis of Dual Source Self Displaying Water Pumps
1022	Smart Hydration Using IoT
1023	Smart Operation of Low Voltage Pumps
1024	Solar Operated Robot
1025	Voice Operated Fire Extinguishing Robot
1026	Information Modelling Using OPCUA
1027	Maximum Power Point Tracking
1028	Spot Welding Machine Using HCT
1030	Smart Power System
1029	Design of Semitransparent Photovoltaic Cells
1032	Design of Cost Effective Pyrheliometer for Solar Radiation Measurement
1031	Autonomous Indoor Mapping Using Raspberry Pi
1033	Autonomous Monitoring Unit for Power Loom
1034	Smart Medicine Box
1035	Autonomous E-Rationing System

Paper ID:NCIAES 1001

Wireless Sensor Network Based Water Distribution System

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[1]Assistant Professor, Department of ECE, Hindusthan Institute of Technology, Coimbatore
[2]UG Scholar, Department of ECE, Hindusthan Institute of Technology, Coimbatore

Abstract:

As population is increasing day by day, urban residential areas have also increased because of this reasons water has become a critical problem, which affects the problem of water distribution, water conservation, water consumption and also interrupted water supply. People are found complaining that they don't have sufficient amount for their daily needs, so to overcome water supply related problems and make system efficient there is need of proper monitoring and controlling system. In this paper, we present design for water monitoring and control approach based on IOT, which focuses on continuous and real time monitoring of water supply that enables proper and uniform distribution so that we can have a record of available amount of water in tanks, flow rate abnormality in distribution line. This paper proposes the conceptual design of automated water distribution system for urban area. Here flow rate sensors are fixed in the inlet of every area, when the system is turned on the amount of water utilized by each area is monitored and controlled by using Arduino Uno from all area continuously. Depending upon the availability of water in the reserve tank, the maximum amount of water, which is the threshold value, will be set for the individual area. The valve can turn on/off by the master node to stop the water supply whenever the flow rate exceeds a predefined threshold. There is a computer, which is managed in the system to keep the track of the usage of water by individual area in real time and will be handled by the admin to simultaneously manage the users accordingly.

Paper ID:NCIAES 1002

Brainwave Controlled Wheelchair

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[2]UG Scholar, Department of ECE, Hindusthan Institute of Technology, Coimbatore

Abstract

BCI is connecting the brain to the computer for getting the information, structure and working of brain. Electroencephalography (EEG) is type of making the connection between brain and computer; using EEG we are able to get the signals. Here in the project we used EEG sensor to make the connection with brain which is Neurosky brainwave sensor. Using Neurosky sensor we get the signals, after plotting and enhancing that signals we get the good form of the brain wave signals. These signals are used for making the movement of wheelchair. EEG headset is placed on the head to get the brainwave signals. From direct brain we get raw signals which are having very small amplitude so these signals are amplified and plotted in the sequence of the frequency using the MATLAB software.

Driver Drowsiness Detection for Vehicle Safety

[1]K.Abarna, [1]S.N.Harishma, [1]K.M.Kalaivani, [2]M.Karthick, [3]Dr.T.Kalaikumaran
[1]UG Scholar, Dept. of EEE, Dr.Mahalingam College of Engineering and Technology, Pollachi
[2]Asst.Professor, Dept. of EEE, Dr.Mahalingam College of Engineering and Technology, Pollachi
[3]Professor, Dept. of EEE, Dr.Mahalingam College of Engineering and Technology, Pollachi

Abstract:

Detection of drowsiness of driver is a car safety era, which helps to dispose of injuries which caused by the driving force being drowsy. The vehicles are assisted with automated safety machine that signals motive force through using alarm. Developing the gadget so as to stumble on and notify a driving force of his/her terrible psychophysical condition which can substantially reduce the variety of fatigue-associated accidents. Implementing driver drowsiness detection machine is to use the vision-primarily based technique. It involves raspberry pi3 powerful python in software program with Open CV computer imaginative and prescient set up. The alarm that's positioned close to the driver can be activated and alerts the driver while her/his gets drowsiness at some point of using. It makes use of a picamera and deep neural network to apprehend the photo and sensors for detection the present day statistics about the car.

Periodic Guidance for Women in Their Rural Language on Financial Tools

[1]T. Elakiya,[1]S. Gokilapriya,[1]J. Jiji Sherin,[2]M. Karthick, [3]T. Kalaikumaran
[1]UG Scholar, Dept. of CSE, SNS College of Technology, Coimbatore
[2]Assistant Professor, Dept. of CSE, SNS College of Technology, Coimbatore
[3]Professor, Dept. of CSE, SNS College of Technology, Coimbatore

Abstract:

The objective of this paper was to propose a system which make the women to build business and manage their financial resources. That system will guide the women by providing step by step process to make use of the existing financial services (Credit, insurance, savings, and payment services) and stock market. That system will provide the procedure to start the business and also provide various business ideas. That system will make the women to aware of the schemes provided by the government and it also includes job searching portal. The women who owns a mobile phone or has access to one is able to use it for educating themselves and managing their own business. Including women in the financial mainstream and making them financially literate are among the most important action areas. Women having access to and use of range of financial services enhances not only the contribute of women and women-led business growth allows for better use of their personal and household resources.

Paper ID:NCIAES 1005

Smart Digital Meter

I.Abinaya, N.Naveen, J.Mohit Babu, N.Suraj, Y.M.Yuvaprakash, V.Aishwariya
Dept. of EEE, Sri Ramakrishna Engineering College, Coimbatore

Abstract:

IIOT is emerging as a new area of research as it primarily aims at efficiency and productivity. IOT is a combination of communication system and embedded system which connects hardware devices to network. Remote monitoring of machines is essential in industrial environments. Though CCTV monitoring has been employed in many of the industrial environments, there is no provision for fault occurrence indication in many of the industrial establishments. The proposed system is designed such that it monitors the industrial applications. An alert will be generated automatically in case of malfunctions. The IOT concept has been implemented to control devices. In industries, monitoring the working condition of machinery and equipment is of paramount importance. Online and remote monitoring of machine condition and fault diagnosis has been developed. The status of the systems could be continuously monitored.

Paper ID:NCIAES 1006

High Frequency Quadrature Correction Loop for Digital Multiphase Clock Generation Circuits Using 90-nm CMOS

V. Subha Sree, V. Hemanth Raju, S.V.S.Reshma, P.Akhilesh
UG Scholar, Dept of ECE, GMRIT, Rajam.

Abstract:

Latest microprocessors are with millions of transistors perform high-complexity computing at multi-gigahertz clock frequencies. Clock generation and clock distribution are crucial tasks which determine the overall performance of a microprocessor. The quadrature error correction for the digital clocks generated is necessary for better performance of the circuit. Measuring the phase difference between two clocks becomes more and more challenging as the frequency increases. In this paper, a feedback-based analog technique for the quadrature correction of high-frequency clocks will be designed. The challenges of quadrature correction at lower and higher frequencies will be addressed in this design. The primary applications of this technique include wireline communication circuits, such as clock and data recovery, and RF transceivers, specifically for reconfigurable radios, such as software defined radios (SDR) and Cognitive radios (CR).The impact of duty cycle distortion in quadrature detection will be analyzed. . The proposed circuit consists of a phase-locked loop- type architecture for quadrature error correction. The circuit will be designed in UMC 90-nm mixed-mode CMOS.

Power Loom Automation Using PIC Microcontroller to Avoid Warp Error and Detection of Thread in Weft

[1]P.Mercy, [2]R.Bharathi, [2]M. Janani, [2]P. Keerthana, [2]S. Niranjan kumar
[1]Assistant Professor, Department of EEE, Info Institute of Engineering, Coimbatore
[2]UG Scholar, Department of EEE, Info Institute of Engineering, Coimbatore

Abstract:

In this paper, a Novel method to Automate shuttled power looms is proposed. Power loom is a mechanized loom, mainly meant for the purpose of weaving in textile industries. It considerably reduces human labor and wastage. Hence it helps to ensure high quality cloth production, monitoring and measurement. It provides automatic warp and weft error detection and automatic weft replenishment. This module uses PIC16F877A to provide the necessary automation of the shuttled power looms, with immediate termination of its motor operation in case of any weft or warp errors. Peripheral Interface Controller (PIC) microcontroller, pin needle, Liquid Crystal Display (LCD) and switches are used for system programming in C language and Proteus electronics simulation environment.

GSM Based Home Automation Using Arduino

[1]G.Seshavarthini,[1]B.Saran, [2]K.Satheeshkumar
[1]U.G.Scholar, Dept. of EEE, KIT-Kalaignar Karunanidhi Institute of Technology, Coimbatore
[2]Asst.Prof, Dept. of EEE, KIT-Kalaignar Karunanidhi Institute of Technology, Coimbatore

Abstract:

Our project is based upon the GSM board. It can control the all types of electronics items. But we will control the light and fan in our project. It will controlled by the mobile. We set the program in the arduino board. While if we send the message through the mobile, the program will done with the increase in the consumption of energy and population, there is a great need to conserve energy in every way possible. The inability to access and control the applications from remote locations is one of the major reasons for energy wastage in Ghana. This project presents the development and implementation of a GSM based remote control system for electrical appliances and lighting that enables complete control of interface on which it is based. GSM shield was used for receiving SMS from the Homeowner's mobile phone that automatically an arduino microcontroller to take the necessary action like switching OFF and ON electrical appliances such as fan, light, air conditioner, supply mains and so on. Basically, it reads the SMS and acts according to the message. Similar products commercially available are internet dependent and so lack the true sense of real mobility and security. However, the present GSM based remote control system allows the homeowner to control household applications from anywhere using the mobile phone and also prevents unauthorized access to these applications. Crucial to the present system is the provision of security on detection of intrusion via SMS using GSM technology. This GSM based hacs is recommended for implementation in every home to tackle the rampant energy wastage in Ghana.

Paper ID:NCIAES 1009

Automatic Yeast Filling and Sealing Machine Using PLC

G.Logesh, M.Prasanth, P.Prabhakaran. P.Praveen kumar

UG Scholar, Dept. of EEE, K.S.R. College of Engineering, Tiruchengode

Abstract:

Filling is the process in which the machine packs the yeast in a bottle. This method include placing bottles onto a conveyor belt and filling the bottle once at a time. The aim of this paper describes the method of filling yeast in a bottle with correct weight by using load cell. In a conveyor system stepper motor is used for its efficiency. This work provides with a lot of benefits like low power consumption, low operational cost, less maintenance, accuracy and many more. This project is based on Industrial automation and is a vast application used in many industries like milk industries, chemical, food, mineral water and many industrial manufacturers. A prototype has been developed to illustrate the project. Filling is the task that is carried out by a machine and this process is widely used in many industries. In this project, the filling of the bottle is controlled by using a controller known as PLC which is also the heart of the entire system. For the conveyor system, a dc motor has been selected for better performance and ease of operation. A sensor has been used to detect the position of the bottle. In our project we have used less number of system hence the overall cost has been reduced to an extent. Ladder logic has been used for the programming of the PLC, which is the most widely used and accepted language for the programming of the PLC.

Paper ID:NCIAES 1010

Wireless Sensor Networks for Post Stroke Healthcare Using Fugl Meyer Assessment

[1]*P.Suganya,* [2]*Dr A.Kalaiarasi*

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Abstract:

EEG-based brain-controlled mobile robots can serve as powerful aids for severely disabled people in their daily life, especially to help them move voluntarily. In this paper, we provide a comprehensive review of the complete systems, key techniques, and evaluation issues of brain-controlled mobile robots along with some insights into related future research and development issues for the stroke survival.This mind controlled robot is in view of Mind – PC interfaces (BCI).BCIs are frameworks that can sidestep traditional channels of correspondence (i.e., muscles and considerations) to give direct correspondence and control between the human mind and physical devices by deciphering distinctive examples of cerebrum action into command continuously. With these orders a portable robot can be controlled. The venture's goal work is to create a robot that can help the crippled individuals in their everyday life to do some work free on other. The performance impromence are measured using fugl meyer assessment.

Paper ID:NCIAES 1011

Pattern Recognition Technique Using DIP

[1]S.Bharathi, [1]K.Madhuleka, [2]Prof.V.J.Vijayalakshmi
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[2]Asst.Prof(Sr.G), Dept. of EEE, KPR Institute of Engineering and Technology, Coimbatore

Abstract:

This project is a new, easy and effective process to found out the missing objects that are classed together. It is helpful in detecting the missing object in a group of objects that are to be placed together. A digital image processing prevents to enhance features of missing objects with the relevant information about the application and fetches the useful information about the application from the image processing in MATLAB. In recent years, digital image processing has become economical in many fields like signature recognition, iris recognition and face recognition, in forensic, in automobile detection and in military application. Each of these applications has its basic requirements, which may be unique from others. It is concerned and demands a system as faster, more accurate, cheaper and more extension computation. In digital image processing the image of object can be encountered and image processing is made and the missing image is detected. Image processing is a procedure of converting an image into digital form and carry out some operation on it, in order to get an improved image and to retrieve some important information from the image.

Paper ID:NCIAES 1013

Mitigation of Harmonics in Power Network with Real Time Data Based on ETAP

[1]Guna, [1]Hariharan, [1]Mohan Kumar, [2]Prof.V.J. Vijayalakshmi
[1]UG Scholar, Dept. of EEE, KPR Institute of Engineering and Technology, Coimbatore
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Abstract :

The emerging development of non - linear loads such as power electronic devices in industry is responsible for injecting harmonics into the electrical network. The static power converters like Variable Frequency Drives (VFD) are mostly used in industries for energy efficiency and process control of an induction motors. This situation cultivates deterioration of voltage and current waveform (i.e.) usually VFD drawn the current from the utility that's not same as applied sinusoidal voltage waveform. This paper aims to build a simulation model of gas cooling plant to evaluate characteristics of harmonics at different case studies with help of Electrical Transient and Analysis Program (ETAP). Generally, harmonic analyser in ETAP, studies the power network and is subjected to harmonic current injection and harmonic voltage at multiple frequencies and real time network is elucidated from voltage and current harmonic distortion at dominant harmonic frequencies individually. In this project, the harmonic pollution is analysed in ETAP and mitigation techniques are recommended which are that single tuned filters should be installed for worst case condition and simulation results of ETAP shows that harmonic voltage and current are well within the limit value as per IEEE 519 -2014 standard and provides theoretical lookout for the improvement of power quality in the power network.

Hybrid Electric Charging Station Using Raspberry PI

[1]Arabi madharshan, [1]Aravinth, [1]Dheneshraajan, [1]Gokul, [2]P. Praveena
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Abstract:

Our world is running out of fossil fuel so people start to change themselves and started to use an electric vehicle. In electric vehicles the charging is a big deal, this project includes solar and wind energy charging mechanism to generate power for electric vehicle both day and night. And it contains Raspberry pi that is programmed to calculate the amount of power charged for an electric vehicle, then the user can know that the information via Blynk application. The power generated by the solar panel setup is given to the battery via DC-DCDC converter because the power from solar panel setup is a variable DC, so that is converted into pure DC. And the power generated by wind generator setup is given to battery via AC – DC converter, the power from a wind generator is AC, so that is converted into DC.

Aid for Visually Challenged People - Ultrasonic Sight

[1]M.Abarna,[1]A.Jane LourdeTeresha, [1]R. Devisri, [1]M.Maithreyini, [2]Dr.V.Kumar Chinnaiyan
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[2]Professor, Dept. of EEE, KPR Institute of Engineering and Technology, Coimbatore

Abstract:

Humanity grows as technology grows. Growth is complete only when it is uniform and common. In places where growth is uneven, technology steps in and happens to be the game changer. The proposed project aims to bring uniformity in the navigation of visually challenged people just like the common people. The project aims to support the safe navigation of people with low vision. This helps the individual in reaching the destination, guiding them throughout the way and warning them about the obstacles that are awaiting their way through vibration and synthetic speech output by means of a headset. Thus, preventing them from hitting the obstacles. This will replace the conventional cane that has been used since ages. An ultrasonic sensor is used to calculate the far the obstacle is from the person. It is a Raspberry Pi based platform which forms the base for all other components and has the operational code. A vibration motor is also included to alert the person of the impending objects on way. Along with the function of guiding, it also has a backup protection plan in case of emergency. The location of the person is sent to the person's predetermined friend through a notification enabled by means of Blynk. Thus, the project assures the visually challenged people to move around alone safely as well as confidently without the fear of getting lost or meeting with accidents anymore.

Paper ID:NCIAES 1015

Automated Attendance System Using Kodular

[1]L.Devaprakash, [1]K.Gowtham, [1]R.Murali, [1]K.Muralidharan, [2]Prof.V.J.Vijayalakshmi
[1]UG Scholar, Dept. of EEE, KPR Institute of Engineering and Technology, Coimbatore
[2]Professor, Dept. of EEE, KPR Institute of Engineering and Technology, Coimbatore

Abstract:

In the recent trends, the method of taking attendance is a very tedious task. It takes quite a lot of time for monitoring and uploading the attendance data in the server. There is a need that a higher official must have to analyse various attendance parameters of various students in different areas. A displaying of the statistical data of the attendance parameters proves to be very useful for the faculties in charge for taking attendance. Hence this method proposes the concept of developing an application that is intended to take attendance and provide some statistical attendance data for the same. QR code is used as the input for the attendance. The App which receives the data through the QR Code then processes the data and an intermediate scripting language called Google Apps Script is used to transmit the information from Kodular to Firebase. Hence, this method is used to reduce the stress of personnel in charge for taking attendance. It also reduces the time needed for a professor to upload the attendance data of various classes in the corresponding server.

Paper ID:NCIAES 1018

Sewage Monitoring System Using IoT

G.Chandhini, B.Chithra, P.Kiruthikadevi, Bhagya sasi
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Abstract:

In India, the sewage system is one of the major issues, as many sewage workers are facing many health problems by consuming poisonous gases present in sewage. Compared to other countries, India tops the list by having highest number of sewage workers. Sewage system monitoring plays a very important role in keeping the city clean & healthy. To reduce the death of manual scavengers who clean the underground sewage & for the benefit of people, a system using wireless sensor network system is designed. The main aim of the proposed system is to provide a smart solution to monitor poisonous gases present in the sewage. Here we use six sensors MQ136 sensor, MQ135 sensor, MQ7 sensor, MQ4 sensor, SO2 sensor & NO2 sensor. These six sensors detects the harmful gases such as Hydrogen sulphide gas, Ammonia gas, Methane gas, Sulphur dioxide gas, Nitrogen dioxide gas and Carbon monoxide gas. Whenever the gas level crosses the threshold value an alert is send to the observer through the app in the smart phone . Here app is mainly used to reduce the cost of the project because LCD display, mechanical buttons, LED, RTC are not required . The information is then forwarded along with different gas ppm values through app in the smartphone indicating whether it is safe for the worker to work in the environment or not.

Automatic Switching of Three Phase Induction Motor During Fault Condition

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Abstract:

The aim of this work is to provide continuous running of the three phase motor. When a fault occurs during the running of the motor, it can switch automatically by itself with the help of the Arduino. After 24 hours, the other motor can run with the help of real time which is connected with Arduino. Due to this, the temperature rise of the motor can be reduced and providing a continuous operation. The GSM is provided to give the information about the motor operation. The pressure sensor is used to avoid the unwanted running of the motor. Also provided if the motor takes more current, it can turn OFF the motor automatically and the GSM passes the message that the fault has occurred in motor or malfunctioning occurred to the user

Brand Site Development Using Microservices

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Abstract:

Micro-service design structures the applying as a group of loosely coupled, collaborating services. Every service implements a group of connected functions. As an example, an e-commerce page may comprise services like order management service, a list management service, etc. Services communicate exploitation protocols like HTTP/REST or any other less popular approach. Services can be developed as separate applications and deployed severally. Data consistency is maintained in design because every service ought to have its own info so as to be decoupled from different services. If there are any modifications and any error in a particular service then only that service can be modified and deployed. The services which are developed separately are bound together by the term called Orchestration. Orchestration binds all the service together and assures that all the services are in order and bounded. Testing is done to ensure the working of all the services without any error. The programs for testing are written manually which contains all the tests that the code has to undergo. In testing it measures the code coverage and it reports through Visual reports. Visual report includes the highlighted lines in the code and percentage of execution along with the code check. SonarQube is a tool used for measuring and analysing the source code quality. The cloud-based platform with built-in redundancy can be used to save the business from data loss. It keeps the info secure, backed-up and simply accessible. An e-commerce business depends hugely on the info of its customers. At the time of catastrophic data losses or security threats, redundancy helps to beat the disaster and resume the business during a streamlined way. AWS acts as a cloud provider. The two tools used in cloud computing are Docker and Kubernetes.

Paper ID:NCIAES 1020

Effective and Efficient Wind Power Generation using Bifarious Solar PV System

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Abstract

Electricity is one of the most essential requirements in day to day life. Generally, electricity is generated through Renewable and Non-renewable energy sources. Power generation through burning of coal is effective but it also causes pollution and reduces the quantity of fossil fuels which leads to degradation of natural resources. Nowadays Renewable energy sources are widely used because it is green and is used to generate power without degrading any natural resources. Solar and wind energy are one of the most effective and efficient renewable energy sources. But wind mill can produce power only when sufficient wind is blowing and solar PV system can generate power only when there is sunlight. These two limitations degrade the efficiency of prolonged power generation. The main motivation of the proposed work is to improve the efficiency of wind power generation with the use of solar panels and utilize the power generated by solar cells effectively by powering the electrical components used inside the wind mill such as revolving motor, elevators etc. In this paper, various literatures have been reviewed and the remarkable features of the proposed system are highlighted.

Paper ID:NCIAES 1021

Analysis of Dual Source Self Displaying Water Pumps

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Abstract:

Energy is a key ingredient for the overall development of a country. India is a country that is abundantly blessed with renewable energy sources. It is a large country and the rate of electrification has not kept pace with the expanding population, urbanization and industrialization and has resulted in the increasing deficit between demand and supply of electricity. This has not only resulted in under electrification but also put heavy pressure on the governments to keep pace with demand for electricity. People not served by the power grid have to rely on fossil fuels like kerosene and diesel for their energy needs and also incur heavy recurring expenditure for the poor people in rural areas. We have taken initiative to design and implement a water pump that can be operated on multiple energy sources. The water pump can be operated by taking power from the existing AC grid as well by the power taken from the stand alone photovoltaic system. The water pump works on renewable solar energy and whenever there is a shortage of solar energy, it can be switched to AC grid. In addition to this, a self-display unit has been installed in the water pump. The display unit helps the consumer to monitor the motor parameters like voltage, current drawn from supply and frequency any time. This display helps in reducing the cost for installing a separate display near the starter of the pump. The compactness of the pump is also increased.

Paper ID:NCIAES 1022

Smart Hydration Using IoT

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Abstract:

Irrigation is the most important cultural practice and most labour task in daily agriculture sector. To do this automatically, sensors and methods are available to determine when plants may need water. Watering the plants is very important in agriculture. By using recent and current technologies irrigation system can be upgraded with the help of sensors and Microcontrollers. A micro controller is a control system that continuously monitors the state of input device and makes decision based upon the program that has been burnt in it to control the state of output devices. As already mentioned the project of this research is to develop an economical micro controller based irrigation controller that automatically carries out the irrigation. It is done through narrow tubes that deliver water directly to the base of the plant. A micro controller is a control system that continuously monitors the state of input device & makes decision based upon the custom program to control the state of output devices. In this paper we are implementing Automatic irrigation by sensing the Moisture of the soil and the information is been passed to the appropriate people using IOT. Thus, this irrigation system can be groomed and upgraded into an automated process.

Paper ID:NCIAES 1023

Smart Operation of Low Voltage Pumps

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Abstract:

Water, a major source of life and a treasure of great demand in near future that needs more attention that it is already given. Electricity is another important resource that acts as a basic need to accomplish every single industrial application and new innovations. Our project is a solution that aims to get optimum use of both these resources and low voltage pump is mainly operated using solar. While using pumps there are possibilities of wastage of current. Some of the common cases are where the current is drawn from the grid but the water actually doesn't flow through the pump or the current drawn is comparatively more than the water flowing through pump. The motor works efficiently when both the current drawn from the grid and the water flow through the pipe are same. Our system consists of an LCD which displays the current drawn, voltage and the speed of the water flow. These are detected through current sensor, voltage sensor and water flow sensor. So by looking at the LCD screen we will be able to find out if the current is drawn unnecessarily without the actual flow of water and thereby we can prevent wastage by switching off the motor. The same can be done in the case where more current is drawn for less water. We will find the fault in the motor through this and rectify it. Thus this project prevents wastage of electricity while using water pumps in industries.

Paper ID:NCIAES 1024

Solar Operated Robot
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Abstract:

Households now, are becoming brighter, smarter and automated. The non-renewable sources that are used today are going to get depleted in the near future. So the usage of renewable source of energy is significant at the present. The aim of this project is to develop solar operated robot which can complete the cleaning work without human guidance. Solar operated robot for dry cleaning is also a step in saving the non-renewable sources of energy. Unmanned solar cleaning robot is one of the possible solution that can change our way of living for modern lifestyle. It provides comfort thereby reducing human work. The developed robot is equipped with dry cleaning technology which helps to reduce the work of cleaners. The technology is developed day by day, and usage of smart phone has become more extensive. So the entire movement of the robot can be viewed via mobile application.

Paper ID:NCIAES 1025

Voice Operated Fire Extinguishing Robot
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Abstract:

Even though there are lot of advancements in technology, there have been increased number of devastating losses in the field of fire-fighting. Fire accidents that occur in industries like nuclear power plants, petroleum refineries, chemical factories and other large-scale fire industries result in quite serious consequences which may cause injuries or even death of individuals. Therefore, this paper is enhanced to develop an automated fire extinguishing robotic vehicle that saves the lives of fire fighters and other persons in that area. The proposed robotic vehicle is controlled using specified speech commands. The language input which is familiar to most of the people allows the user to interact with the robot. The advantages of voice-controlled robots are hands-free and rapid data input operations. The speech recognition process is done in such a way that it recognizes defined commands from the user and the designed robot navigates based on the instructions via the speech commands. The fire can be extinguished using water tank that is fitted along with the robotic vehicle. Consequently, the site of fire is live monitored using ESP 32 and the status of the fire zone is updated to the user through message.

Paper ID:NCIAES 1026

Information Modelling Using OPCUA

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Abstract:

Industrial automation is the use of control systems, such as computers or robots, and information technologies for handling different processes and machineries in an industry to replace a human being. It is the second step beyond mechanization in the scope of industrialization. Earlier the purpose of automation was to increase productivity (since automated systems The data collection from field level devices is important for the monitoring of the devices and also to keep record of the behavior of the devices. Modbus RTU are the protocols used to get data from field devices in the application layer. Serial communication is used to provide a communication between a device and a server/client. Modbus RTU is an open, serial (RS-232 or RS-485) protocol derived from the Master/Slave architecture. It is a widely accepted protocol due to its ease of use and reliability. Modbus RTU is widely used within Building Management Systems and Industrial Automation Systems. This wide acceptance is due in large part to MODBUS RTU's ease of use. Modbus RTU uses RS485 cable for receiving data from field level devices. The data acquired from these devices are sent to Server. In this case OPC UA Server is used of to store data for monitoring and also commands can be sent from server to the devices. The Modbus Over OPCUA is used to collect data and store in information model of the OPCUA. OPCUA helps the field devices from different vendors to interoperate and communicate between themselves. In this project the power factor and watts/hr data is taken from the energy meter with help of RS 485 using Modbus RTU and then sent to OPC UA Server. Then data from the energy meters are taken using Modbus RTU. From the information model data is published and viewed in OPCUA client. Similarly, the data from energy meters taken using Modbus RTU are sent to the open62541 stack and stored in information model and data is published and viewed in OPCUA client.

Paper ID:NCIAES 1027

Maximum Power Point Tracking

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Abstract:

The main objective of this project is to achieve the maximum power output from the solar panel or the photovoltaic panel. In general, the Sun's Path is from East to West but the Sun's position changes from season to season. Keeping this in mind we have designed a system to trap maximum amount of photons from the Sun rays. The photovoltaic panel converts the solar energy (photons) into Electrical energy. By doing this the output efficiency of the system is increased compared to the efficiency of fixed mount system. The overall project is controlled by PLC (Programmable Logic Controller) and rotation of panels were controlled by linear actuator.

Spot Welding Machine Using HCT

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Abstract:

The project aims to spot weld the battery terminals without affecting the battery life. Based on availability of materials on local area an option of various metal strips can be spot welded on the battery terminals. The batteries C rating raises the metal strip thickness to be used. So, that high thickness metal strip can be welded upto 0.7mm without impacting the battery life. The current from the transformer is controlled by proper delay time by using with relay and microcontroller. This reduces the red hot spot of metal strips during welding.

Smart Power System

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Abstract:

The main motive of the Smart Power System is to conserve energy in this modern world. Electricity plays a vital role in today's world, at the same time conservation of electricity is also very much important as it needed for future use. The Smart Power System helps to monitor the power consumed at each phase, the data is stored and updated meanwhile. It identifies the fault when overload occurs and controls it automatically. The data of both monitoring and identifing the fault is stored. By the application of IoT, the stored data is notified to the public. Manytimes consumers are not satisfied with the power bill as it does not show the power consumed at the device. This approach is to design a efficient and real time wireless networks to monitor the power consumption of any electrical devices or appliances. Sensor is set to sense the voltage and current. By utilizing the measured voltage and current power can be computed. Control qualities are put away in cloud database along with that the device sends notification to the user about the status of the power consumed and the data sheet will be generated.

Design of Semitransparent Photovoltaic Cells

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Abstract:

This paper evolves a prototype to provide electricity from solar energy and reduce the heat generated during the daytime. Solar heat can be stored on molten salt which is present on the backside of the pv cells. Our project is based on Concentrated Solar Power where we use linear glasses to concentrate a large area of sunlight onto a small area. Glasses fabricated from different materials under various dimensions vary in thermodynamic efficiencies as each of them will produce different peak temperature. Thus the heat produced directly on the prototype is reduded and the electricity is generated. Here we use Parrafin chloride as the coollant.

Design of Cost Effective Pyrheliometer for Solar Radiation Measurement

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Abstract:

This paper aims to make a pyrheliometer that measures the amount of direct solar radiation through which, maximum efficiency can be derived from the solar panels. This paper overcomes the existing pyranometer system in terms of cost by neglecting the various sensors. The proposed system implements an aluminum disc and a thermocouple to measure the amount of solar radiation. The thermocouple sensor generates a voltage output signal that is proportional to the solar irradiance. The analogue thermocouple voltage is converted to a digital signal using a high-end 10-bit A/D converter. The electrical signal from the thermocouple is then amplified and measured across a display as $Watt/m^2$. This project also gets and stores the real time data through Arduino atmega. Thus by using the pyrheliometer the amount of solar radiation in a specific area can be decided and the solar panels can be placed appropriately in that area, for better efficiency. These types of meters are widely used in meteorology, climate change research, building engineering research and many more.

Autonomous Indoor Mapping Using Raspberry Pi

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Abstract:

The main objective is to assist a person to know the location of another person in the campus by using Passive Radio Frequency Identification (RFID) tags. The RFID tag stores the data about the person. The RFID sensor acts as the power source for the RFID tags. GPS is not suitable for positioning inside the building. Generally there is a problem in locating the individual in the campus at the time of urgency. To eliminate the problem, indoor mapping is done to know the exact location of the individual. Here RFID tags give the exact location of an individual inside the campus. It can also give data about the personals present in a specific cabin or a room. Raspberry pi is used as the controller circuit for this project.

Autonomous Monitoring Unit for Power Loom

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Abstract:

Automation plays a major role in today's world. Power loom is the most important industry for the economical development. But all the labourer are working in this industry face atmost difficulty in removing the manufactured piece from the machine. Our project mainly focuses on developing an eco-friendly product to reduce this difficulty. So we have designed a roller to remove and fold the manufactured piece properly. The manufactured piece in the main roller of the machine is send to the sub roller and the plates are used to remove and fold the piece. This involves less manual work and makes the work easier. Time is saved for the labourer when they implement it in their machine. In our project the monitoring of the production in the power loom industry is done automatically. The database of production in power loom is stored in cloud and separate user id is given for customers to maintain the database in the mobile application. The analysis can also be done by using the bar graph option present in it to get the idea about the previous productions.

Paper ID:NCIAES 1034

Smart Medicine Box

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Abstract:

The project aims to make a smart medicine box for those who regularly take medicines. This work mainly helps the old age people who are suffering from permanent diseases like diabetes, blood pressure, cancer, heart problems and several other health issues. This cabinet will be connected to mobile applications that can cause multiple warnings when the medication is about to finish. It also provides a warning signal when the patient fails to take the medication in time to the care taker. Additionally an information will be sent to the medical store through GPS system when the medication is to be ordered.

Paper ID:NCIAES 1035

Autonomous E-Rationing System

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Abstract:

Autonomous e-rationing system involves distribution of essential commodities to the citizens of nation and it also gives an identity for being a citizen. There are various types of ration card available to buy materials like rice, sugar, oil, kerosene, etc. It involves two major issues which are error in human calculation and stealing of commodities without the knowledge of customer and government officials. To overcome these issues, in this project the total system is automated which can provide essential commodities to the public without the help of third party. We designed it for the ease of users in such a way that the product name will be displayed along with its pictorial representation. It will help illiterates to use this system more effective. RFID tag is provided to each family which can be read through RFID reader. It communicate with the microcontroller through the PC and it provides the details completely based on the card type. A load cell, DC motor, solenoid valve is used in which each one is controlled by the microcontroller. A load cell is used instead of weighing scale to measure the quantity being supplied to the customer. A DC motor arrangement helps to pour the quantity that is measured. A solenoid valve arrangement is done to supply the kerosene in required level. In this project the entire setup is controlled through IoT. The ultimate aim of our project is to supply the commodities to the customer in packed manner.