Online International Conference on *"Smart Modernistic in Electronics and Communication"* (ICSMEC-20)

St. MARTIN'S Engineering College

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on 29th & 30th June 2020

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Online International Conference on "SMART MODERNISTIC in ELECTRONICS AND COMMUNICATION" on 29th & 30th June 2020

(ICSMEC - 2020)

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M. LAXMAN REDDY
CHAIRMAN

MESSAGE

I am extremely pleased to know that the department of Electronics and Communication Engineering of SMEC is organizing Online International Conference on "**Smart Modernistic in Electronics and Communication (ICSMEC) - 2020**" on 29th and 30th of June 2020. I understand a substantial number of researchers have submitted their papers for presentation in the conference and also for publication. The response to this conference from all over India and Foreign countries is most encouraging. I am sure all the participants will be benefitted by their interaction with their fellow scientists and engineers which will help for their research work and subsequently to the society at large. I wish the conference meets its objective and confident that it will be a grand success to the organizers**.**

M. Laxman Reddy

M.LAXMAN REDDY

Chairman

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G. CHANDRA SEKHAR YADAV
EXECUTIVE DIRECTOR

MESSAGE

I am pleased to state that the Department of Electronics and Communication Engineering of SMEC is organizing a prestigious Online International Conference on "**Smart Modernistic in Electronics and Communication (ICSMEC) - 2020**" on 29th and 30th of June 2020. For strengthening the "MAKE IN INDIA" concept many innovations need to be translated into a workable product. Concept to commissioning is a long route. The academicians can play a major role in bringing out new products through innovations.

I am delighted to know that there are many papers on Electronics and Communication. I wish the participants of the conference to get additional insight into their subjects of interest.

I wish the organizers of the conference to have great success.

G.CHANDRSEKHAR YADAV
Executive Director

St. MARTIN'S ENGINEERINGCOLLEGE

Dhulapally, Secunderabad - 500100

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Dr. P. SANTOSH KUMAR PATRA
PRINCIPAL

MESSAGE

I am delighted to be the Patron for the **First Online International Conference** on"**Smart Modernistic in Electronics and Communication (ICSMEC) - 2020**"to be conducted by the Department of Electronics and Communication Engineering on 29th and 30th of June 2020. I have a strong desire that the conference to unfold new domains of research among the Electronics and Communication Engineering fraternity and will boost the knowledge level of many participating budding scholars by opening a plethora of future developments in the field of Electronics and Communication Engineering and other areas of Engineering.

I appreciate the faculties and department Head of Electronics and Communication Engineering for his continuous untiring contribution in making the conference a reality.

I wish the conference a great grand success and motivate other departments to follow the trend, to make SMEC reach higher levels of learning in the next few years.

(Dr.P. Santosh Kumar Patra)
Principal

CONVENERS

The world is always poised to move towards new and progressive engineering solutions that result in a cleaner, safer and sustainable products for the use of mankind. India too is emerging as a big production center for world-class quality. Electronics and Communication Engineering plays a vital role in this endeavor.

The aim of the Online International Conference on"**Smart Modernistic in Electronics and Communication (ICSMEC) - 2020**"being conducted by the Department of Electronics and Communication Engineering of SMEC, is to create a platform for academicians and researchers to exchange their innovative ideas and interact with researchers of the same field of interest. This will enable to accelerate the work to progress faster to achieve the individuals end goals, which will ultimately benefit the larger society of India.

We the organizers of the conference are glad to note that 450 papers have been received for presentation during the online conference. After scrutiny by reviewers, 267 papers have been selected, and the authors have been informed to be there at the online platform for presentations. Steps have been taken to publish these papers with ISBN number in the Conference Proceedings and some selected papers will be published in Scopus / UGC recognized reputed journal.

The editorial Committee and the organizers express their sincere thanks to all authors who have shown interest and contributed their knowledge in the form of technical papers. We are delighted and happy to state that the conference is moving towards a grand success with the untiring effort of the faculties of Electronics and Communication Engineering of SMEC and with the blessing of the Managing Committee of SMEC

Dr. B. Hari Krishna,

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Performance Analysis of Virtual Machines and Docker Containers in Hybrid Cloud

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Abstract

Cloud computing is a paradigm that utilizes virtualization technology for implementing different workloads, and its resources are elastic in nature. It attracts many IT industry and organization, as it reduces the initial investment and running capital. The overall performance of a cloud provider should be good enough to deliver the promised Quality of Service (QoS) to the end users. Infrastructure as a Service (IaaS) provider possesses multiples of Virtual Machine (VM) to perform the full functionality demanded by the users. Hence overall performance of a cloud provider mainly depends on VMs. But VMs are heavy and slow in nature as it possesses its own OS and dependent on the hypervisor. Our focus is to enhance the performance by employing an alternate substitute to VMs. Recently, Docker containers emerged with upgraded performance compared to VMs. Docker containers are incorporated to handle the user request which in turn improves the performance of cloud provider. A private cloud provider scales up its financial gains, only when it is capable of fulfilling all the demands of users which are dynamic in nature. To meet out the user request during peak demands, a private cloud provider can make use of public cloud resources, when its own resources are not sufficient. In this paper, we propose a hybrid framework to make use of the public cloud like Amazon Web Service (AWS) to fulfill the user request. To compare the performance of VM and Docker container, an open-source testing software tool namely Apache JMeter is employed to perform a load tests. Also, we demonstrate the outstanding performance of the docker containers in terms of throughput, average response time, etc. The experimental results prove that Docker containers outperform VMs almost in all metrics.

Keywords:*Virtual Machine, Docker Container, Apache JMeter, Throughput, Average Response Time*.

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A Survey on Role of Wireless Sensor Networks in Internet of Things

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Abstract

Artificial intelligence (AI) is an emerging research area in the domain of computer science. Internet of Things (IOT) is a part of AI. All the devices and appliances are connected to the internet to share the information. It is expected that 50 million devices will be connected to the internet by the end of this decade. Wireless sensor networks (WSN) play a key Job in IOT. This paper analyzes the role of WSN in IOT.

Keywords:*Wireless Sensor Network, AI, layered architecture, IOT*

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Content Based Social Image Retrieval using Feature Extraction with ANN Algorithm

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Abstract:

Content based social image retrieval is the retrieval of similarimages fromlarge data base based on their features extracted from the image. This paper proposes a system with the help of ANN algorithm that can be used for obtaining images related to a query image from an enormous amount of distinct images according to the user interest.There are athree features are proposed to an image, namely, color, bit pattern and shape, which are generated at once from the Database encoded data stream without performs the decoding process. Experimental results show that the proposed method is an efficient than the block truncation coding image search systems and the other earlier methods. Artificial neural network is more accurate and used to predict the output.

Keywords:*socialimage, userinterest, deepfeatures, ANNalgorithm*.

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Simulation and Performance Analysis of PUSCH in 5G NR

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Abstract

The new 5G is the upcoming digital wireless communication network, which has high speed data transmission cellular network also called as New Radio (NR). It is industry associated third generation partnership project (3GPP) defines any system using "5G NR". Beyond the speed, it will allow many new mobile capabilities to be realized-high data capacity, low latency and IoT capability. The major research issue for 5G is to design fruitful and trustworthy Physical Uplink Shared Channels (PUSCH). In this paper, the design, simulation and its results are discussed, based on different parameter like subcarrier spacing and modulation schemes such as 64QAM and 256QAM techniques using MATLAB 2019a. The overall discussion and its conclusion will benefit to develop the better 5G communication system.

Keywords:*5G, PUSCH Design, Throughput.*

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U-Shaped Microstrip Rectangular Antenna

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Abstract

In this paper U-Shaped Rectangular Microstrip Patch antenna is used in wireless communication. Now in this configuration modified antenna patch shape is rectangular. This modified U-Shaped antenna gives good results return loss is -38dB and height is 2.4mm.The frequency band used in this configuration 4.5GHz. U-Shaped antenna is used in WI-MAX applications. This antenna gives the max gain upto 8dbB .Firstly desined simple patch antenna using HFSS. The substarate developed material RT/duroid 5880 glass micro-fiber reinforced.

Keywords:*U-Shaped patch, printed antenna,Wi-Max(Worldwide Interoperability for Microwave Access)*

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Localization Techniques in Wireless Sensor Networks: A Comprehensive Survey

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Abstract

WirelessSensorNetworks(WSNs)areemergingasa promising network for security, surveillance and maintenance of smart cities. The WSNs are built with sensor nodes that collect data from their surrounding environments. The data collected from these sensor nodes is applicable, only if, the location of the origin of the data is known. Therefore, it becomes important to know the sensor node locations. The process of mapping co- ordinates of the sensor nodes is known as localization. In this survey paper, we have presented some of the recent localization methodsandclassifiedthembasedondifferentparameters.

Key words*: Position estimation, Received signal strength indicator, Range based localization, Range free localization*

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Applications, Security Issues, Challenges in IOT

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Abstract

The Internet of Things (IOT) is a framework covered physical articles in shape for get-collectively and sharing digital facts. IOT assumes a key job in ordinary existence. IOT has programs in various domains like Healthcare, Baby nurturing, Telecommunications, Industries, Environmental monitoring and so forth. Despite in their guarantees they have demises too. Security is a fundamental problem in Internet of Things. This paper focuses and analyzes the survey on IOT programs, demanding situations and security issues and challenges in IOT.

Keywords: *IOT, Security challenges, attacker, hacker, smart home*.

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Establish an Algorithms for Energy Efficient IoT Network

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Abstract

Latest progresses in wireless interacting and microelectronic creation have empowered a bulk manufacture of cost effective computationally accomplished small expedients which can be employed in various advanced results. Since domestic division has been recognized as one the most vitality challenging, the reoccurs a robust curiosity in manipulation of linked keen expedients with the objective of cultivating energy effectiveness, operator ease and the total eminence of life. The IoT stage which will be obtainable in this paper focuses to meet the said aims with the blend of smart observing and regulator expedients with the progressive energy facilities proficient in evaluating the poised facts and offering controller activities and propositions concerning the end operators through instinctive mobile and web applications.

Keywords: *Energy Efficient, IoT, Architecture*

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Applications of Wireless Body Area Networks in Hospital Environment

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Abstract

A Wireless Body Area Network (WBAN) is a specific reason sensor arrange intended to work self-sufficiently to interface different clinical sensors and apparatuses, situated inside and outside of a human body. The social insurance segment is progressively searching for cutting edge ICT (Information and Communication Technology) frameworks to proficiently control the medicinal services conveyance for a scope of administrations. Progressed ICT frameworks will have the option to convey medicinal services not exclusively to patients in emergency clinics and clinical focuses; yet in addition in their homes and working environments in this way offering cost reserve funds, and improving the personal satisfaction of patients. These correspondence systems could be either a standard phone arrange, cell phone organize, a devoted clinical focus/emergency clinic system or utilizing open WLAN (Wireless Local Area Network) hotspots otherwise called WiFi. A WBAN can likewise exploit broadly conveyed portable information systems, for example, the 3G/4G information systems to transmit tolerant information. This paper talk about the WBAN based system to gather the information from various patients.

Keywords:*WBAN,WLAN, Zigbee,ICT, CCU,WMTS*

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Designing and Modellingof a Potable System for Detection of Covid-19

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Abstract:

COVID -19 is a life threatening disease caused by a Corona virus. According to recent report of WHO about 3.2 billion people of the globe are at risk. Early diagnosis and treatment of reduce infection and also prevents death case. Moreover, it also contributes to reducing disease transmission from patient to healthy man. WHO guidelines recommend that all the suspected cases of should be confirmed by following parasite based diagnostic test before administrating treatment. Currently there are few testing methods is available. But due to the rapid spreading of infection and topographical problems, it demands the development of a potable bio-sensing instrument to test disease at remote/rural area with accuracy technology and user friendly. To develop a portable biomedical device for corona virus patients to detect the diseases at early stage of infection with affordable cost.

Keywords:*Bio sensor, refractive wave, AWS IOT*

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SMART SECURITY DEVICE FOR WOMEN

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Abstract

Every day, every woman, young girls, mothers and women from all walks of life are strugglingto be safe and protect themselves from the roving gaze of the horribly insensitivemen who molest assault and violate the dignity of women on a daily basis. The streets, public transport, public places in particular have become the dominion of the hunters. Due to these atrocities that women are subjected to in the present scenario, a smart security wearable device for women based on Internet of Things is proposed. It is implemented and comprises of Raspberry Pi[1], Raspberry Pi camera and button to activate the services. This device is extremely portable and can be activated by the victim on being assaulted just by the click of a button that will fetch her current location and also capture the image of the attacker via Raspberry Pi camera. The location and the link of the image captured will be sent to predefined emergency contact numbers or police via smart phone of the victim thus preventing the use of additional hardware devices/modules (GPS Module[2] and GSM Module[3]) and making the devicecompact.

Key words: *Raspberry Pi[1], GPS Module[2], GSM Module[3].*

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360 Degree Video Surveillance for Elder and Disable Persons

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Abstract

Machine learning is that the scientific study of algorithms and applied mathematics models that pc systems use to perform a particular task while not exploitation specific directions. The main aim of this project is to serve the daily must elder folks and incapacitated persons, conjointly to produce 360 degrees video coverage of surroundings to the viewer. For this we have got used MEMS detector to control the automaton by twisting the detector and Voice IC Circuits has been used with speaker to talk out the necessity of elder or disabled person. Two sections are used - Transmitter and Receiver sections, where Transmitter is placed at wheel chair or at traditional chair or bed for Elder people that is unable walk or disabled one that is unable to talk and walk. Receiver could be a automaton that moves altogether directions and creating the sound for daily desires (medicines, water, food in keeping with time) of that persons. Video camera has been connected to receiver section to capture the video of surroundings of that person who are often viewed in third person mobile.

Keywords- *Machine learning, MEMS, Voice IC, Video Camera*

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Huang Hilbert Transform for classification of Sleep and Normal

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Abstract

Sleep is one of the primary modes of human brain activity, that is a recurring stage of the human body and mind characterized by body stillness and altered consciousness. Sleep stage classification process was implemented based on Empirical Mode Decomposition (EMD). The sleep epochs were prepared 0.1 to 7 Hz by Band Pass Filter (BPF) in pre-processing. In this EMD-BNN method, the EMD was applied to each preprocessing signal to extract the features into Intrinsic Mode Functions (IMF), which are further used to extract features. These features are given as the input for the ANN model to classify sleep and control state. The experimental outcome shows that the EMD-ANN methodology improved the accuracy in sleep stage detection up to 91.67 % compared to existing methods.

Keywords: *Electroencephalogram, Empirical Mode Decomposition, Intrinsic Mode Functions, Hilbert-Huang Transform, Artificial Neural Network*

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Energy Efficient Sink Placements with Mobile Data Aggregation in Wireless Sensor Network

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Abstract

The modelling of wireless sensor networks has always given priority to energy efficiency. The implementation of mobile agent technology in integrated signal and wireless sensor networks has created an effective platform for data storage and aggregation. The distributed paradigm based on mobile agents provides many advantages over the current, widely used device paradigm for clients / data centres in wireless sensor networks. The agent-based paradigms are one of the major problems with mobile agent-based paradigms. Many sinks mitigate the problem by distributing traffic across several discharges, and reducing energy consumption at nodes and extending network service life. This paper presents an Energy-efficient multiple sink positioning algorithm to maximize average network life and limit average sensor network energy consumption. Several sinks are used here for data communication. Result of our proposed algorithm maximizes an average network life and reduces the energy consumption average. The results of the simulation shows that the Protocol proposed exceeds the end-to - end delay, energy consumption and output.

Keywords: *WSN, Distributed Computing Paradigm, Mobile Agent, Multiple Sinks, Average Energy Consumption, Average Network Lifetime.*

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A Detail Review of a Fast Data Throughput Using Various Studies

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Abstract

The Mobile system is required to help essentially huge measure of versatile information traffic and colossal number of remote associations, to accomplish better range and vitality productivity, just as nature of administration, unwavering quality and security. Moreover, the updated versatile system will likewise consolidate high portability prerequisites as an essential part, offering good support to clients going at a speed. This paper gives an overview of potential high versatility remote correspondence strategies for portable system. In the wake of talking about the run of the mill prerequisites and difficulties, key procedures to adapt to the difficulties are checked on, including transmission strategies under the quick time-shifting channels, organize design with portability backing, and versatility the executives. At long last, future research headings on high portability interchanges are given.

Keywords: *FEC-Forward Error Correcting, AVA- adaptive Viterbi Algorithm, BM- Branch Metric*

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Design and Implementation of C.C.S.D.S Data Simulator in Altera VHDL

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Abstract

Space station receives data from different remote sensing satellite and process depends on user requirements. The data has to be frame synchronize with the hardware. Before launch of a satellite into its orbit, it is important to check all health parameters of ground station equipment are proper. To test hardware units developed for receiving satellite data and to maintain these hardware units, a standard format simulator is required which will generate data in satellite data format. Satellite launching involves huge cost designing of data format simulator importance is high. The project is implemented and tested using ALTERA EPM7160SLC84-7 EPLD. The required software has to be developed using the ALTERA VHDL language. Here we are developing in a CCSDS format. CCSDS means Consultative Committee for Space Data System. This is an organization officially established by the management of member space agencies. If satellite uses CCSDS format, data from satellite can be received by anyone who have compatible receiving hardware.

Keywords— *ALTERA,EPLD,CCSDS*

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IoT Based Automated Fish Farm Aquaculture Monitoring System

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Abstract

IoT field has been proving its importance in areas like agriculture, medical, transportation, etc. As aquaculture has been a backward region of applied science, IoT can be successfully used in this field. Water quality is the major issue in aquaculture that includes turbidity, water level, temperature, pH etc. The proposed system continuously watches the water quality parameter using sensors. Aquafarmers in India spend about 5lakh rupees in a period of 3-4 months on aquafarms. If there is any slight change in turbidity, pH, water level and temperature may cause the death of fish or shrimp in bulk. This would be a huge loss to the farmer. So IoT based approach to aquaculture would prevent any losses to the farmer. The observing of physical and substance factors like pH, oxygen, and temperature in water is crucial to keep up sufficient conditions and avoid unfortunate circumstances that cause the failure of aquaculture. Aquaculture, known as aquafarming, is the farming of aquatic animals, for example, scavengers, fish, and crabs.

Key words: *Turbidity, Water level, Temperature and pH.*

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Operational Trans-Conductance Amplifier with Improved Characteristics for Active Filters

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Abstract

Active clear out plays an critical function in today's global of communication. A famous application uses an op-amp to build lively filter out circuits. A filter out circuit may be constructed the usage of passive components: resistors and capacitors, Low pass and excessive skip filter out structure have sizeable utility and the usage of CMOS Operational Trans-conductance amplifier gives capability to perform properly in Nano- meter variety as it has better manage over short channel impact and different scaling problem like gate leakage, sub-threshold conduction. The proposed clear out includes OTA. This filter out suggests low sensitivity to passive components, low element count and simplicity in design.

Design of operational trans-conductance amplifier (OTA) is the principle awareness for designing excessive skip and low pass filter out. The simplicity and linearity are the important capabilities of the OTA intended for any application. There are several in contrast to OTA's are used wherein this OTA is a easy OTA with low energy intake in (µwatt) and high gain (db). The OTA is considered by numerous constraints like open loop gain, Bandwidth, Slew Rate, CMRR and etc. The output of OTA with HLF completed in mentor photographs 0.25µm technology [2].

Keywords: *Basic Current Mirror, Differential Amplifier, Common Source Amplifier, Active Low Pass, Slew Rate, High Pass Filter, Gain, CMRR.*

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Implementation 128x128 Dadda Multiplier Using Virtex-7 FPGA

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Abstract

The fundamental goal of this paper is to structure and implement 128x128 quickest DADDA multiplier by utilizing the ISE tool writing code in Verilog. The Design of a decent multiplier is to use energy-efficient and quick computational activities. The objective is to observe region, power, and speed by ASIC execution this Multiplier using advanced technique. The usage of this paper is acknowledged in vertex – FPGA to give a superior outcome. There are steps to plan a 128x128 Multiplier to give a progressively precise yield.

Tools: *Xilinx ISE 14.7, Verilog, Virtex-7 FPGA.*

Key words: *FPGA, Verilog, Multiplier.*

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PAPER ID: ICSMEC-2020/0068

A Trust based Cluster Head Selection Approach Using RBFO and Hybrid BFO-BSO for Wireless Sensor Network

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Abstract

The devices to create a connected network are demanded by the communication task which involves in the wireless sensor network for disseminating and collecting the information based on the radio transmission. The network lifetime's extension in the operational environment is the essential aim of the WSNs for exchanging the batteries of sensor node is an unfeasible or impossible activity probably. The selection of CHs is targeted in the clustered network that reduces the energy and transmission costs. It's essential to make the optimal selection of CH to improve the lifetime of a network. However, Non-deterministic Polynomial (NP) hard is considered for CH selections. The natural swarm inspired algorithms such as Ant Colony Optimization (ACO), Particle Swarm Optimization (PSO), and Hybrid algorithm (Bacterial foraging Optimization) BFO-BSO (Bee Swarm Optimization) have search their path into the domain and effectiveness is proved. An approach of a trust-based cluster head selection is introduced for improving the efficiency in terms of choosing the cluster head. To compute a trust level for every node, a designing of trust model is done and is implemented. By using the additional three parameters in addition to the hybrid approach such as trust value, residual energy, and the number of neighbors, the cluster heads are chosen. For choosing of cluster head, the T-BOA is adapted to achieve the different objectives such as increased performance of a network, reduced end to end delay, and decreased usage of energy in this work.

Keyword: *T-BOA, Trust model, ACO, BAT algorithm, WSN, Cluster Head selection, BFO–BSO, and PSO.*

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An Autonomous Playground Cleaning System using Arduino

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Abstract

The waste materials like empty bottles, polythene bags, papers etc. present in the playgrounds workplaces can be a big problem in cleaning and maintenance. The proposed system clean and removes unwanted things in the playground or stadium. In the proposed system, an Ultrasonic sensor is used to find waste materials and robot arm structure is used to clean the waste things in the ground area with the help of a moving platform. The system is fully automatic and controlled by the Arduino processor. The collected waste materials are kept in the tray which is placed in the system. Thus proposed autonomous cleaning system keeps the ground clean and minimizes the manual cleaning.

Keywords: *Arduino Controller, Ultrasonic Sensor, Waste Collector, Robotic System, Playground Cleaning System*

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High-Speed CMOS DD Amplifiers at Low Static Current Consumption

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Abstract

This paper presents design technique for linear operation range of CMOS differential difference amplifier with the primitive object of the Trans conductance on its Differential stage corner voltage (Vcn), is considered. The mathematical and comparative SPICE modelling results of typical CMOS Differential difference stage on the channel width of CMOS transistors at different static currents are presented using Mentor graphics 0.25micro Technology. The DDA can be reconfigured as an operational amplifier, this novel implementation brings significant reduction in static current to pace slew rate of the output voltage (SR).

Keywords—*CASCODE Current Mirror; Differential Difference Amplifier; Corner Voltage (Vcn); Unity Gain Buffer; Slew Rate.*

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Risk Minimization due to COVID-19 using CSR-BOT in Educational Institutions

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Abstract

Service robots are semi-autonomous or fully autonomous robots that have some mobility and interact with people, usually in a retail, hospitality, healthcare, warehouse or fulfilment setting, while others are used in more demanding settings, such as in space and defence, agricultural applications, and police work. The current pandemic situation due to Covid-19 has made employers to install service robots in many field to avoid human contacts and maintain social distance among them. This project focuses on building a low cost Classroom Service Robot (CSR-BOT) which is specifically designed to provide service in various rooms located on a single floor of educational institutions and design ensures that the payload will always be delivered to the right rooms in due time and alerts any human beings who are in its path through voice feedback. There by ensuring the safety of teaching and non-teaching staffs of the educational institutions.

Keywords— *Covid-19, Service Robot, Payload, RFID, CSR-BOT*

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Execution Experience with MANET Routing Protocols

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Abstract

This paper plots our involvement in the implementation and arrangement of two MANET directing conventions on a ve hub, four jump, organize. The work was provoked by the absence of distributed outcomes concerning the issues associated with the execution of MANET directing protocols on genuine remote systems, rather than aftereffects of recreation tests. We analysed executions of two separation vector MANET steering conventions and found various issues with the two conventions over the span of our tests. The most signi cannot was that neither one of the protocols could give a steady course over any multi-bounce arrange association. The course disclosure procedure of the two conventions is tricked by the transient accessibility of system connects to hubs that were more than one jump away. Bundles transmitted over a blurring channel influence the steering convention to close mistakenly that there is another one bounce neighbour that could give a lower metric (jump tally) course to significantly increasingly far off hubs. This can happen in any event, when hubs are stationary, portability came about in even less course soundness. We executed a straightforward sign quality based neighbour selection method to test our attestation that blurring channels and inconsistent system joins were the reason for the disappointment of the directing conventions. The outcome was that neighbour discovery and the ltering for neighbours with which hubs could convey dependably empowers the production of solid multi-bounce courses. In light of our encounters, we layout a few suggestions for future work in MANET look into.

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Multi GNSS (GPS+IRNSS) System Performance Evaluation for Position Estimation

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Abstract

In Satellite communications, GPS systems are extremely versatile and can be found in almost any industry sector. They can be used to map forest, help formers to harvest their fields, and navigate air planes on the ground or in the air. IRNSS stands for "INDIAN REGIONAL NAVIGATION SATELLITE SYSTEM". It is an autonomous regional satellite navigation system being developed by the Indian space research organization (ISRO) which would be under complete control of the Indian government. It would determine accurately the PNT i.e., position, navigation and time of anobject.GPS utilizes the concept of TOA ranging to determine user position. This concept entails measuring the time it takes for a signal transmitted by an emitter (e.g., foghorn, radio beacon, or satellite) at a known location to reach a user receiver. This time interval, referred to as the signal propagation time, is then multiplied by the speed of the signal (e.g., speed of sound or speed of light) to obtain the emitter to-receiver distance. By measuring the propagation time of the signal broadcast from multiple emitters (i.e., navigation aids) at known locations, the receiver can determine its position.

By using GPS+IRNSS we can reduce the errors mostly to millimeters that is by using multi constellation systems whereas when we use single constellation system i.e., GPS some errors can only be reduced.

Keywords: *GPS, IRNSS, TOA*

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Design and Implementation of Dadda Multiplier for FIR Filters by Compressors

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Abstract

During this paper, we tend to propose compressors 4:2, which can have the pliability to change between the precise operational mode and approximate operational mode. Multiplication is the essential function of arithmetic operation. In signal process applications multiplication primarily based operations like multiply and Accumulate unit (MAC), convolution, quick Fourier remodels (FFT), filtering (FIR) area unit wide used. In DSP systems, multiplication dominates the execution time; therefore, there's a necessity to develop associate degree high-speed multipliers.Within the approximation mode, the dual quality compressor provides higher speeds and lower power consumption by neglecting accuracy. Every one of these compressors in approximate mode has its level of accuracy, equally as utterly completely different power dissipations and delaysat approximate mode, actual mode.Within the body of parallel multipliers, these compressors provide configurable multipliers whose powers,accuracies, and speeds could cause modification dynamically within the runtime. In Xilinx ISE 14.7, efficiencies of those compressors in an exceedingly 32-bit Dadda number for FIR Filter area unit evaluated withinVerilogHDL and simulated and synthesized. Scrutiny the parameters with the prevailing Wallace tree multiplier designed utilizing 4:2 and 5:2 compressor. The comparison results indicate the lesser delay and power intake within the approximate mode.

Keywords: *Approximate Computing, Configurable 4:2 Compressors, Accuracy & Delay.*

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Mismatch of Bottle Detection by Video Processing

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Abstract

Many Industries adopt manual sorting for the classification of the defected bottle as they travel along the conveyor belt. Manual sorting may not be a suitable option for identifying the defected bottle in high throughput. It has also been noted that there is a lot of difficulties in achieving consistency in the bottle separation process. Therefore, an Intelligent system for automated sorting is needed to replace the manual sorting system. The main component used for the Intelligent sorting system is recognition of image. As a result, in this work, combination of Top-hat and histogram equalization and the segmentation scheme is implemented to extract the ROI from the frames of bottle images. After extracting the ROI from the frames, the classification of defected bottle is identified by the SVM (Support Vector Machine) with FKM (Fuzzy K-means). This experimental result confirms that, the proposed approaches is efficient in extracting the ROI from the considered frames of images. In future, this methodology can be used in industries to classify the defected bottles.

Keywords—*SVM (Support Vector Machine) with FKM (Fuzzy K-means), OCR, Top-hat, Histogram Equalization, ROI (Region of Interest)*

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Review of Cluster Head Election Protocol Implementation in Randomly Deployed Wireless Sensor Network.

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Abstract

Remote sensor systems are lone innovations due to their a scope of uses, for example, medicinal services observing framework, advanced mobile phones, military application and many more. WSN be made out of many low-power multi working sensor nodes, working in an unattended domain with constrained computational and detecting abilities. Notwithstanding at least one sensors, every hub in a sensor organize is normally outfitted through a radio transceiver, a little microcontroller and a vitality resource, ordinarily a battery. These reasonable and force productive sensor nodes cooperates to shape a system for observing the objective district. Progressive plans are ordinarily arranged as cluster based and lattice based methodologies. In cluster based methodologies, sensor nodes are gathered into groups, where an ingenious sensor hub is selected as a cluster head (CH) while in framework based methodology the system is separated into little virtual lattices every now and again performed by the data aggregating by base station. In the paper difficulties for cluster based plans, the significant group arrangement parameters, and overview of progressive clustering conventions are discussed.

Keywords— *Sensor Node, Cluster Head, Clustering Approach, Energy Efficiency*

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Brain Tonic- Clonic Seizure Prediction Based on Deep Learning

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Abstract— Tonic - clonic is one of the world's most regular neurological illnesses. Early expectation of the approaching seizures impacts epileptic patients' life. In this paper, anoriginal patient-explicit seizure expectation method dependent on profound learning and functional to long haul scalp "EEG" chronicles is projected. The objective is to precisely identify the recital mind formal and separate it after the predominant interracial national as ahead of schedule as could reasonably be expected and make it appropriate for constant. The highlights extraction and order forms are consolidated into a solitary computerized framework. Crude EEG signal with no pre-handling is measured as the contribution to the framework which advance decreases the calculations. Four profound knowledge models are planned to remove the greatest discriminative highlights which improve the grouping precision and forecast time. The projected method exploits the convolutional neural system in removing the critical spatial highlights from various scalp positions and the intermittent neural system in expectant the occurrence of seizures sooner than the present-day techniques. A semi-administered method dependent on move learning strategy is acquainted through progress the advancement issue. A channel choice calculation is suggested to choose the furthermost pertinent EEG channels which make the proposed framework great possibility for constant utilization. A powerful test strategy is used to guarantee strength. The accomplished most noteworthy precision of 99.6% and least bogus alert pace of 0.004 $\mathbf{h}^{-}\mathbf{1}$ alongside prompt seizure forecast time of one hour kind the proposed strategy the maximum effective amongst the best in class.

Index Terms— *Organization, Deep Learning, Tonic - Clonic, EEG, Interracial, Recital, Seizure Calculation*

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Early Diagnosis and Classification of Melanoma Detection Using Neural Network

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Abstract

Melanoma is one of the types of skin cancer. It is easily curable when detected at an early stage. Once it spreads into other parts of the body, it can be deadly. It is difficult to find the difference between melanoma and nevus due to the same appearance. In this paper, we have proposed an early diagnosis and classification of melanoma detection using neural networks. It uses image processing methods and algorithms. The mobile image of skin cancer is given as input, and it is converted into a grayscale image to process faster. To enhance the feature of the image it uses contrast enhancement then the median filter is used to remove noise without leaving the edges from the skin surface and the image is undergone to segmentation and features extraction to remove the unwanted features from the lesion. These are given as input to the classifier. Convolutional neural network classifies the given image into melanoma and non-melanoma. DERMIS dataset is a proposed method with a total of 50 skin cancer images: 32 is melanoma and 18 are non-melanoma. It achieves a result of 89% accuracy.

KEY WORDS - *Melanoma, Nevus, Median Filter, Convolutional Neural Network*

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SECURING THE BIOMETRIC DATA IN CLOUD COMPUTING

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Abstract

Presently a day's distributed computing has rising a great deal. It has been an extraordinary innovation of putting away and recovering a lot of pieces of information. Biometric pieces of information are vital in this day and age. It distinguishes every single individual on the planet. This biometric pieces of information are critical to be secure in light of the fact that it has been stolen and utilized for different purposes. With the goal that it must be protected and secure in one spot. For distributed computing encourages a ton to oversee and store the information. The high security is protected while utilizing this innovation. At that point the biometric pieces of information incorporate unique mark ,iris, facial examples, etc.The biometric reports are utilized for distinguishing his/her own recognizable pieces of proof. The figures are cautious in putting away and protecting in a specific innovation. So in this paper I am going to protect the biometric pieces of information in an innovation called distributed computing. For this encryption and decoding process is done here. The homomorphism encryption calculation is actualized here to scramble and unscramble the information.

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Prevention of Raten Keystone Attacks in Cloud using Diffie Hellman Algorithm

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Abstract

Cloud holding change users to document data to storage servers and retrieve target data efficiently. Some of the document information are really delicate and should be ventilated for any outflow. In now a days there are so more unskilled person are easily hacked any type of file or data. Because of the information can be stored in encrypted format, so it will be easily hacked by any third party. Public-key encoding with keyword search (PEKS) calculate this stress. Whereas, it is insecure to keyword guessing attacks (KGA), since keywords are low-entropy. In this paper, we present a guaranteed PEKS scheme called SEPSE against KGA, where users encrypt keywords with the help of consecrate key servers via a beginning and inattentive manner. SEPSE assist key repeating to periodically replace an present key with a newfound one on each key computer to spoil the key agree. Moreover, SEPSE can inefficiently escape online KGA, where to each one keyword message successful by a user is coordinated into a dealings on a public blockchain (e.g., Ethereum), which allows key computer to discover the number of keyword chase made by the user without involve a synchronism between them for per-user rank constrictive. Certificate investigation and operation assessment demo that SEPSE give a powerful certificate assurance compared with active strategy.

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Fuzzy Expert System Based Fault Monitoring and Protection in the Power System

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Abstract

In power systems, transmission line reliability plays a vital role. In order to achieve high reliability, the system should be free from the faults. For this we need to minimize the faults within a short period of time and make the system stable. When a fault occurs in the system the voltage and current waveforms are disrupted due to transients and their design varies according to the type of fault. Especially these faults can be seen at a high rate in the transmission lines. Since the faults cannot be avoided in the transmission line, we require a fast-operating control system and a quick acting protection system to make the lines isolate from unhealthy unit and make transmission of electricity supply to run normally in the healthy lines there by making the system stable and reliable. This makes a lossless and a safe running power system. The proposed schemed is modelled using MAMDANI structure in LabVIEW. The simulation plots represent fault classification, fault section, fault monitoring and relay protection. This designed technique is best suitable for tripping action at zenith speeds and thus can be applied in live states. The results of this technique considering various functioning states are executed using the LabVIEW software.

Keywords: *Faults, Voltages, Fuzzy Logic System.*

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Gas Leakage Detecting Travelling Robot

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Abstract

The internet of things to uniquely identified objects and their virtual representations in an Internet-like structure. In this project, the most aim is to detect gas line leakage in under pipeline through internet connectivity and monitoring it daily. In the existing system, uses an LPG gas sensor [1] to sense LPG gas when LPG gas leakage occurs. We have used an LPG gas sensor module to detect LPG Gas. When LPG gas leakage occurs, a HIGH pulse will send to the Arduino board. When the Arduino board gets a HIGH pulse from a gas sensor then it displays a message LCD display and activates the buzzer to get the beep sound. In the proposed system, the robot keeps moving along the metal pipe it keeps monitoring for any gas leakage, on detection it uses an interface GPS sensor to transmit the location of the leakage detected over to the IOT login system, here we use IOT to detect and located the situation of leakage. Thus we have a fully automated insect-like a robot that moves with the gas pipe and detects gas leakages instantly at a low budget. This kit is a demo project that how is leakage is been detecting.

Key words: *LPG Gas Sensor , Bluetooth, GSM , GPS , LCD , L293D*

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Designing of Adjustable Logic for the Systolic Array Multiplier Circuit

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Abstract

For data communication, an ideal correspondence trusts upon Low Power plan. Systolic cluster multiplier with the rescindable rationale is broadly known among those procedures for harmonizing entryways in DIGITAL SIGNAL processor requests. Low force circuit configuration yields numerous good circumstancessimilar expanded execution, framework limit, limited cost and so forth. Reversible rationale is an extraordinary way to deal with decrease heat scattering and data misfortune. Among fundamental number-crunching tasks, Multiplication requests all the more preparing time and look for complex equipment. As "Conservative Systolic Array Multiplier" is planned utilizing permanent rationale doors, aroundremains undesired force dispersal. Along these lines, to ad lib this drawback, this paper lights up the plan of low force Systolic Array Multiplier utilizing reversible rationale doors which performs information handling in Parallelism way [5]. Force, delay, trash yields and important cost is determined numerically in this paper. At long last, "Cadence Virtuoso is utilized to get recreation results".

Keywords— *Garbage Outputs (GO), Quantum Price (QC), Multiplier Cell(MC), Peres Full Adder (PFA), Peres gate (PG), Toffoli gate(TG).*

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Bluetooth Module Based Pick and Place Robot

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Abstract

The data which transfer from dongle to blue tooth modem and modem to Bluetooth dongle by wireless module i.e.; Bluetooth. To transmit & receive wireless data in serial format this module enables. "It is an advanced technology that is widely used nowadays in mobile data sharing and within network communications like a modem to the printer, etc. Allowing transparent two-way data communication[1]." In the project, we can use it for transmitting wireless serial data to establish a connection between MCU or embedded project and PC.

In this Bluetooth wireless communication, we are using the HC-05 module for communication. Bluetooth can communicate in serial. Using this Bluetooth we can control the devices in these projects. 1Bluetooth can operate with a frequency that frequency transmitted by the microcontroller in the form of an analog signal. This analog signal converted into digital. The receiver will receive that signal and it operated. In this project, we are using the android app by controlling the device. In receiving section HC-05, the receiver module. We can use that module and receive the signal and perform the corresponding operation. Here the robot will pick and place the things in front of it.

Keywords: *Blue Tooth Modem, Hc-05 Module, Android App etc.*

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Artificial Intelligence Based Chatbot for Appliance Control

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Abstract

This work presents a low cost and flexible home control and monitoring system using an embedded micro-web server, with IP connectivity for accessing and controlling devices and appliancesremotelyusingAndroidbasedSmartphoneapp.Theproposedsystemdoesnotrequire a dedicated server PC with respect to similar systems and offers a novel communication protocol to monitor and control the home environment with more than just the switching functionality. The Internet of Things (IoTs) can be described as connecting everyday objects like smart-phones, Internet TVs, sensors and actuators to the Internet where the devices are intelligently linked together enabling new forms of communication between things and people, and between things themselves [1]. Now anyone, from anytime and anywhere can have connectivity for anything and it is expected that these connections will extend and create an entirely advanced dynamic network of IoTs. IoTs technology can also be applied to create a new concept and wide development space for smart homes to provide intelligence, comfort and to improve the quality oflife.

Keywords: *Message Queue Telemetry Transport(MQTT),Artificial intelligence(AI) , If This Then That(IFTTT), Internet of Things(IoT), Machine to machine(M2M), Google assistant, Human–Robot Interaction (HRI)*

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Automated Attendance Management System Based on Face Recognition Algorithm

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Abstract

This paper is based on face detection and recognition algorithms. Detects the group of students in class room and marks the attendance by recognizing them. The system architecture and algorithms used in each stage is presented and Different real time scenarios are considered to evaluate the performance of various Face recognition systems.

we have utilized a new, real-world source of images to test a variety of algorithms for holistic performance with respect to the potential application , this paper focuses on localizing parts in natural face images, taken under a wide range of poses, lighting conditions, and facial expressions, in the presence of occluding objects such as sunglasses or microphones

Keywords— *Face Recognition Systems, Holistic Performance, Localization, Attendance System, Algorithms*

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Device to Device Communication Underlaying Cellular Networks Using Energy Efficiency Optimization

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Abstract

In this paper we discuss about the D2D communication which is used to improve the communication rapidly. To maximize the EE, we use D2D in 5g networks which is key in D2D. It also reduces the throughput latency. We use D2D in overlay or underlay, in this we choose underlaid over overlaid because of high spectral efficiency. However, we give much attention to single cell scenario to which are existing technologies and we give less attention to maximize the EE of whole cellular network underlaid with D2D communication. By using successful transmission probability and AVSR reduces the interference problem which is introduced by D2D and cellular. The optimization problem is formulated with algorithms they are Branch and Bound and proposed derivative algorithm. To solve non-convex problem, we proposed a derivative algorithm, compare both algorithms which shows the propose derivative is lower than the BB. Finally, we perform simulation results by using MATLAB software which demonstrated that the EE with much better performance.

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Arduino Based Robot Controlled by Android G Sensors

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Abstract

Android controlled robot paper utilizes an Android portable for mechanical control with the help of Bluetooth innovation. This is a basic mechanical technology paper utilizing microcontroller. We have just observed Mobile Controlled Robot utilizing DTMF innovation which uses call based technique to manage robot. Likewise numerous remote controlled robots use RF modules. The control orders accessible are very RF modules. Cell phone controlled robot is prevalent than of these robots.

This paper is a Bluetooth controlled robot. For this the android versatile client must introduce an application on her/his portable. At that point client must initiate the Bluetooth inside the portable. The remote correspondence strategies wont to control the robot is Bluetooth innovation. Client can utilize different orders like push ahead, switch, stop move left, move right. These orders are sent from the Android versatile to the Bluetooth collector. Android based robot includes a Bluetooth collector unit which gets the orders and gives it to the microcontroller circuit to direct the engines. The microcontroller then transmits the sign to the engine driver IC's to work the engines.

Key word: *Arduino UNO, Remote XY App,G Sensors*

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Automatic Garbage Collector using GPS and GSM: An Initiative to Smart India

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Abstract

In the present day scenario people face many problems in waste collection and management. Overflowing of wastes in the garbage bins causes many problems to the nearby people and also pollutes the environment. It is very difficult to find the garbage bins filled status. This is the solution which saves the time and also prevents the environment from pollution.

This method is used automatically to monitoring the level of bins and the send data to the garbage collecting driver through an SMS with the location of the Bin. Microcontroller is used to process the data from the Ultrasonic sensor and the GSM is used to send the SMS. Garbage level are often detected by using the Ultrasonic sensor and therefore the GPS is employed to seek out out the precise location of the bin which information are often send to the truck driver through a SMS. With the assistance of that message, teamster can identify the situation and therefore the status of the bins.

Keywords: *Waste Collection, Ultrasonic Sensor, GPS, GSM.*

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Automatic Greenhouse Agriculture Parameters Using Internet of Things (IoT)

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Abstract

In the modern scenario of worldwide global climate change and its effect on the environment has motivated the farmers to place in greenhouses in their fields. But maintaining a greenhouse and its plantation is extremely labor-intensive and all of them perform vital operations intuitively. Also agricultural researchers face scarcity of fantastic quality of data which is crucial for crop development. Thus we've developed such a price effective system using Automation which is targeting solving these particular problems, our system automates the greenhouse maintenance operations and keep a check on the expansion conditions inside the greenhouse closely. The automation of greenhouses has proved to be extremely helpful in maximizing crop yields and minimizing labor costs. The optimum conditions for cultivating plants are regularly maintained by the utilization of programmed sensors and actuators with constant monitoring of the system. Proper ecological conditions are fundamental for ideal plant development, enhanced harvest yields, and efficient utilization of water and different assets, and efficient use of water and other resources. Automating the info acquisition process of the soil conditions and various climatic parameters that over run plant growth allows information to be collected at high frequency with less agriculture labor requirements. The foremost objective of the project is to research and control the atmospheric conditions like soil moisture, humidity, co2, light and temperature under a closed path using wireless sensor networks and Arduino UNO.

Keywords:*Greenhouse, Data Acquisition Process, Wireless Sensor Networks, Arduino UNO.*

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Liver Tumor Detection using UWB Antenna

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Abstract

Worldwide liver cancer is the sixth-most frequent cancer (6%) and the second-leading cause of death from cancer (9%).There are many techniques that are used in the detection of liver cancer which are medical ultrasound, CT and MRI.An UWB Antennas has less power requirement, low interference, non-ionizing in nature which can be used to detect tumor in tissues. This study uses a UWB antenna for detection of tumor cells. The reason behind using the UWB over otherfrequency bandsisitgetstheelectricalcharacteristicsofhealthytissues; the tumor effected tissues and finds the difference between them. By fabricating the antenna that has good SAR value and comparing S parameters of antenna we can easily detect the tumor in the liver. Thecurrent antenna operates perfectly in the UWB range i.e., 3.1 to 10.6 GHz [1] according to FCC. A single unit cell has been designed and simulated with a size of 25*20*1.6mm3 with FR4 material as a substrate. The performance of thisantennahasbeenanalyzedbymodifyingtheradiator, feedand ground structures. The analysis of SAR is carried out by placing the antenna excited at a distance greater or equal to far- fielddistanceof22.5mmfromthelivermodel.Hereweuse twoantennas around the liver tissue and measures the S21 parameters with and without tumor in liver. The difference in the electrical characteristicsisenoughtodetectthe tumor.

Keywords:*Ultra-Wideband Antenna (UWB), Liver tumor, Specific Absorption rate (SAR), Scattering parameters, Time domain Analysis*

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Improved Pilot Assignment Algorithm with Reduced Inter-Cell Interference in Massive Mimo Systems

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Abstract

Massive multiple-input multiple-output (MIMO) faces pilot contamination because of inter-cell interference. This paper proposes a pilot assignment strategy to combat this interference. The users present in the serving cell are separated into three groups based on their large scale fading coefficients. The group of weak users having small large scale fading coefficients is assigned pilots based on exhaustive search strategy. The second user group is allocated pilots based on the intensity of pilot contamination and the strong user group is assigned pilots based on the frequency of pilot usage. This proposed scheme shows increase in the performance of the system as compared to smart pilot assignment scheme as well as user grouping scheme with two groups. The performance of the proposed strategy tends towards the exhaustive search strategy with much less computational time complexity.

Keywords*: Massive MIMO, Pilot Contamination, Inter-Cell Interference, Pilot Allocation, User Grouping.*

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Pi Skate - An Electric Skateboard

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Abstract

Environmental protection and energy conservations are the main concern of 21st century which has now accelerated into developing electric vehicle technology. The electric vehicles (referred to as EVs) offer zero emission and provide a new industrial sector for development and invention. It is being designed suitably for any type of road conditions and to reduce the efforts of a rider to drive skateboard easily. Currently the permanent magnet brush-less DC motors are current choice of automobile industries and researchers because of its high power density, compact size, reliability, and noise free and minimum maintenance requirements. It deals with the fabrication of electric skateboard which mainly includes assembly of skateboard and electric hub motor drive and designing the controllers. Thus, the final stage is to improve the design model of the electric skateboard for off road conditions. The objective of this project is to improve the driving mode of skateboard on off road condition by centralized electric wheel on the board and to reduces the effort of skateboard even on uphill area and improve sensitivity of the skateboard with dependence on non-renewable resources using latest technology. The implementation involves development of Electric-Skateboard that runs on battery as well as manual propulsion of vehicle.

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Dual Axis Solar Tracking System using Arduino

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Abstract

Solar power is the fastest growing means of renewable energy. This paper is designed to implement a simple dual axis solar tracker system.in order to maximize energy generation from the sun, it is necessary to introduce solar tracking system. A dual axis tracker can increase its energy by tracking sun rays from switching solar panel in various directions .It can also be used to sense weather, and it will display on LCD. This system is powered by Arduino, consist of servo motor, stepper motor, rain drop sensor, temperature and humidity sensor and LCD. The main objective of this research is whether static solar panel is better than solar tracker or no the outcome of the solar tracker system has analysed and compared with the fixed or static solar panel found better performance in terms of voltage, current and power.

Keywords: *Arduino, Servo Motor, Stepper Motor, Solar Tracker, Dual Axis System*

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Identification and Classification of Fetal Abnormalities and Ultrasound Modality

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Abstract

Ultrasound is one of the most popular medical imaging technologies that can help a physician evaluate, diagnose and treat medical conditions. Although ultrasound imaging is generally considered good medical tool but the overall detection rate of abnormality Defects using ultrasound image remain anomic. Congenital Heart Defects are the heart problem that occurs before birth. Recognizing abnormality Defects at right time is a difficult task for Physicians due to lack of subject specialists or inexperience with the previous cases or even as the children they can't express their problem in a proper way. In order to improve the diagnosis accuracy and to reduce the diagnosis time, it has become a demanding issue to develop an efficient and reliable medical Decision Support System. Hence machine learning approaches such as neural networks have shown great potential to be applied in the development of medical Decision Support System for Physical Abnormalities. Fetal anomaly detection mainly carried out in four steps. Noise removal, segmentation, feature extraction and classification. General Terms Image processing.

Keywords:*Abnormality Defects, Morphological Operations, Speckle Noise, Ultrasound Image, Neural Network.*

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Raspberry Pi Based Covid-19 Face Mask Detector with OpenCV, Keras/TensorFlow and Deep Learning

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Abstract

In this paper a Raspberry Pi implementation of COVID-19 face mask detection has been proposed. This is implemented using Python Programming with OpenCV Library and keras/TensorFlow (An end-to-end open source machine learning platform). The main Idea of this Implementation is to detect the persons without wearing a Face mask in Public places. The system takes images of people, analyse, detect and recognize human faces with mask and without mask using image processing algorithms. The system can serve as a security or surveillance system in public places like Malls, Universities, and airports. It can detect and recognize persons without a face mask in Public places. We'll use Python script to train a face mask detector and review the results

Keywords: *COVID-19, Face Mask Detection, Face Recognition, Raspberry Pi, Python, OpenCV, Keras/TensorFlow.*

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An Online Food Requesting Application by Using Python Framework

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Abstract

The purpose of this paper is to develop a web sustenance building food ordering System. It's a system that modify client of sustenance building to put their order online at anytime and anywhere the rationale to develop the system is because of the problems facing by the sustenance building trade. These Problems square measure like peak hour-long queue problems, increase of excluding foods than guests, speed major requisite of sustenance preparation, restricted promotion and advertising on current strategy, and internal control of sustenance management problems. Therefore, this technique enhances the speed and standardization of taking the order from the client and displays it to the employees within the room consequently. Besides that, it gives easy websites and effective advertising medium to the new product of the sustenance building to the client with cheaper value. Additionally, extend and deliver the client or reaching the client who square measures constrain of transport to be in sustenance building. The structured style methodology adopts a proper gradual approach to the System Development Life Cycle that moves logically from one section to ensuing. The methodology used concerned system analysis system style, system development, and system testing. The aim is to modify its existing manual system by the assistance of computerized equipment and full-fledged laptop computer code, fulfilling their needs, so their valuable data will be hold on for an extended amount with simple accessing and manipulation of identical. Basically, the paper describes a way to manage permanent performance and higher services for shoppers.

Keywords:*Fledged, Manipulation, SDLC, Client, Support, Shoppers.*

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Image Super-Resolution of Two Cases by Sensor Grid Scanning and Deconvolution Detection

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Abstract

The super goals replicate a high-focal point picture from at any rate one recorded low-focal point picture. Utilizations an assortment of hardware techniques, for instance Assessment of the raster sensor or programming methodologies, for example Contribution, iterative overheads and regularized strategies, and is valuable in an assortment of employments, for example Video perception, clinical and remote identification research. Here, two applications that depend on a comparable technique are introduced in detail: first, the hyperspectral portrayal of a THz projection created by a period space spectroscopy gadget, and second, the focal points has improved photography. In the two cases, the pictures logged by the sensor through a sub-pixel raster channel were interwoven into a high-focal point picture, at that point deconvolved with a consistent square bit of the sensor pixel size. For hyperspectral portrayal, regularization was significant, while for endpoints photography improved, direct deconvolution carried out the responsibility. The way Magee manages super objective, which doesn't utilize convolution, has been dismembered and disposed of.

Key Words:*Super-Resolution, Deconvolution, Hyperspectroscopy.*

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PAPER ID: ICSMEC-2020/0112

Alcohol Detection and Control System

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Abstract

This paper proposed an efficient technique for preventing roads accidents caused by excessive intake of alcohol by drivers on the roads. Driving vehicles endlessly for hours will be very difficult for most of the people. Most of the cases, it was discovered most of the truck drivers and private bus drive by consuming alcohol. Driving such massive vehicles in the influence of alcohol could be a fatal for other commuter's life on the road. This study introduces a model which detects alcohol level of the driver and lock the engine so that vehicle will not able to start by using an open source microcontroller boardinterfaced with an alcohol sensor. If the sensor detects the alcohol percentage more than threshold level it will stop the ignition and will not allow to boost the engine.

Keywords:*Arduino UNO, Alcohol Sensor MQ-3, GSM Module, 16X2 LCD Display.*

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Design and Implementationof 16- Bit Floating Point Mac using Residue Number System

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Abstract

This paper presents the design and implementation of 16-bit floating point RNS multiply and Accumulate (MAC) unit. Residue Number System (RNS) gained popularity in the implementation of fast arithmetic and fault-tolerant computing applications. Its attractive properties such as parallelism and carry free E computation have speed up the arithmetic computations. Floating Point can be represented as M × B where M is Mantissa, E is the Exponent and B is the Base. The MAC unit consists of three units - Floating-point multiplier, Conversion unit and an Accumulator. The floating-point multiplier makes use of Brickell's Algorithm, the conversion unit makes use of a parallel conversion for the forward conversion and the Chinese Remainder Theorem for reverse conversion and the accumulator includes an adder unit which can make use of any of the conventional adders that depends on the moduli of the RNS being used. The input takes form of half-precision format where there is 1-bit for sign, 5-bits for exponent and 10-bits for mantissa. The design is coded in Verilog HDL and the synthesis is done using Cadence RTL Compiler

Keywords:*MAC, Residue Number System (RNS), Floating point, Moduli, Brickell'sAlgorithm*

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Biometric Based Security System for Vehicles

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Abstract

Biometrics is a method of working to identify the individuals, this study includes fingerprint, face, voice, signature, hand geometry recognition and so on. Finger Print demonstrated as best individuality provided with good mismatch ratio and also reliable. To provide security and to make our work easier, we are taking the help of two dissimilar technologies embedded systems and biometrics.

Biometrics we are intent on fingerprint scanning for this, we are using FIM 305N high voltage module as a scanner and this module has in-built ROM, DSP and RAM. We can store the fingerprints of up to 100 users in this project. This module holds two modes of operation (Master mode and User mode). Master mode is used to register the fingerprints which will be stored in the ROM present on the scanner with a unique id.

The project is designed to provide absolute security for vehicles and avoids vehicle jacking. Microcontroller have finger print module with serial connectivity, initially owner of the vehicle enrollsusing a Finger print module. Before starting the engine scan particular finger, the microcontroller detect and compare with database of enrollment area. If the fingerprint is matched a person can start the vehicle if not it is impossible to start a vehicle.

Keywords:*Microcontroller 8051***,** *Finger Print module.*

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Electrical Power System Monitoring and Protection using Cloud Services

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Abstract

The existing conventional meters are up to accurate for the measuring of electrical parameters. Smart meters when compared to electro-mechanical meters will reduce man power and it should ensure the capability of direct connection with the consumer side.

Hence by using cloud services, the technology of modern era, there will be a successful power quality monitoring process. In this project the process of monitoring concentrates over the electrical parameters such as voltage, current and power, protection from high current disturbances due to faults etc., Indeed the major part of the project is to continuous monitoring of the power quality of the system using the Arduino programming. Generally, a healthy power system network is free from faults and power quality should be high. Whenever the interruptions occurred in the power due to fluctuations results in the decrease in reliability and the quality of power to supply. This is due to the fluctuation of the voltages. These voltage variations are generally considered as sag and swell. This can be reduced by the continuous monitoring of the system by using cloud services. Cloud services will have effective efficient by reducing the man power and increases the accuracy. By using the cloud services we can monitor the multiple networks at any point of time at any location. On the whole, monitoring the power consumption via internet of things ensures effective monitoring and power quality issues and protection in the power grid.

Keywords: *Monitoring, Voltage, Protection, Thing speak, Blynk.*

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Dual Steganography Hiding Technique for Digital Communication

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Abstract

In modern age in which data is conveyed through digital medium, the protection of data is top priority concern for any organization. Digital steganography is an advance technique in which secret data can't be detected easily. Steganography envelopes and information to such degree that it is invisible to a spectator. In this proposed paper the focus is on increasing data security using dual steganography. In dual steganography secret message is first embedded into cover medium and then resulted stego-object will be again embedded into other cover medium. Mentioned paper also provides a computable evaluation of dual steganography in terms the reduction in the mean square error (MSE) and hence increase in peak signal to noise ratio (PSNR) measure between original host files and generated stenographic files.

Keywords: *Dual steganography, Image steganography, LSB, Video steganography, DWT.*

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Health Monitoring System for NGOs Run Organizations using Biosensors

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Abstract

Good health is important in human life. Therefore, for good health better healthcare system is needed for continuously monitoring the health in the NGO run Organizations in Goa in order to reduce the burdens on these organizations especially of financial burdens. Therefore, it is highly needed to monitor continuously health parameters such as temperature, heartbeat rate, and respiratory rate. This has done using various using biological sensor such as temperature sensor, heart rate sensor, and respiration sensor. After receiving the sensed value, if the sensed values have abnormality rate, an alarm is generated through buzzer, and the same is transmitted to the control office and received using wireless internet of things technology. The control office after receiving and analyzing the same finds that the values are exceeding the normal rate necessary preventive action is taken such as informing the doctors or medical health center. Also, SMS based alert is sent to the mobile's phones to the concerned doctor. The above health monitoring system has analyzed using fuzzy logic system.

Keywords: *Health, Raspberry Pi, Bio-Sensors, Wi-Fi, Data Acquisition, Monitoring, Temperature, Heartbeat, Respiration Adafruit Server, Fuzzy Logic*.

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Power Generation System with Stride Control with Bluetooth Module

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Abstract

In this paper we have a tendency to propose a complicated footstep power generator system that uses piezo sensors to come up with power from human footsteps. The system permits a platform for putting footsteps. The piezo sensors square measure mounted below the platform to come up with a voltage from footsteps. The sensors square measure mounted below the platform to come up with a voltage from footsteps. The sensors square measure placed in such a rendezvous thus on generate the most output voltage; this is often then provided to our watching electronic equipment. The circuit could be a microcontroller-based watching circuit that enables the user to observe the voltage and charges a connected battery by it. It conjointly shows the charge generated associated displays on an alphanumeric display. Also, it consists of a USB peripatetic charging purpose whenever users might connect cables to charge the peripatetic from the battery charge. So we have a tendency to charge electric battery victimization power from user footsteps, show it on alphanumeric display victimization microcontroller circuit and permit for mobile charging through the setup.

Keywords: *Piezo, Sensors, Battery, USB Peripatetic*

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An Efficient Method for Wireless Fire Recognition Monitoring Structure by Arduino Mega

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Abstract

The goal of the chimney and Release Facility is to shield human life, our stuff, and Earth regular assets after chimney then option emergencies. Through alteration in requests, the Fire and Rescue Service necessity furnish through the greatest methods, preparing system and hardware to encounter open desires. Moderation, preparation and hazard the executives obligate taken on new benefit with difficulties challenging hearth administration these days. Quick reaction can't be accomplished while not reasonable thinking of and status. Thus, a checking arrangement of alert for fire discovery utilizing"Arduino microcontroller was plan". "The circuit are incorporates with a signal, smoke sensor and a camera. All the information taken from smoke sensor and camera will be send to information checking framework and be show on observing framework remotely".

Keywords: *Arduino Microcontroller Monitoring System, Fire Detection System*

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Detection of Breathing and Infant Sleep Apnea

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Abstract

Sleep apnea is a condition where people pause while breathing in their sleep; this can be of great concern for infants and premature babies. Current monitoring systems either require physical attachment to a user or may be unreliable. This project is meant to develop a device that can accurately detect breathing through pulse rate and issue appropriate warnings upon its cessation. The device produced is meant to be a standalone device and thus was developed as an embedded systems project. One of the crucial points of the device is that it should be accurate, with extremely little chance of false negatives and few false positives while detecting apnea events. The device must be easy to operate and setup. No special training should be required to use or maintain the device and setup requirements should be minimal .The device itself should be small in dimension not requiring large spaces and have few remote connections. The device should be powered from the wall with possible support for battery backup. The tools that we use in this project are Arduino UNO, PIC Microcontroller, ECG sensors, LCD Display RF transmitter, RF receiver, Buzzer, Vibration Sensor, Reset Button.

Keywords: *Arduino UNO, PICcontroller, ECG sensors, LCD Display RF transmitter, RF receiver, SleepApnea.*

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Design of Power Efficient CMOS Latched Comparator

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Abstract

In this paper a new architectural work of latched comparator has been proposed. Within the new suggested design low energy dissipation is achieved i. e This is implemented with a Tail capacitors Energy consumption is reduced to great Extent due to result nodes of the pre-amplifier are partly discharged. The suggested circuit contains a minimal quantity of transistors with tail capacitors. With this document, the applied circuit is controlled using EDA (Electronic Design Automation) tools in CMOS technology. Comparators play an important role in the implementation of the mixed transmission type SAR (ADC). Analog / digital conversion (Successive Strategy Register). There are several critical things to consider when designing CMOS comparators as low energy usage. In reverse noise. Broadband, less delay, etc

Keywords:*Latch Comparator, Low Transistor Count, ADC, High Speed, Offset Voltage*.

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PAPER ID: ICSMEC-2020/0126

Criminal Detection using Facial Recognition

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Abstract

The principle idea of this paper is to explore different avenues regarding utilizing profound learning neural systems to recognize and rapidly react to wrongdoings in progress with compelling Criminal Recognition to lessen the crime percentage. Additionally, physically doing following can be exceptionally troublesome. This is finished with the assistance of face acknowledgment in addition to video handling. Flow framework in this field intends to look for an element in video by removing its face and coordinating (or running) it against a database of human faces that is in the intrigue. In this way, none of the frameworks settle the undertaking on the off chance that they don't have a predefined database against whom the coordinating is finished. Our, Smart AI will do this in a savvy route by first producing datasets from human countenances taken from CCTV video and useit in a Face Recognition model we are utilizing. The utilization of profound learning libraries like keras, tensor flow alongside some picture handling instruments like OpenCV with a cloud-based arrangement is done to accomplish this undertaking.

Keywords:*Convolution Neural Network (CNN), ONEIROS (Open- ended Neuro-Electronic Intelligent Robot Operating System).*

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Intelligent Voice Based Automatic Wheel Chair using WIFI

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Abstract

This project describes an Intelligent Voice Controlled Wheelchair which operates on user's voice commands. The disabled people cannot move from one place to another on their own. They continuously need someone to help them in getting the wheelchair move. So the automated wheelchair makes them more independent. Bluetooth controlled automated wheelchair makes the person move within a confined area. Also the automated wheelchair designed using the touch panel, buttons are not effective for the people who are physically impaired or handicapped. The automated wheelchair is designed based on voice commands rather than gestures and buttons. The wheelchair uses NodeMcu microcontroller which has an inbuilt wifi module to control the wheelchair from anywhere. The voice recognition system used here is through the simple voice commands given by the user through the android phone. The microcontroller through the commands given controls the movement of the motors. An Obstacle Detection unit is present in order to detect and alert the user with the help of a buzzer.

Keywords:*NodeMCU, Voice Control, Obstacle Detection*

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A New Method on Automatic Public Tap Controller using IR Sensor

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Abstract

A framework of anticipated SYSTEM Water scarceness is one in everything about most significant issues tormenting the planet nowadays to stop this from altering into any supplementaryunfortunate, we essential to boardfortification. Water is that the most valuable asset on earth and it's our duty to preserve it. Anyway wittingly or incidentally, we tend to will in general waste a lot of water day by day. One in everything about principal clear water-squandering propensities is neglecting to flaunt the fixture once exploitation it or deed the water running once brushing our teeth, shaving or doing the dishes. To help cut back water wastage from spigots, we tend to excite you a reasonable answer. Nowadays during this DIY venture, we'll be making a reasonable tap that precisely kills once you don't appear to be exploitation it. It'll precisely actuate once it identifies hand or glass near it and switch off once the instrumentation is packed. The Aim of the undertaking is arranging IR essentially based programmed open fixture the executives wont to prevent wastage of water from open spigots. Presently a-days the use of water has surpassed in metros and in provincial zones.

Keywords: *Sensors, Microcontroller, Timer, Arduino, GSM Modem, AT Mega328*

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Automatic Room Light Controller with Visitor Counter Using IR Sensor

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Abstract

Automatic Room Light controller is a microcontroller based system that automatically turns on or off the lights in a room. Electricity, being one of the most important resources, must be utilized carefully. We often forget to switch off lights or fans when we leave room. By using this system, we can intentionally forget to about the lights as the system will automatically take care of them. The digital world we are living in allows us to use different technologies to automatically perform certain tasks. Such automation is very useful in certain areas like energy consumption, reducing human efforts, improving Standard of living etc. The project implemented here is one such project where the microcontroller based system automatically controls the room lights.

Keywords: *IR Sensor, Arduino, Automation, Obstacle Detector, Proximity Sensor, Temperature Sensor*

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Wireless Notice Board using Raspberry PI

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Abstract

This paper presents the project College Information Management System (CIMS) deals with the maintenance of information over a network within the college. The college system has gone through a vast transformation particularly in the last decade. While adopting, IT seems to be the best choice towards enhancing efficiency, it becomes necessary for college systems to face the challenges imposed by the e-vulnerabilities. This product ensures instant and secure information maintenance in colleges. In this system raspberry pi is used which is interconnected to the all college notice boards which will have a admin who will enter the notice which should appear in the college premises. Apart from this College Information Management System project allows the information available over the college internal network and provides information access to the entire spectrum of campus users that includes college staff such as administrators, faculty, librarians, etc. Whatever message the admin want to give the person will give it through the network in the raspberry pi which will automatically display the notice on the particular E-notice board.

Keywords:*College Information Management System-Vulnerabilities, E-Notice Board, Raspberry Pi, Efficiency*

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Deferral Enhanced Full Adder Proposal for High Speed VLSI Applications

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Abstract

The most broadly utilized math activity in advanced requests is expansion. Full snake is the greatest significant structure hinder in computerized signal computers and supervisors as it is utilized in number juggling rationale circuit (ALU) , in the drifting point unit then if there must arise an incidence of stock or memory become to address age. As thickness of IC chip expands, power utilization additionally increments. Henceforth low force plans are the essential necessity in the VLSI field. Decreasing deferral of an advanced circuit is a significant point in rationale structure for proficient usage of viper. In this paper a half and half "CMOS full snake circuit structured utilizing both transmission entryway and correlative metal oxide semiconductor (CMOS) is executed and an adjusted rendition of this full viper is proposed". Configuration was actualized utilizing "Cadence Virtuoso Tools in 180nm and 90nm innovation". At that point examination is done against these full adders regarding force, speed and force defer item.

Keywords:*CMOS, TG, Power Delay Product*

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Innovative Home Automation System Exhausting Raspberry-Piand Arduino

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Abstract

The rapid improvement of the internet of things (IoT), life is getting easier and pretentious in all aspects. At current world, automatic systems are being favored over the physical system. Today's world automation has become an intimate part of ordinary households and subjects to continuous evolution. IoT is a developing network of predictable object- from industry to consumer that can share material and comprehensive jobs while you are elaborate with other activities. A smart home automation organization can help to have a national method to control all home appliances. In this paper, a cost- effective organization is projected to achieve such automation system based on IoT concept. All the strategies of this system are associated to Raspberry Pi. The suggested system also offers a capability to control all home appliances locally without the internet via a local network. Raspberry Pi runs a web attendant to host a web -based control boundary and a SQL database to preserve the current status of applications. The interface can be retrieved complete the internet or nearby without the internet. Besides our automatic re-start mechanism makes the organization more efficient.

Keywords: *Dataplicity, Home Automation, IOT, Raspberry Pi, Web Interface*

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Multiple Motion Control

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Abstract

The main of the project to design a Robot for multiple motion control using Raspberry pi processor. In project the smart phone reads the accelerometer and magnetometer data of the direction in which the user turns his head, say, right or left. This data is sent to the modem over Wi-Fi or through Hotspot and to the Raspberry Pi board which in turn provides these values as inputs to the servo motors. The Raspberry Pi is a low cost, credit-card sized computer that can be used in electronics projects. It is a capable little device that enables people of all ages to explore computing, and to learn how to program in languages like Scratch and Python. It's capable of doing everything you'd expect a desktop computer to do, from browsing the internet and playing high-definition video, to making spreadsheets, word-processing, and playing games. The task of the project is achieved by using Raspberry pi. This robot with a Pi camera is placed in a remote location to capture the environment in visual form using Raspberry Pi. The captured visuals are displayed on the user's virtual reality (VR) headset. The robot can also be moved in any direction (in which the user turns his head, say, right or left) through an app installed in the user's smart phone. Two servo motors are used to move the camera—one for the vertical movement and the other for the horizontal movement. So, when you turn your head along with VR headset to the right side, the Raspberry Pi camera will also turn to the right direction. The smart phone also provides input to the processor for the purpose of navigation or movement of the robot. The motor driver IC and geared motors are connected at the end of the navigation circuit. The commands to run the robot can be sent via Wi-Fi wireless technology from the smart phone.

Keywords: *Raspberry Pi, Internet of Things (IoT), Virtual Reality Box (VR Box), Servo Motors.*

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WI-FI Based Data Logger

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Abstract

In earlier days there is lack of device where we can use a single system in real time to monitor and store the different physical or environmental parameters like temperature, pressure, etc. Hence, we developed a system using Datalogger to monitor and store the parameters. Datalogger is an electronic device that records various data over time. The datalogger is generally portable, battery powered and internal memory for data storage and equipped with a microprocessor and sensors. Some data loggers' interface with a personal computer and utilize software to activate the data logger and view and analyze the collected data. One of the primary benefits of using data loggers is the ability to automatically collect data on a continuous basis. Data loggers are typically deployed and left unattended to measure and record information for the duration of the monitoring period. This allows for a comprehensive, accurate idea of the environmental conditions being monitored, such as air temperature and relative humidity. We developed a Wi-Fi based wireless data logger through which we measured and monitored a parameterstemperature, pressure, altitude etc. for a period of time. During configuration phase, the data logger will search for a wireless network while it is physically connected to the PC.

Keywords: *Arduino UNO, DH11 Sensor, Raspberry Pi, LCD, LM 35*

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Bettering of Cash Crops Underrate Greenhouse

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Abstract

In this paper we have represented the system that can reduce manpower, risk and money. Its easy way to do agriculture by using latest technologies such as IoT. By using various sensors we can get lot of parameters. In today's world growing a crop and doing agriculture is very difficult in terms of manpower and investment. By using this proposed design farmers can get lot of benefits and they can grow more plants and profits in their agriculture. It's totally technology oriented and we can move this world to high speed agriculture. Farmers no need to worry about their crops whether they got the water in time or not and no need to check their crops thoroughly. Here we are using DHT sensor and Moisture sensor Bulb and motor. Where DHT Sensor is used to measure the air. And moisture sensor will detects moisture level continuously and it will turn on the motor when moisture percentage is below threshold level. Bulb is there to provide the light throughout the crop in the night time itself. Here we have used raspberry pi as a control processor. It manages and activates all necessary operations within the scheduled time and provides the outputs in mobile application through IOT technology.

Keywords:*Cultivation, IoT, Raspberrypi, Agriculture.*

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Study of Improvement Techniques for Low Power VLSI Design

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Abstract

With decreasing innovation, as force thickness ("estimated in watts per quadrangular millimetre") is teaching at a disturbing rate, power the executives is turning into a basic trademark for essentially every gathering of proposition and accommodation. Sinking power ingestion and finished all on chip power the board are the crucial analyses in significant sub miniaturized scale meter hubs due to enhanced intricacy. Force the board should be estimated at real early undertaking stages. Likewise low-power strategies ought to be working at each task stage, on or after "RTL (Register Transfer Level)" to GDSII. This analysis paper assigns the few organizations, methodology besides force association strategies for low force VLSI circuits. Forthcoming trials that commitment be met by creators to structures low power in height introduction circuits are additionally talked. Cutting edge streamlining approaches at changed idea heights that target plan of stumpy force advanced VLSI circuits are reviewed.

Keywords:*Optimization, Low Power, Power Dissipation, Power Management*

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Rational Fire Revealing and Pictorial Guided Evacuation System Consuming Arduino and GSM

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Abstract

An example accomplished of distinguishing fire coincidence in actual time and as long as a pictorial management organization in circumstance of alternative in space Area is communicated in offered case. Project consumes binary parts hardware part and software part. The central and intellectual unit of the prototypical is Arduino. "Hardware design comprises Arduino, flame sensor, LEDs, liquid crystal display (LCD), buzzer, GSM. And software contains the programming of Arduino conferring to preparation of fire sensor and grounding of LED panels for supervisory emigration in case of fire". The sensor units are associated via common data line to ATMEL MEGA328P AU1722 Arduino. A SIM 800C GSM kit based network module, accomplished of operational in normal. GSM Bands has been recycled to send alert communication. The scheme is working on overall determination published circuit board (PCB).

Keywords:*Arduino, FlameSensor, GSM Modem, SMS, LEDs.*

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Design Approaches and Circuit Expansion Performances for Low Power CMOS VLSI Design

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Abstract

Low power is the real test for late apparatus affiliations. Regulator dispersing is a chief arrangement to the degree execution and territory for VLSI Chip gathering. Switch connection technique is commonly used to outline low power circuits and structures. Bits of information show that 40% or from a general perspective higher pace of the rigid power use is a postponed result of the spillage of transistors. This frequency will grow through progress scaling close to if streamlining systems consider bring spillage exclusive motivations driving camouflage.. The covered piece of the paper gives an arrangement of principal wellsprings of spillage current in CMOS transistor. The second bit of the paper depicts obvious circuit streamlining systems for controlling the fortress spillage current. Some spillage current decreasing structures like rest approach; stack approach, and lector framework are examined for arranging CMOS entries which from a general perspective hacks down the spillage streams.

Keywords:*VLSI, Power consumption, Dynamic power, Clock gating, Lector Method etc.*

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An Exploring Low Power and Fast Full Adder using XOR/XNOR Gates with Adiabatic Technology

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Abstract

The most commonly used arithmetic operation is addition and it is the speed- limiting element to make faster VLSI processors. As the demand for higher performance processors grows, there is a need to improve arithmetic unit performance. The aim of the project is to reduce the power consumption and delay of full adder circuit. The six new hybrid 1-bit full-adder (FA) circuits based on the novel full-swing XOR–XNOR or XOR/XNOR gates. Each of the planned circuits has its own deserves in terms of speed, power consumption, power delay product (PDP), driving ability, and so on. The proposed system uses a new low power logic called ADIABATIC LOGIC which reduces the power and delay of the existed circuits. The word ADIABATIC is derived from the Greek word ADIABATOS which means there is no exchange of energy with the environment and hence no energy loss in form of heat dissipation. Adiabatic logic is the term given to low power electronics circuits that implement reversible logic. Adiabatic logic is commonly used to reduce the energy loss during the charging and discharging process of circuit operations. Adiabatic logic is also known as energy recovery or charge recovery logic. The adiabatic logic structure dramatically reduces power dissipation. Simulations with Tanner 16.0 tool confirm the superiority of the proposed cells compared with the previously reported ones in terms of power and delay.

Keywords:*VLSI, Logic Gates, Adiabatic Technology, Simulation*

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Prepaid Energy Meter with Anti-Theft Alerting using GSM Module

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Abstract

The work framework embraces an absolutely new idea of "Prepaid Energy Meter with hostile to burglary assurance". The GSM innovation is utilized with the goal that the purchaser would get messages about the utilization of intensity (in watts) and in the event that it arrives at the base sum, it would consequently make the buyer aware of energize. This innovation holds useful for all power circulation organizations, private networks, IT parks and self-containing lodging ventures. The usage of this task will help in better vitality the executives, protection of vitality and furthermore in getting rid of the pointless issues over erroneous charging. The computerized charging framework will monitor the ongoing utilization and will leave little extension for difference on utilization and charging. A GSM-based Energy Recharge Interface which contains a prepaid card equal to a versatile SIM card. The prepaid card speaks with the force utility utilizing GSM correspondence arrange. When the prepaid card is out of equalization, the customer load is detached from the utility gracefully by the hooking Relay (contactor). This paper manages limit the line at the vitality meter charging counters and to confine the use of vitality meter consequently, if the bill isn't paid.

Keywords:*Energy Meter, GSM, Micro Controller, Current Sensor*

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Electronic Notice Board with an Operating Distance up to 1000 Meters using RS485 Protocol

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Abstract

Notice boards play a vital role mostly in educational institutions. The events, occasions or any news, which has to be passed to the students, will be written on the notice boards present in every floor in the colleges or schools. The present system is like, a person will be told the news and he has to update this news on all the notice boards present in the college or school. This will be seen mostly during the examination. Here we are using RS485. It is an alternative for RS-232 for long distance. RS-232 only up to 15m. But in MAX 485 up to 1500m limit. In addition we connect up to 32 devices. If your control system needs to receiving and sending data in the same time you must use full duplex transmission mode. It is possible that control system first sends request message to ROV (e.g. get temperature) and then waits for the response.

Keywords: E-Notice Board, RS-485Protocol, RS-232, MAX 485, Full Duplex Transmission Mode.

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Accident and Drowsiness Detection Using Raspberry Pi, GPS and GSM Module

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Abstract

Day by day man improving technology and introducing new technologies to make human lifestyle so simple, safety and secure. But still we have some problem whenever we face some sudden unexpected situation occurs like accident. We are losing so many lives because of delay in reaching the hospitals or intimating to ambulances. This paper is designed to inform about the accident location that has occurred to concerned persons. The main application of this system is track the vehicle using the GPS modem. This modem gives the information about its position whenever required in the form of latitudes and longitudes. This is done with the help of the GPS satellite and the GPS module attached to the vehicle which needs to be tracked. And this is also used to sleep detection of the person who is sitting in the driving seat.

Keywords: *GPS Satellite, GSM, ARM 11, Vibration Sensor, DC Motor, Buzzer*

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A State of the Art of Drowning Death Detection and Prevention Systems with Various Communication Technologies and Discussion on their Performance

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Abstract

Drowning is most terrifying accident to most of the children and adult which prevent them from using swimming pools for recreation and fitness .The present article focuses on accuracy in drown predict ,notify and saving inventions .Comparison and short falls in research work done so for done .Research gaps were identified in available art work and proposed improvements .This review article focused mainly of drown safety related inventions and research articles in databases .The present study thrown light on how many technologies were being used to predict and avoid drown deaths .

Keywords:*Swimming Pool, Image Processing, Image Processing Technique, Drowning Accident, Drowning Detection System, Drowning Prevention System, Waterside Monitoring System, Drowning Detection, Portable Bather Monitoring Device, Complex Image Processing Technique, Motion Responsive Swimming Pool, Drowning Victim, Responsive Swimming Pool Safety.*

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An Integrated Approach for Satellite Image Resolution Enhancement

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Abstract

Resolution enhancement (RE) schemes (which are not based on wavelets) suffer from the drawback of losing high frequency contents (which results in blurring). The discrete wavelet-transform-based (DWT) RE scheme generates artifacts (due to a DWT shift-variant property). A wavelet-domain approach based on dual-tree complex wavelet transform (DT- CWT) and nonlocal means (NLM) is proposed for RE of the satellite images. A satellite input image is decomposed by DT-CWT (which is nearly shift invariant) to obtain high-frequency sub bands. The high-frequency sub bands and the low-resolution (LR) input image are interpolated using the Lanczos interpolator. The high frequency subbands are passed through an NLM filter to cater for the artifacts generated by DT-CWT (despite of its nearly shift invariance). The filtered high-frequency sub bands and the LR input image are combined using inverse DT-CWT to obtain a resolution-enhanced image. Objective and subjective analyses reveal superiority of the proposed technique over the conventional and state-of-the- art RE techniques.

Keywords:*Dual-Tree Complex Wavelet Transform (DT-CWT), Lanczos Interpolation, Resolution Enhancement (RE), Shift Variant.*

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Embedded Controller Fabricated Anti-Theft Safety Structure for Vehicles

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Abstract

A productive car security framework and possession bound of progression in vehicle highlights through innovation need remained significant worry trendy car enterprises. Numerous individuals need to confront challenges in locking/opening and turning ON/OFF the motor after behind the vehicle key or losing the key. Also, if a vehicle gets taken and utilized for some criminal operations prohibited through the administration then a vehicle proprietor will confront numerous lawful issues. So to handle every one of these subjects, an electronic framework dependent on inserted controller is structured and actualized in a genuine vehicle that doesn't give just vehicle security angles yet gives extra highlights, for example, opening and bolting of the vehicle, and turning ON besides OFF the motor remotely utilizing cell phone. This paper essentially talks about the mechanical parts of such electronic framework.

Keywords: *Automatic Vehicle Security System, Embedded Controller, Global System for Mobile Communication, Hardware Design.*

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Watermarking of Color Image Based on Wavelet and QR Decomposition

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Abstract

In this work, a new image watermarking algorithm on colour images is proposed. The proposed algorithm divides a cover image into three colour bands of red, green and blue. Then the following tasks are done on all three channels separately. First, Each colour band is divided into patches of small sizes then the entropy of each patch is calculated. At this step a threshold is found based on the average entropy of all patches and following is applied to all patches which have entropy lower than the threshold. A wavelet representation of each patch is given by applying a discrete wavelet transform. Then Singular value decomposition, orthogonal-triangulardecomposition, and a chirp z-transform are used to embed a watermark on the cover image. Several signal processing attacks are applied on watermarked images in order to robustness of the algorithm. The Proposed algorithm is compared with one conventional and two state-of the-art algorithms. Experimental results show superiority of the proposed algorithm compare with other algorithmin the area of image watermarking.

Keywords:*Wavelet Transform, Orthogonal-Triangular Decomposition, and A Chirp Z-Transform*

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PAPER ID: ICSMEC-2020/0152

Generation, Utilization and Monitorization of Renewable Energy by Hybrid Micro Grid Via IoT

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Abstract

A hybrid smart grid opens up new avenues for renewable energy like solar power, wind power, etc… based micro grids, to be controlled and accessed by Internet of things technologies. This project is to enhance the Hybrid power grid system in homes, and to connect them to a main grid connecting many other homes. The node owners can purchase or sell the generated/stored power at their homes, using a web interface. A solar cell or photovoltaic cell is a device that converts solar energy into electricity by the photovoltaic effect. Photovoltaic is the field of technology and research related to the application of solar cells for solar energy. A wind turbine is a device that converts kinetic energy from the wind, also called wind energy, into mechanical energy; a process known as wind power. The PIC is whole controller of the project. In this project we use solar panel and wind turbine. The power generated from these two sources is calculated and displayed on the cloud, where in the user can select the particular device to be switched ON/OFF.

Keywords: *PIC Microcontroller, solar panel, ESP 8266, Wind Turbine*

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PAPER ID: ICSMEC-2020/0160

Performance Analysis of Wireless Gesture Vocalizer using ZigBee Technology

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Abstract

Wireless gesture vocalizer is a hand movement based speaking system used for aiding physically challenged people. The main aim of this paper is to analyze the performance of hand movement based speaking system for physically challenged. This device is portable andthis system operation is entirely driven by mems and flexes sensors. Voice module for audio announcements and micro controller, which is programmed with the help of embedded c instructions. The user can wear this devise to hand and with the simple hand movements, he/she can request the basic needs like water, food or medicine by using mems technology.

Key words: *Mems and flex sensors, ZigBee Technology*

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PAPER ID: ICSMEC-2020/0163

Face Recognition and Anti Spoofing System

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Abstract

A face recognition system is one of the biometric information processes, its applicability is easier and working range is larger than others i.e. finger print. Even though there is a wide range of applications to it. There is possibility of threating (spoofing) attack by the hacker's .In our project by using tensor flow model in computer vision and image analytics we trying to make a system that allows for facial recognition and detection of spoofing is performed. We are using raspberry pi 4 model to implement this real time system. In this model face images are captured through webcam and stored in data base with name in raspberry pi .Next time when you face before webcam it will compare your images samples with database. If it is matched with database then it will display the recognized person name and we can listen the name with speaker as output. When the unrecognized person wants to do some malfunction practices. The system is carefully designed, it will not give access to them .To secure our assests and protect our privacy there is a strong demand for this kind of user friendly biometric security system.

Key Words: *Raspberry pi, OpenCV, Face Recognition Technique, Spoofing, Webcam*

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RF and Arduino Based Plant Watering System

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Abstract

Watering plants has been a great time consuming task to most of us. RF AND ARDUINO CONTROLLED PLANT WATERING SYSTEM helps us to water the plants easily without consuming much time. The RF transmitter is used in signaling the RF receiver which in turn sends the logic to the ARDUINO that is powered by the solar energy. Based on logic received from the ARDUINO the motor driver switches ON the motor which pumps the water to the plants.In this project we use the RF module and the ARDUINO in order to make a remote controller to water the plants easily.. Our project also makes use of a renewable energy i.e., the solar energy to get powered.

Keywords: *Plant watering system, RF, ARDUINO*

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Automatic Door Lock Using Face Recognition

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Abstract

Even if every individual is very much involved in their busy schedule, one always looks upon on ones privacy and security. People generally use pins, patterns, finger prints for their primary security access. But, instead of these, face detection and face recognition can provide much more as there exists faces which are natural and unique for a specified individual. Face detection and face recognition has much number of applications and has a very good scope in computer analysis. This paper depicts and characterizes the security access systems to detect an individual and recognize him based on the stored database, and provides him/her an access to enter a highly authorized area. In this paper this is provided by means of Internet of Things (IoT) which is the present trend of the contemporary era. System on Chip (SOC) manifesto as provided in Raspberry pi is used to attain the requirement of the expected which will be achieved by the detection and recognition of a face by means of a Raspberry pi Camera and OpenCV library. The whole work is monitored by personnel in a remote area and has an eye on all the visitants.

Keywords: *Face Detection and Face Recognition, OpenCV, Raspberry pi, Internet of Things (IoT)*

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Design and Implementation Offractional Order PID Controller for Fractional Order Thermal Process

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Abstract

With the continuous innovation and to control the temperature produced by appliances to help the energy consumption. The energy demand and control motor temperature, speed, positions along with the congested transmission systems, fractional order PID[1] is suggested as the best solution So many methods are involved to control temperature but sometimes they fail because of increased temperature. Temperature sensors are used many appliances but due to this failure sometimes accidents happen. To overcome this issue we introduced fractional order PID controller to control the temperature [2] before attending the cutoff level. To design the fractional order PID controller [1] using a genetic algorithm to get better value for the fractional orders of the corresponding systems.

Key words: *FOPID, GA Tuning, PSO, Temperature Control System*

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Copyright Protection and Security to Digital Image Against Different Attacks

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Abstract

As we know it, digital data is in various formats such as text, audio, video, image, graphics, and message or in animated format. When transmitting digital data through a channel, digital data requires security and copyright protection. In this paper, a 2-D digital image is used for experimental purposes. There are a variety of strategies and algorithms that can provide services to protect and protect patents. The combination of the DWT and DCT digital signal path is used to provide a patent protection service and security services can be provided through the AES process using a key of 256 bits. The combination of digital watermarking image and AES process provides authentication, copyright protection, and digital image protection against different attacks such as Dissolution, Gaussian, Salt and pepper noise, JPEG compression.

Keywords— *Gaussian noise, Salt and pepper noise, Median filtering, digital watermarking, AES technique, JPEG compression.*

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A Review Paper on High Speed Vedic Multiplier for VLSI Technology

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Abstract

In the cycle of digitalization, it is required to extension the speed of digital circuits while reducing size and power consumption. In any digital system, multiplication is a essential. One of the important parameters which overcome the attainment of the entire system is the performance of the multiplier unit. Therefore, it is required to design adynamic multiplier unit. To improve the ability of the multiplier unit, it's needed to optimize various parameters such as speed and size. There are different Vedic multipliers algorithms are discussed and compared in this paper for performance optimization.

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Fire Fighting Robot with Navigation Sensors and MWIR Camera in Fire Smoke Environment

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Abstract

This paper presents the design and development of a frame work of fire fighting robot with Navigation sensors and MWIR camera in fire smoke environment. It inscription the water-based extinguishing system for fire using the drizzle gun and pump. For this motive, a water atomizer is used. Network system is created by integrating flame sensor to steer robot to the target direction. The proper steer relies on the obstacle avoidance algorithm. At present, fire extinguish become exciting in a multi-storey building especially. This work gives a solution to extinguish fire automatically to prevent danger in a residential premise and to find objects in the flame where human cannot find.

Keywords: *Automated, Firefighter, Network, Sensor, Midwave Infrared (MWIR) Cameras.*

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Message Display on Notice Board using GSM

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Abstract

In the last couple of decades, communication technology has developed leaps and bounds. It has already established its importance in sharing the information right from household matters to worldwide phenomena. Apart from sharing information, it is also used for remote control of machines and electronic appliances. In our day-to-day life, we use many such appliances at home, office and public places for our comfort and convenience. Every device requires one or the other kind of operation control for which it has a HMI (Human-Machine Interface). Communication Technology not only helps us to exchange information with human beings but also allows us to carryout monitoring and controlling of machines from remote locations. This remote control of appliances is possible with wired or wireless communication interfaces embedded in the machines. The use of "Embedded System in Communication" has given rise to many interesting applications. One of such applications is Public Addressing System (PAS). Many companies are manufacturing audio/video systems like public announcement system, CCTV, programmable sign boards etc. But all these systems are generally hard-wired, complex in nature and difficult to expand. So, by adding wireless communication interface such as GSM to these systems, we can overcome their limitations.

Keywords: *Arduino UNO, GSM, Mobile*

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PAPER ID: ICSMEC-2020/0175

Patient Health Monitoring System using Arduino

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Abstract

In the last decade the healthcare monitoring systems have drawn considerable attentions of the researchers. The prime goal was to develop a reliable patient monitoring system so that the healthcare professionals can monitor their patients, who are either hospitalized or executing their normal daily life activities. In this project we monitor the patient's health conditions like monitoring temperature and heartbeat. At patient side we have, Arduino micro controller, temperature sensor and heart beat sensor, buzzer, LCD. This micro controller will keep updating patient's body temperature and heartbeat on LCD. In this way doctor take action immediately action if necessary. To sense the temperature and heartbeat sensors are connect to the fingertip of patients.

KEYWORDS: — *Arduino Microcontroller, Temperature Sensor and Heart BeatSensor, Buzzer*

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An Essential Executions and Working Standards of Remote Sensor Systems

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Abstract

Remote Sensor Systems (WSNs) comprise of countless Sensors, which are minimal effort little gadgets with restricted capacity, computational ability and force. They can give ease answer for verity of certifiable issues. They are furnished with different detecting gadgets and little non battery-powered batteries. For the most part, these sensors are built that out of nowhere dynamic to accumulate the necessary information for certain occasions when something is identified, and afterward remaining to a great extent dormant for significant stretches of time. Here the examination on sensor's structure, its design, its applications and their difficulties were sought after. The examination on different directing conventions for sensor systems and characterization for the different methodologies were additionally sought after. The significant characterizations of steering convention checked on are arrange structure, way foundation, convention activity and initiator of correspondence. Every one of the steering plans and calculations has the shared objective of attempting to show signs of improvement throughput and to expand the lifetime and productivity of the sensor arrange. Consequently, this work has noteworthy significance, to examine and considering while at the same time structuring a Remote Sensor Steering convention.

Keywords: *Remote Sensor Systems, Steering Conventions, Difficulties, Planning issues of WSN*

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Detection of Lung Cancer in CT Images using Image Processing

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Abstract

Cancer is one of the most serious and widespread disease that is responsible for large number of deaths every year. Among all different types of cancers, lung cancer is the most prevalent cancer having the highest mortality rate. Computed tomography scans are used for identification of lung cancer as it provides detailed picture of tumor in the body and tracks its growth. Although CT is preferred over other imaging modalities, visual interpretation of these CT scan images may be an error prone task and can cause delay in lung cancer detection. Therefore, image processing techniques are used widely in medical fields for early stage detection of lung tumor. This paper presents an automated approach for detection of lung cancer in CT scan images. The algorithm for lung cancer detection is proposed using methods such as median filtering for image preprocessing followed by segmentation of lung region of interest using mathematical morphological operations.

Keywords:*CT, Lung cancer, Region of interest, SVM.*

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Comparison Analysis of Feature Extraction from the ECG Graph Reports

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Abstract

Predicting the explanation and rate of exactness on heart attack from ECG reports is a significant issue. The robotized examination strategy will age out the issues of common people in understanding the reason for heart attack. This methodology has put a genuine conversation stage for the investigation of a Content-Based Image Retrieval System (CBIR) for ECG reports. As the energetic development of securable picture data and a most extreme necessity for information documentation ordering and correction, numerous researchers, specialists, and researchers worked a great deal on the ECG chart report. This paper offers a similar examination of the few procedures and techniques that were utilized and applied to remove features from ECG chart reports. Correlation examination will support the looks into and researchers to pick an appropriate strategy or technique for future extension.

Index Terms -*ECG reports, feature extraction, heart attack, CBIR*

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Consuming CMOS VLSI Design in Recent Trends for Low Power Consumption

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Abstract

The transformation of remote correspondence, versatile and cell phones has reliably requesting the originator to plan the gadget for low force utilization. Force misfortune turns into a principle boundary of incorporated circuits, especially for compact PCs and individual correspondence frameworks. There has been reliable innovative work to improve the force utilization and execution of the gadget in different degree of reflection beginning from veil format – circuit, Gate and Register level-to framework level. Different methodologies including equipment and programming are recognized to structure the VLSI Circuit with least force utilization and enhancement between the force and execution. This paper breaks down the fundamental wellspring of intensity guilty pleasure in CMOS circuit and theireffect.

KEY WORDS: *Static Dissipation, Dynamic Dissipation, Power-Delay.*

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Effective Implementation of Human FPGA Video Stream Detection

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Abstract

Recognizing people is a crucial and troublesome assignment PC vision application, for example, a police examination, a vehicle human checking and observing. Human identification in video transmission It is significant in overseeing open wellbeing. In such safety connected belongings that distinguish an item in the video, the successions are a great deal critical to comprehend the conduct of moving articles the typically utilized in the procedure of lower deduction. The info information is pre-prepared utilizing an altered middle channel e Haar change. The district of intrigue is extricated utilizing a lower deduction calculation with outstanding proposals expelled utilizing the edge procedure. The proposed design is encoded utilizing standard VHDL language and execution is confirmed on Spartan-6 FPGA card. The consequence of the correlation shows that the proposed design is better than the current one strategy both in equipment and in picture quality.

Keywords: *Adaptive Threshold, Background Subtraction FPGA Implementation, Human Detection, Modified Median Filter.*

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Smart Wireless Video Surveillance Robot

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Abstract

An embedded web server creates a simple way for monitoring. For designing the system we require remote pc together with the web facility at the remote locations. If we don't have internet connectivity still we can use the unit using Wi-Fi. This implements a system which is portable, low cost & having less maintenance. The reporting of this real-time data corresponding to the process plants is therefore be of great use which is affordable for future analysis. In order to make the IP-based systems affordable for the people having a less budget. Raspberry pi model B for making this real-time surveillance which makes it possible to live streaming with connectivity. As the internet of things is the concept, newly introduced within the field of electronics. The concept is about handling the items with the utilization of internet and therefore the best model for these applications is raspberry pi. Raspberry pi serves good at connectivity simply plugging Wi-Fi dongle into one of its port. A robot is a machine which is designed to perform a particular task supported the programming done by the user. It can perform multi task at a time. Now a day's most of the industries are automated. Robots are getting used in sort of industrial applications for various activities like pick and place, painting, assembling of subsystems and in hazardous places for material handling etc.

Keywords: *Raspberry pi, Webcam, DC Motor, HTML, LINUX*

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WEKA Tool used in Air Pollution Study

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Abstract

Toxicity in the air is the largest problem in the whole world. The main reason of air pollution is manufacturing companies, vehicles, tree cutting, etc. many companies and environmental research centers are using ML tools for analyzing the dataset to take quick action. WEKA is software which is used to analyze real-time big dataset like industrial, medical, bank, shopping mall, school, colleges. In this paper WEKA tool used to analyze the air pollution dataset with different machine learning techniques such as multilayer perceptron and random forest tree for better solution.

Keywords: *Air pollution dataset, WEKA, MLP, RFT*

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IoT with Android Application Study for Industrial Air Pollution

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Abstract

Now a day's industrial pollution is one of the biggest questions in front of the world we know industries are helping to grow our technology but we also know its side effects because the main region of global warming, decrease ozone layer some of the symptoms of increasing air pollution into the atmosphere. Government organized many rules to overcome the industrial air pollution but day by day toxic gases are increasing into the air so the industries follow with technology such as the combination of IoT and Android becomes good result to monitor the toxicity into the atmosphere and give the best result of the day, night period including whether, date and time, however, android helps to alert the people or industrial workers about obnoxious level, IoT helps alarm system with blinking light, android support various IoT sensors few sensors we are studied in this paper which are widely used in industrial work.

Keywords: *IoT, Android, air Pollution, air pollution sensors, MQ2, MQ7, MQ135, MQ138.*

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Android App for Inventory Management System in Supermarket

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Abstract

The retail sector has implemented various inventory management technologies globally and many grocery stores now utilize forecasting instruments to determine future profits. In India, however, there are several regular shopping activities through local shops. The managers of these mum and pop stores typically don't have the money to invest in advanced tools or build an inventory control program. This goes without saying that the same applies to every distribution plan. As a consequence, many of the company owners end up with a lot of worthless and unprofitable things that contribute to loss of income. A very cost-effective and open approach is a smartphone application which provides a point-of - sales device with all its functionality and visibility on possible sales. It will allow shopkeepers to control their existing stock revenue and invoicing. The predictive market model will assist you in improving the offering and delivering innovation, guaranteeing full income. When a shop contains such items that fulfill consumer requirements, customers' scope can expand. The Economy Times in May 2019 reported its report that projections found that the amount of smart phone users in India would rise from 84 percent in 2017 to 859 million by 2022, from 468 million to 859 million by 2017. Therefore, it would prove to have a smart phone application to support local shoppers because it opens them to all of the advantages

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Design and Implementation for Crosstalk Noise Avoidance in VLSI Circuits Using Fibonacci Numeral Codes

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Abstract

To increase the interconnect resistance, length, and inter-wire capacitance we are going with deep sub micrometer CMOS process technology which contribute to large on-chip propagation delay. When the data is being transmitted over interconnect determine the propagation delay where the delay is observed to be extremely significant when adjacent wires are transitioning in opposite directions (i.e; crosstalk transitions) as compared to transitioning within the same direction. As a result, the degradation of high-speed digital circuits thanks to crosstalk. Crosstalk can be defined to be a phenomenon by which logic transmitted in VLSI circuit or net/wire creates undesired effect on the neighboring circuit or nets/wires. Thanks to capacitive coupling as the reduction of crosstalk has become more important for the high-speed digital circuits. We are reducing the crosstalk by exploiting Fibonacci number system. We propose a family of Fibonacci coding techniques for crosstalk avoidance relate them to a number of the prevailing crosstalk avoidance techniques by using the CADENCE TOOLS and simulate the codes for the reduction of crosstalk.

Keywords: *On-chip Bus, Crosstalk, Fibonacci Coding.*

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Cleaning Garbage Under the Water by Robot using IoT Technology

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Abstract

A rapid increase in population has led to improper waste management not only in cities but also in the seas, lakes, and rivers. Because of the condense and un-degradable waste, the toxicity in the water level has been increasing since the past few years. Due to this carelessness there aroused a problem not only for humans but also for the aquatic animals which dwell in those sources. Keeping the complication in mind we developed a solution called "CLEANING OF GARBAGE UNDER THE WATER BY ROBOT USING IoT TECHNOLOGY" which works on IoT technology. The devices like Node MCU ESP8266, motor drivers L293D, DC motors, LED lights, propeller's, bin, belt, 9v battery are used to construct the project. The power supply for the robot is given using a 12v battery and to control this robot we are using an application known as blynk that should be installed in android device, the commands we give through this application are received by pre-installed Wi-Fi module present in Node MCU and as per the commands the robot moves and starts collecting garbage, which presents on the surface of the water. This water robot can also be used for monitoring the sea levels and water samples for Research and Testing.

***Keywords*:—** *IoT, Toxic, Node MCU, Motor DriverL293,Blynk.*

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Comparison of Wavelets for EEG Denoising

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Abstract

EEG signals which are used in recognition of diverse cerebrum diseases is prone to divergent noises because of its small amplitudes. In this paper, we are going to denoise the EEG signal by executing the amalgamation of stationary wavelet transform (SWT) and discrete wavelet transform(DWT). We have also incorporated universal threshold estimation (UTE) and statistical threshold estimation(STE) for the wavelets symlet,haar,coif and bior4.4.To examine the fulfiment of these wavelets, we used four perform -ance parameters namely Signal to Artifacts Ratio (SAR),Correlation Coefficient(CC) and Normalized Mean Square error (NMSE). MATLAB has been used to implement the denoising of EEG signal.

Keywords: *EEG, denoising, SWT, DWT, UTE, STE, SAR, CC, NMSE, MATLAB*

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Innovative Home Locker Safety Security Structure by Arduino UNO Based on Expansion of GSM

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Abstract

At present the main stream of the horse confronting issue about how to protect their own effects like adornments, significant records and cash reserved in home because of the burglary in houses, workplaces and in associations too. Hence forth, a large portion of the house individuals are taking chronological registries and protect storage spaces in homes to give security to their note worthy things. "In any case, even still they worked with manual activity of lock and key framework without giving any data to the client when burglary is occurred by breaking them". Thus, an endeavor has been made to create propelled ready home security framework with Fingerprint and Password confirmation to open or close the entry way framework and furthermore sending the message if any miss activity will be performed by other sutilizing GSM Technology with shrewd versatile. The current frame work gives the better security to a wide range of houses and further more this frame work has exceptionally prudent expense, with the goal that it can moderate to all. The framework effectively created, executed and tried in our research center and we originate that its employed is acceptable.

Keywords: *ArduinoUno, GSM.Unique mark, Sesnor Module,MultiSegments*

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Extraction of Bridges from Satellite Images using the Superimposition of K-means clustering and Watershed algorithm

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Abstract

Bridges are the hubs of transportation, so it is important to identify and locate bridges for satellite image interpretation. Satellite Images contain very important information about geographical features such as roads, rivers, bridges, buildings, etc of earth. Such features are required for military as well as civilian applications. However, satellite images are often corrupted by different types of noise and detection of details is a nontrivial problem. To enhance luminance and chromatic components the suitable denoising algorithms have to be incorporated for the images before detection of features is done. In this paper, segmentation methods such as segmentation of K-means and segmentation of watersheds are used to extract the bridge material from satellite images. In satellite bridge images, segmentation is performed after pre-processing based on the luminance and chromatic components of the various regions. Bridge part is extracted using K-means segmentation methods and the watershed segmentation methods by segmenting different regions. It performs the superposition of segmented images. The results for various sets of images will be presented here. The evaluation of their performance is based on two quality metrics such as mean square error and peak signal-to - noise ratio.

Keywords– *noise identification, de-noising, enhancement, K-means clustering, watershed segmentation, image quality metrics.*

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MAC Unit Design Using Vedic Multiplier and Kogge Stone Adder

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Abstract

Binary multipliers and addresses are used in the design and development of Arithmetic Logic Unit (ALU), Digital Signal Processing (DSP) Processors, Multiply and Accumulate (MAC).The objective of this project is to implement digital multipliers based on the concept of Vedic mathematics. In order to develop a digital multiplier, Urdhva-tiryakbyham sutra of Vedic mathematics is used to implement vertical and cross wise operations. Since these are digital multipliers, they can be implemented on FPGA board. A 32-bit Vedic multiplier has been simulated in Xilinx ISE 14.7.

Keywords: *Vedic multiplier, Kogge stone adder, Vedic mathematics, MAC*

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Design and Development of Smart Robot Car for Border Security

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Abstract

The proposed work presents designing and development of a multipurpose smart robot car using wireless camera detecting alive humans, harmful gases, metals, at remote areas and sends information to main location. The proposed system uses machine intelligence to provide immediate response from sensors. The robot system is equipped with sensors those can alert the user when some anomaly appears within the range while robot is working and the proposed system is designed by using Raspberry Pi-3.

Keywords: *wireless camera, smart robot car, machine intelligence, sensor, Raspberry Pi-3.*

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RFID Based Smart Vehicle Access System

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Abstract

This Paper Describe designing of automated secure vehicle access system using RFID technology. Additional security is provided through Helmet wearing indication. Locking Security is the bigger concern for vehicles. Recognizing the need of security we developed an automated security vehicle access system with user friendly access.

The main controlling device of the whole system is a Microcontroller. RFID reader, IR sensor (to detect helmet) and DC motor (vehicle ignition indication) are interfaced to Microcontroller. The RFID card will be access as a license to start the vehicle. The owner will have an RFID tag, When the RFID reader gets unique data from RFID tags which will be processed by the microcontroller and validates it. The Microcontroller asks the user to wear helmet and validates it through the IR sensor. When the user wears helmet then only he can start the Bike. If the rider removes helmet in the middle of the ride the controller alerts the bike rider through an audible alert, he ignores and still riding the bike without wearing helmet then the ignition will be off. To perform the task, Microcontroller is loaded with an intelligent program written in embedded 'C' language.

Key Words: *RFID (Radio Frequency Identification) MIC (Micro Controller Interfacing), Arduinoide Compiler*

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Automatic Car Wipers Using Arduino Microcontroller

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Abstract

A car wiper is a device which is used to remove droplets of rainwater from a windscreen. Nowadays, each and every vehicle is provisioned with the wiper to avoid the accidents and to decrease the human intervention in controlling the wiper to ensure luxury. Wiper generally consists of a metal arm and a long rubber blade. In some vehicles, pneumatic power is used. Here, the metal arm gets powered by an electric motor. The blade moves in clock-wise and counters clock-wise direction on the glass, pushing the water from the surface of the glass. Two synchronized radial type arms are used in most of the automobiles, whereas pantograph arms are used in commercial automobiles. Wipers are automated in many ways. These days' automobiles consist of a series of mechanical parts which are automated by an electric motor. In this, we propose an unmanned wiper which senses rain and starts automatically and switches off automatically when the rain stops. By using this, there will be no need for physical intervention of human to control the speed of the wiper. For this purpose, we use a rain sensor to detect the rain and then the signal is managed by Arduino and takes the required action. Over the last ten years, the advancement in the automobile industry has been increased to find modern techniques to increase safety. There are many reasons behind the vehicles which are not equipped with automatic car wipers. Many reasons in the sense, the car wipers are too expensive to fit in economical automobiles and they are too unreliable for new automobiles. Many automobile companies made an attempt to construct the automatic car wiper at low cost which is not only economical but also efficient. This project is all about the attempt they tried to construct.

Keywords: *Electronic motor, Arduino, Automobile Engine Control System, Dital Video Player*

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Automatic Irrigation System for Crop Field Monitoring using Arduino and GSM

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Abstract

The paper aims at developing an intelligent system capable of monitoring different parameters in the irrigation system through GSM. The live parameters and status of sensors can be monitored on the LCD screen available in the system. The Alerting of the sensors is done using GSM with the help of SMS format. The controlling device of the whole system is done using Arduino Microcontroller. Whenever the sensors unit gets the input from respected sensors like, soil moisture sensor, DHT11 (combination of temperature and humidity sensor), these inputs are fed to the Arduino microcontroller. The Microcontroller performs appropriate task, and sends the Alert messages through GSM modem.

Key Words: *SMS, GSM Network, DHT11, ATMEGA 328 Microcontroller.*

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Synthesis of Inverse Synthetic Aperture Radar (ISAR) Using Matlab

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Abstract

High-resolution radar images can be achieved by employing synthetic aperture radar (SAR) or inverse synthetic aperture radar (ISAR) techniques. It can be shown that SAR and ISAR have the same underlying theory but different configuration. Here the specific problem of aircraft ISAR imaging using ground-based radar is Addressed. Three ISAR imaging scenarios, namely ISAR imaging with the normal motion compensation, ISAR imaging with the EM model, and ISAR imaging with GPS data are studied, with emphasis on GPS-aided imaging. As motion plays a critical role in ISAR, we study how the motion compensation should be done to focus the echoed data into a 2-D image. Besides the normal motion compensation, which uses the data sets themselves, here GPS-aided motion compensation is proposed and studied in detail, which uses GPS motion data of the aircraft as an additional input. Comparison of these two cases helps to expose problems of the normal motion compensation and to form a better understanding of ISAR imaging process. EM model-based imaging results can be regarded as a third reference for the comparison. Neither GPS-aided imaging nor comparison between it and normal motion compensation imaging or EM model-based imaging has been reported, therefore this work is both initiative and difficult in this sense. After giving problem definition and objectives of the project, this final report presents the underlying theory of ISAR imaging. Then emphasis is on the implementation and results.

Key words: *SAR, ISAR, radar imaging, HRR*

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Leaf Disease Detection using Image Processing

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ABSTARCT

Plant leaf diseases and destructive insects are a major challenge in the agriculture sector. Faster and an accurate prediction of leaf diseases in crops could help to develop an early treatment technique while considerably reducing economic losses. Modern advanced developments in Deep Learning have allowed researchers to extremely improve the performance and accuracy of object detection and recognition systems. In this paper, we proposed a deep-learning-based approach to detect leaf diseases in many different plants using images of plant leaves. Our goal is to find and develop the more suitable deep learning methodologies for our task. Therefore, we consider three main families of detectors: Deep Network which is one of the important networks also available in MATLAB. The process in detailed explained in proposed.

Key words: *Deep learning, Faster R-CNN*

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Automatic Fire Extinguishing Robot

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Abstract

Fire Extinguisher Robot is a Hardware based model used to automatically extinguish the fire during fire accidents. A Robot has been developed which features to move in the direction with respect to the fire intensity. "The Robot shield is coated with calcium silicate boards that are capable of withstanding very high temperatures". "The principle used, was designed and experimented at a temperature of 300°C the temperature sensing capability of the robot is varied by heating the Thermocouple ends to a cut-off temperature, above which the robot starts responding to the fire". The Robot finds its applications in Rescue operations during fire accidents where the possibility for service men to enter the fire prone areas is very less and also during wars to perform rescue functions. "The most added advantage of this Robot is that it turns ON automatically as it detects the fire around its surroundings, using Thermocouple and tries to extinguish it by moving in the direction with respect to the fire the temperature sensor provides a backup to the Thermocouple, if needed in vast circumstances".

Key-Words: *- Fire extinguishing robot, Fire fighting robot, Internet of things, Wireless control robot, Arduinoyun microcontroller, Arduinouno microcontroller.*

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Performance Analysis of Grating Lobephased Array Antenna

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Abstract

An antenna Array is a configuration of individual radiating elements that are arranged in space and can be used to produce a directional radiation pattern. Single element antennas have radiation patterns that are broad and hence have a low directivity and wide beam width compared to when the number of element of antennas are increasing, that is not suitable for long distance communications with more directive radiation. A high directivity can still be achieved with single element antennas by increasing the electrical dimensions (in terms of wavelength) and hence the physical size of the antenna. Generally, this paper focuses on uniform linear phased array, an array which consists of equal-spaced elements (d), which are fed with current of equal magnitude (i.e. with uniform weighting) and can have progressive phase-shift (theta) along the array. The existence of grating lobes and the mechanisms that can be implemented to reduce these grating lobes are also the main points of interest in this paper. The impact of variation of phase angle, number of elements and inter element spacing are also described with supportive simulation using MATLAB software.

Keywords: *Phased Array Antenna, Gain, Directivity, Grating Lobes*

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Arm Spy Robot

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Abstract

Main aim of our paperwork is to study development of the P.C operated spy robot. The robot is in form of a vehicle mounted with a web cam, which acquires and sends video to a TV or PC. The movement of vehicles is controlled by microcontroller. We can't forget 9/11 when 101 people including nine foreigners & 14 policemen have lost their lives while about 300 people were injured in the worst terror attack seen in country in which desperate man fired indiscriminately at people. Our idea is to make a robot to tackle the hostage situation & the worst conditions which cannot be handled by human being. Humans are moved out from direct exposure to potentially dangerous situations. Robotic system can perform many security and surveillance functions more effectively than humans.

Keywords: *Robotic System[1], Micro Controller[2], Web Cam[3]*

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Automatic vehicle Accident Detection and Instant Messaging using GPS and GSM

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Abstract

Day by day man improving technology and introducing new technologies to make human lifestyle so simple, safety and secure. But still we have some problem whenever we face some sudden unexpected situation occurs like accident. We are losing so many lives because of delay in reaching the hospitals or intimating to ambulances. This paper is designed to inform about the accident location that has occurred to concerned persons. The main application of this system is track the vehicle using the GPS modem. This modem gives the information about its position whenever required in the form of latitudes and longitudes. This is done with the help of the GPS satellite and the GPS module attached to the vehicle which needs to be tracked. GPS works in any weather conditions, anywhere in the world, 24 hours a day.GPS receiver must be locked on to the signal of at least three satellites to calculate a 2D position (latitude and longitude) and track movement. Whenever the accident occurs to any vehicle with any other vehicle or with something else, it will be detected by the input sensors, this information is sent immediately to the controlling unit i.e. to the ambulance using a GSM modem by. The provision to change the mobile number to which the message has to be sent is also provided in this system.

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Assistive Interface Stick for Visually Disabled People

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Abstract

Visually disabled persons finds find it more challenging to move out independently. There are millions of blind people in this world who are always in need of helping hands. The smart walking stick that we have designed will help the blind society by providing more convenient means of life and to move around independently. The stick consists of one ultrasonic sensor, soil moisture sensor, temperature and humidity sensor, camera and earphones. The ultrasonic sensor is used for obstacle detection. The temperature and humidity sensor are used to measure the humidity and temperature. The soil moisture sensor is used to measure the volumetric water content in soil. The camera is used for text and object recognition. Thus, it works as a virtual eye for blind people. The output will be from an earpiece.

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Signal Transmission Over FSO Link Using BPSK Modulation

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Abstract

FSO might be a correspondence framework any place free zone goes about as medium between handsets which they should be in LOS for Triple Crown transmission of optical sign. Medium might be air, space or vacuum. The balance of BPSK is done utilizing a parity modulator, which increases the 2 signs applied at the info. The yield sign wave of the modulator will be the immediate info transporters or the altered 180 degree stage moved information bearer, which is an element of the information signal. In existing technique, the perceive abilitygo is up to 0m by utilizing Quadrature Amplitude Modulation. Here we will give perceivability go from 100 to 200m by utilizing BPSK regulation. The outcomes are Visibility Range, Bit Error Rate, Eye Diagram.

Keywords: *Free space optical communication, EDFA,RAMAN, Hybrid amplifiers.*

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PAPER ID: ICSMEC-2020/0210

Intelligent Border Security Intrusion Detection and Auto Destroy System using IOT

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Abstract

Border areas are generally considered as places where great deal of violence, intrusion and cohesion between several parties happens. This often led to danger for the life of employees, soldiers and common man working or living in border areas. Further geographical conditions like mountains, snow, forest, deserts, harsh weather and water bodies often lead to difficult access and monitoring of border areas. A motor-controlled spot light with infrared and laser gun is used to illuminate under various conditions at the site. System also integrates sound sensor to detect specific sounds and motion sensors to sense suspicious movements. Based on the decision a buzzer and electric current through fence for further protection can be initiated. Sensors are be integrated through IOT for an efficient control of large border area and connectivity between sites.

Key words: *Node MCU, Ultrasonic sensor, Fire sensor, Temperature sensor, DC Motors, Smart Phone.*

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Grocery Replenish System

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Abstract

For the Smart city application we explicitly center around IoT, The point of this paper is to causes us to keep up the savvy staple administration which is essential prerequisite for each family individual. Here we are going to plan the staple thing estimation in a compartment by utilizing ultrasonic sensor of strong or fluid substances as well as temperature measurement using temperature sensor. Smart grocery system is a smart and new way of grocery shopping that acts as our helper and re-defines the approach towards grocery shopping. For an oversized range of various heterogeneous end systems, the internet of Things (IoT) could be ready to incorporate seamlessly and transparently .Whereas it also provides open access to choose subsets of information for an event of digital services. Therefore building a general structure for the IoT is actually a propelled task, in the fundamental owing to the phenomenally monstrous sort of administrations, gadgets and connection layer innovations, which will be worried in such a system.

Keywords:*IoT, Grocery Management, Smart*

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FPGA Implementation of Viterbi Decoder for OFDM Application (LDACS1)

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Abstract

In this project, Orthogonal frequency division multiplexing (OFDM) system's baseband processor is implemented. Ofdm is a modulation format that's being employed for several of the newest wireless and telecommunication standards. In order to resolve the bandwidth efficiency problem, OFDM was proposed, where the various carriers are orthogonal to each other. For Ofdm system module, there's a desire for an efficient encoder and decoder technique. Therefore it's meaningful to style a system which is predicated on the standard wireless communication. For this, during this project we select Field programmable gate array (FPGA) implementation of convolutional encoder and viterbi decoder to verify the model. Verilog HDL language is employed to present a detail design for the simulation, and verify on the Spartan3/Vertex5 Fpga [1]. A viterbi decoder uses the viterbi algorithm for decoding a bit stream that has been encoded employing a convolutional code or trellis code.
In this project also the appliance of OFDM, LDACS1 chain to be coded in MATLAB. We'll simulate LDACS1 physical layer employed in aircraft transmitter and ground station receiver. LDACS is under development as data link communication between aircraft stations and ground station for traffic control and maintenance. LDACS stands for L-band digital aeronautical communication system. LDACS1 physical layer for the reverse link is split into transmitter part employed in as and receiver part employed in ground station.[2]

Keywords– *OFDM, Wireless Communication, FPGA, Convolutional Encoder, Viterbi Decoder, Verilog, Spartan3, Vertex5, LDACS1, Matlab, L-band*

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Arduino Based Bluetooth-Controlled Rover

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Abstract

All-terrain rovers are increasing their popularity day by day, along with their purpose. The project aims to design an Arduino based Bluetooth (& mobile-app) controlled bot. This Arduino-car contains an Arduino microcontroller with basic mobility features. Arduino programs contain instructions mediating between Android (controller) and Arduino car. Android mobile controller application uses different mobile sensors to supervise motion. The program has been successfully compiled, and uploaded to the Arduino microprocessor through the Arduino IDE after a proper check of logic to decrease the chance of any loss / damage of hardware. We use an android application that will provide the user an interface to interact with the Arduino powered car. The interface is easy to use and provides continuous feedback from the Arduino microprocessor through the Bluetooth after giving instructions to the Arduino for various actions through the interface via Bluetooth module. The android application is downloaded from the app store that provides us with more capability & stability. After carrying out all the above mentioned steps we have to test this project thoroughly and check for errors & bugs in the microprocessor program, if any. Only after performing the test we can say that we have been able to create a bot as per our target specifications described.

Keywords: *Arduino Nano, Bluetooth Module (HC-05), Motor Driver Module (L293D), BO Geared motors & Wheels, Servo motors, Jumper Wires, Chassis for the Rover, Bluetooth Electronics' Android Application.*

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Automatic Street Light On/Off with SMS Controlling and Failure Detection and Indication

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Abstract

Nowadays, human has become too busy, and is unable to find time even to turn off the light switch wherever not necessary. This project aims at designing and executing the advanced development in embedded systems for energy saving of street lights. The present system is like, the street lights will be switched on in the evening before the sun sets and they are switched off the next day morning after there is sufficient light on the roads. This paper gives the best solution for electrical power wastage. Also the manual operation of the lighting system is completely eliminated. In this proposed method, two sensors are used which are Light Dependent Resistor LDR sensor to indicate a day/night time. The microcontroller IC16F877A is used as brain to control the street light system, where the programming language used for developing the software to the microcontroller is C-language. Finally, the system has been successfully designed and implemented as prototype system.

Key words: *Microcontroller IC16F877A, LDR, GSM*

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Design and Analysis of Multi-Hop Patient Monitoring Using WBAN

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Abstract

A Wireless Body Area Network (WBAN) is a particular reason sensor organize intended to work independently to associate different clinical sensors and apparatuses, situated inside and outside of a human body. A WBAN could permit a client to store its gathered information on his/her PDA (Personal Digital Assistant) or iPod or some other convenient gadgets and afterward move those data to an appropriate PC. Future uses of WBAN acquaint various prospects with improve the medicinal services and sports preparing offices. The information from sensors are transmitted to the PCU (Patient Coordinator Unit-A wearable gadget that can be conveyed or wearable by the patient). The PCU totals sensor information and transmit them to the CCU (Central Coordination Unit). The CCU goes about as a middle of the road arrange gadget that forward the gathered clinical information to a patient database (DB) where remote observing gadgets can recover patients' information for human services callings. Every patient body shapes a PAN (Personal Area Network) where PCU goes about as the PAN facilitator. Also the CCU goes about as the PAN organizer for all PCUs which can be considered as a subsequent level system. In this paper we are dealing with the some analysis of the data Transmission Between different nodes, Packet ratio , Transmitted Power, Packet loss, Delay and data generation.

Key words: *WBAN, PAN, CCU, PCU, Medical sensors, Zigbee*

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IoT Based Water Metering System with Theft Penalty

(Every drop counts)

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Abstract

In urban areas, the water supply to residence and commercial establishment are provided at a fixed flow rate. There are incidents of excess water drawing by certain customers/users by connecting motor-pump sets to the water lines which is considered as water theft. In this project it is proposed to develop an IoT based water metering system and theft prevention systems by recording the flow rates at the customer/user end. The main aim of the project is to design a smart water metering system using IoT and flow sensor. The water bill and the amount of water consumed by user in liters are displayed on LCD;Wi-Fi module is used to send the data to Thing Speak IoT website.

Keywords: *Flow Rate, Motor Pump, Flow Sensor, Thing Speak IoT.*

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Edge Recognition Performance of Image Processing by Repetitive Improvement Wavelet used for Traffic Control Problem

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Abstract

Traffic issue isn't joking and tallness issue of mankind. Traffic issue result time-waste and cause the development in sullying level. In case this troublesome will continue than world air will be at critical danger. For the improvement of the traffic issue particular sort of edge recognizable proof technique are used. One of the issues in the edge distinguishing proof strategy is the removal of racket and healthiness from the image during getting ready. In this paper we use iterative overhaul wavelet change with the edge acknowledgment methodology (careful) for keeping the false ID of picture least. The objective of this strategy is to improve the traffic issue and the area of emergency vehicle.

Keywords: *Canny, EdgeDetection, ImageProcessing, Iterative Enhancement Wavelet Transformation*

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Secure Biometric Authentication Based on Separation of Image Processing Using Computational Geometry Algorithms

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Abstract

It presents the combination of three biometric highlights, for example iris, palm fingerprints and fingerprints, in a comparing score level engineering utilizing the weighted total score strategy. The highlights are removed from pre-handled iris pictures, palm prints and fingerprints. These qualities of an inquiry picture are contrasted and persons of a database picture to get relating scores. The separate scores created after the game is approved to the union structure. This module comprises of three principle stages, specifically standardization, age of similitude scores and converging of biased scores. The last score is utilized to proclaim the individual as bona fide or not to confirm with the examination of the mystery key.

Keywords: *"Multimodal, Multi-Resolution, Curvelet Tranform, Ridgelet Transform, Score Mixture, Weighted Similarity".*

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Home Automation using Arduino and Internet of Things

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Abstract

The commitment of innovation to the world is monstrous and the mechanical headways which have been going on ceaselessly are unquestionably making our lives simpler. Sooner rather than later, everything on the planet will be computerized as individuals will invest less time doing basic errands. The point of this paper is to plan and build up an arrangement of Home Automation utilizing Internet of Things (IoT). This will be a minimal effort and dependable framework which is made utilizing Arduino Uno Microcontroller and we use esp8266-01 Wi-Fi module. With the assistance of this framework we can control all the home apparatuses, for example, Television, Air Conditioner, Fan, Light, and so on. An individual would not need to invest energy controlling every one of these gadgets after they begin utilizing this Home Automation System.

Key words: *Arduino Uno, Internet of Things, Home Automation System*

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IoT Based Meteorological System by using Raspberry-Pi

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Abstract

The project aims at building a system which may be used on universally at any scale to watch the parameters during a given environment. Different physical and chemical factors, like temperature, ratio, and pollutants then on, can affect works of art on display. Each factor doesn't act individually, but its effect are often enhanced or accelerated by the presence of other factor. With the evolution of diminished sensor devices including wireless technologies it's possible to remotely monitor the parameters like temperature, humidity, smoke in air and lots of more .We are going to be using raspberry-pi 2 as main board and sensors like temperature humidity and smoke will collect all the important time information from environment and this real time information will be fetched by the online server and display it. User can access this data from anywhere through Internet. this will be checked via the phone application or by logging into the server to see the newest values updated within the database and compare those values with past values. thanks to unnatural and unpredictable weather farmers now days face large financial losses thanks to incorrect irrigation methods and wrong prediction of weather and therefore the amount of pesticides and insecticides used for crops. this technique provides genuine information to extend their crop production in agriculture field.

Key words: *Raspberry-Pi, Sensors, Web server, Weather.*

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Patient Body Vitals Monitoring and Alerting System with Raspberry-Pi and Multi channel Wi-Fi Communication

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Abstract

Extensive research is done on present technology on wireless patient monitoring devices .This paper proposes intelligent Wi-Fi enabled wireless device to seamlessly monitor patient vitals and transmit the data continuously to another display device connected to internet .The algorithm proposed is hardwired and fail proof and sensors were so advanced that minute deviation can also be detected and send email to stored mail ids instantly.

Key words: *Raspberry Pi, Wi-Fi Enabled ,Wireless ,Medical , Patient-Monitoring , Blood-Pressure ,Body-Temperature , Human-Vitals , Sensors ,Biomedical-Device .*

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Solar Powered Agribot for Irrigation and Smart Farm Monitoring using IoT

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Abstract

Agriculture contributes to a major portion of India's GDP. Two significant issues in current horticulture are water shortage and high work costs. These issues can be settled utilizing horticulture task computerization, which energizes accuracy agribusiness. Thinking about wealth of daylight in India, this paper talks about the structure and improvement of an IoT based solar powered Agribot that mechanizes water system task and empowers remote homestead checking. The Agribot is created utilizing an Arduino microcontroller. It harvests s solar powered based force when not performing water system. At each detecting point, information procured from various sensors is handled locally to choose the need of water system and in like manner ranch is watered. Further, Agribot goes about as an IoT gadget and transmits the information gathered from different sensors to a remote server utilizing Wi-Fi interface. At the remote server, raw data is prepared utilizing signal handling activities, signal processing operations such as filtering, compression and prediction. As needs be, the investigated information measurements are shown utilizing an intelligent interface, according to client demand.

Keywords: *IoT, Agribot, Wi-Fi Link, Arduino Microcontroller.*

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Arduino Based Parking LOT

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Abstract

The parking is limited in almost all the major cities in the world which leads to traffic congestion, air pollution, fuel wastage and driver frustration. Due to lack of space available for parking the vehicles, the driver not knowing the parking slot in malls and many other places, struggles to park his/her car. The major challenges faced by many vehicle owners in big cities are where to park their vehicles. One can save precious time and fuel if the parking slot is known in advance. Many times, driver is not aware of the parking slots that have just become vacant. Finding the parking slot itself consumes too much time. The traffic problems are bound to exist due to the proliferation in the number of vehicles on road. This is due to insufficient and unorganized parking slots. The problem is even critical when there are multiple lanes to park the vehicle. Hence there is a need for an automated parking system. In this paper, effective solutions for the Parking system and have been proposed. The proposed system also ensures avoiding of traffic problems in high traffic cityroads.

Here, in this project, Arduino(Atmega 328p) a microcontroller board based system is used which keeps the track of the number of cars parked. LCD display shows the status of slots i.e., occupied or unoccupied. Servomotor automatically raises the gate arm to allow cars into the parking lot or to exit the parking lot.

Keywords: *Fuel Wastage, Time, Parking System, Microcontroller, Servomotor.*

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Intelligent Security Alerting System for Vehicles

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Abstract

Security applications are a class of emerging workloads that will play a central role in determining the performance of next generation embedded microprocessors. The objective of this research work is to understand the inherent workload characteristics of security applications, and analyze their impact on microprocessor architecture design. The outcome of this work will provide an insight into the performance bottlenecks in existing architectures that challenge security applications, and enable us to propose architectural enhancements required to boost the performance of embedded and digital processors running security applications. In this report we summarize the popular methodologies for characterizing workloads, survey classic studies that have been performed to measure the degree of parallelism in applications, and present a proposal to study the micro-architecture independent characteristics of security applications.

Keywords: *Micro Controller (At89s52), GSM Module, Vibrating Sensor, Gas Sensor And Motor Driver (L293d), Buzzer.*

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Based on RFID Smart Parking and Damage Detection Using IoT

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Abstract

As of late the idea of shrewd urban areas increased extraordinary prominence. The development of Internet of things keen city currently is by all accounts feasible. Predictable endeavors are being made in the field of IoT so as to augment the efficiency and dependability of urban framework. Issues, for example, traffic clog, restricted vehicle leaving offices and street security are being tended to by IoT. "In this paper, we present an IoT based cloud incorporated savvy stopping system"[1]. "The proposed Smart Parking framework comprises of an on location sending of an IoT module that is utilized to screen and signalize the condition of accessibility of each single stopping space[2]". A versatile application is additionally given that permits an end client to check the accessibility of parking spot and book a stopping opening likewise. The paper additionally depicts an elevated level perspective on the framework design.

Keywords: *IOT, Cloud integrated*

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RFID E-Challan Generation for Traffic Violation

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Abstract

The fundamental aim is to detect any signal break by the vehicle on the traffic signals and generates the e-challan through implementation of programming and hardware mechanism. Deploying the RFID technology which constitutes tags storing data and transferring that data to readers over a wireless interface. Microcontroller compares this reader's information with previously stored information of that vehicle after comparing. It sends the texted message (e-challan) to GSM. Which send it to registered mobile number of owner of that vehicle as well as RTO (Regional transport office) office. Owner has to pay the challan amount to the RTO office or can pay online if linked to online payment system. This system also provides the tracking of vehicle driven by anonymous vehicle driver. Since vehicle would be among traffic signals and database are linked online to RTO office as security purpose.

Keywords: *Challan, Anonymous Tracking, Radio Frequency Identification (RFID).*

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PAPER ID: ICSMEC-2020/0229

Combat Medic Robot

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Abstract

Assistance to needy frontline soldiers during war times is a challenging task, especially when the solider is injured and needs immediate medical assistance. It can be resolved by an IoT based health monitoring and assistance system using bio-medical sensors attached to soldier's body that provides cloud-based monitoring of vital signs such as temperature, pulse rate etc. This medical robot also shows the position of soldier using GPS supported by NodeMCU in an internet based environment at regular intervals. Our medical robot is designed using compact low power consumption based raspberry pi- 3 module, connected with a 360-degree rotatable camera with GPS location sensor. It can be operated from remote location named on IoT. Also, the robot can be used in multiple ways such as also supply needy ammunition, food etc along with medications.

Keywords**:** *Medical robot, robot for military, military robot, IoT, GPS, NodeMCU, Raspberry pi zero, multipurpose military robot*

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The Design of High Performance Multiply-Accumulate Unit

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Abstract

Multiply and Accumulate (MAC) Unit is an inevitable component in number of Digital Signal Processing (DSP) applications involving multiplications and accumulations.

In this Paper, a 16-bit MAC unit is designed using 16 bit Vedic Multiplier and a Carry- Save adder. The design of high speed Vedic Multiplier is done using the techniques of Vedic Mathematics that have been modified to improve performance using Carry Save adders. This Paper shows the architecture for a 16×16 Vedic Multiplier module using UrdhvaTiryagbhyam Sutra.

he proposed multiplier design is compared with a commonly used Booth Multiplier so that the efficiency, time delay and area required for both can be compared. The entire design can be implemented in Verilog HDL. Synthesis and Simulations are done using Xilinx ISE Design Suite 14.5 and Verification of both 4x4 multipliers can be done on FPGA Spartan 6.

Keywords: *Vedic multiplier, FPGA Spartan 6, Urdhva Tiryakbhyamsutra, xilinxISEdesign suite14.5*

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Life Saving Robot using Arduino-The Fire Fighter

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Abstract

Robots are designed to find a fire, before it rages out of control, could one day work with fire fighters greatly reducing the risk of injury to victims. l Fire Fighting Robot Competition is a contest purposely to simulate the real-world operation of an autonomous robot rescuing 10 victims (table tennis balls) and stop 5 fires (emergency candles) in a house within three minutes. The robot development is consisting of three elements which is the hardware, electronic, and programming. The robot have three DC motor, two for driving system and another single DC motor for ball suction subsystem and the fire blowing subsystem. Our proposed project aims to develop an Arduino controlled fire fighter robot that can be used to extinguish the fire through remote handling. The vehicle consists of a water tank along with a pump which can throw water when needed. The system uses an Arduino Uno microcontroller board for this purpose. The Infrared receiver on the vehicle is used to receive the amount of flame. These values are used to find the location of the fire. These are then fed to the motors responsible for controlling the vehicle movements in front, back, left and right directions. The IR sensor is interfaced with an Arduino Uno microcontroller for this purpose.

Keywords: *Arduino, fire fighting robot, DC motor, gas sensor, Infrared receiver*

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Hand Gesture Controlled Robot

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Abstract

In this paper we have simply designed a Hand Gesture Controlled Robot using Arduino Lilypad, Axis accelerometer ADXL335, RF Transmitter and Receiver pair, HT12D IC, HT12E IC and L293D Motor Driver. The model is controlled through a motion device that is mounted on the hand glove. Even though the title says hand gesture controlled robot technically the robot is controlled by hand tilt. The project is based on Wireless Communication, where the data from the hand gesture is transmitted to the robot using RF Transmitter–Receiver pair .The first part is getting data from the Axis accelerometer sensor by Lilypad Arduino , And based on predefined parameters it sends data to RF transmitter through Encoded IC(HT12E). The Wireless Communication between RF Transmitter and RF Receiver helps RF Receiver to receive the information. And further the information is send to Decoder IC(HT12D) , which sends appropriate signals to the Motor Driver IC(L293D) which in turn activates the wheels of robot. Four main hand gesture movements like FORWARD , BACKWARD , LEFT , RIGHT area are detected and enforced.

Keywords: *Hand Gesture , Robot control , Accelerometer ,RF Transmitter & Reciever , Hand tilt*

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Essentials of Cyber-Physical Systems -Application and Challenges

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Abstract

In today's cyber world, the industry is moving towards the orchestration of networked resources with a transdisciplinary system to achieve smartness in all domains as well as in our social life. The Cyber-Physical System is collaborative modeling and plays an important role in industrial automation and smart manufacturing by tightly integrating computation with the physical process. This work aims to provide a good understanding of different types of CPS architecture based on Service Oriented Architecture (SOA) and applications in various field. Moreover, the security and challenges of CPS are also covered in this work.

Keywords: *Cyber-physical System; CPS Architecture; Application of CPS; Software attacks; challenges of CPS.*

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Digit Recognition using Convolutional Neural Networks (Deep Learning)

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Abstract

Deep neural Networks have proved promising results in many applications and fields. The model developed using it, can be seen as a black box, where input image is fed and recognition results are obtained. In this paper, a Convolutional Neural Network based digit recognition framework is proposed, which is a neural network consisting of four hidden layers and one input and output layer each. The system undergoes training using Tensor Flow software library and a feed forward propagation algorithm. The advantage of this framework is provided by the experimental results. The accuracy thus obtained is much higher than the traditional neural networks.

Keywords: *ANN, CNN AI, Character recognition, Deep Learning*

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Preventive Measurements for Home Appliances using IoT

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Abstract

The primary objective of the project is to detect the gas leakage[1] of LPG cylinders, which are commonly used in Indian homes, and alarm the user and the surrounding neighborhood using IoT.Gas leakage leads to various accidents resulting in both material loss and human injuries. The risk of explosion, firing, suffocation are based on their physical properties such toxicity, flammability, etc. The number of deaths due to explosion of gas cylinders[2] has been increasing in recent years. The reason for such explosion is due to substandard cylinders, old valves, worn out regulators and lack of awareness in handling gas cylinders. Due to the explosion of LPG, the number of deaths has been increased in recent years. To avoid this problem there is a need for a system to detect the leakage of LPG. Gas leak detection is the process of identifying potentially hazardous gas leaks by means of various sensors. The sensors connected to the Arduino Uno[3] gives the digital output which is connected to the BOLT IoT[5] platform. The Bolt IoT platform comes with a cloud service which helps us collect the data and can be pushed on to the cloud. Whenever there is a gas leakage and once the alarm is set on the bolt cloud sends information through SMS to the specified person. This reduces the risk of any explosion caused by the leakage. This is initial prevention techniques to detect and prevent home appliance accidents.

Keywords: LPG, Sensors, Arduino, Bolt IoT.

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Embedded Linux Based Location-Aware Safer Cards: Enhancing RFID Security and Privacy Via Location Sensing

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Abstract

This paper mainly aims to identifying the different blocks in the organization by using the safer cards with RFID technology at indoor locations. And the employer can be able to find where the employee in the organization. All the multinational companies are having more than 50 blocks in a single building those are working for different projects. So it is difficult to find by the new employee to know which block is belongs to which category. For this requirement we are going to develop a new idea which is apt for the new employee's to aware the locations along with indoor different blocks in the organization. The internal architecture of the mechanism consists of a GPS receiver to track the position of the employee at outdoor and an RFID reader for indoor at individual blocks. The system provides both audible and visual alerts about the location using LCD and APR voice module.

Keywords:*ARM-11Raspberry Pi Processor, GPS, RFID reader and tags, LCD.*

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Implementation of IoT Based Weather Control Center Using Node MCU

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Abstract

The system proposed in this paper is an advanced solution for monitoring the weather conditions at a particular place and make the information visible anywhere in the world. The technology behind this is Internet of Things (IoT), which is an advanced and efficient solution for connecting the things to the internet and to connect the entire world of things in a network. Here things might be whatever like electronic gadgets, sensors and automotive electronic equipment. The system deals with monitoring and controlling the environmental conditions like temperature, relative humidity, rain, air pressure, air quality and wind level with sensors and sends the information to the Database and then received by the android application. The data updated from the implemented system can be accessible in the internet from anywhere in the world.

Keywords- *Internet of Things (IoT) Embedded Computing System: Arduino Software, NodeMCU, Smart Environment, Android Studio, Android Application and Google Firebase Database.*

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Solar Tracker using Arduino

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Abstract

Solar energy is a clean, easily accessible and abundantly available alternative energy source in nature. Getting solar energy from nature is very beneficial for power generation. Therefore, the need to improve the energy efficiency of solar panel through building a solar tracking system cannot be overemphasized. Photovoltaic panels must be perpendicular with the sun in order to get maximum energy. The methodology employed in this work includes the implementation of an Arduino based solar tracking system. Light Dependent Resistors (LDRs) are used to sense the intensity of sunlight and hence the PV solar panel is adjusted accordingly to track maximum energy. The mechanism uses servo motor to control the movement of the solar panel. The Arduino is used to control the servo motor based on signals received from the LDRs. The result of this work has clearly shown that the tracking solar panel produces more energy compared to a fixed panel.

Keywords: *Arduino, Light Dependent Resistors, Servo Motor, photovoltaic panel, Breadboard*

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Integrated Secured Transaction Online Processing System

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Abstract

Data security in non-fiscal cash registers and non-fiscal printers is minimal. However, data security in fiscal cash registers and fiscal printers is also not satisfactory. This paper describes turnover control devices based on GPRS terminals for sending data from fiscal electronic cash registers and fiscal printers to the server of Tax Administration[1] in order to prevent tax evasion, diversion of original goods from the distribution system and infiltration of counterfeited or original goods into the distribution system without payment of customs, tax and excise duties. The comparison with ordinary fiscal cash registers and non-fiscal cash registers is also provided.

Keywords: *Micro Controller, RFID Reader, LPC2148 Board, Pc, GPRS Modem, Zigbee Wireless Network.*

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Human Movement Detection for Safe Accessin Mobile Devices

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Abstract

The objective of this project is to develop an android application which provides location tracking functionality for android device using SMS. Additionally, we can track the photos of person who stole our android mobile device This project supports android OS and makes communication with the phone through SMS and E-mail. Using simple SMS commands so you can track your android device even if it is in silent mode and thus locate your device locally. Location tracking: We can track the lost phone using simple SMS commands. We can control camera of the device externally using SMS to capture picture in lost mobile. Mobile devices are handheld devices and very compact for every human being. There are frequent thefts of mobile devices and the existing system consists of monitoring the walking movement of user and patterns are analysed when there is a variation in movement then the mobile device will be locked. The proposed system is used to save another alternate number of the user. When a message is sent to the theft mobile device using GPS location the handheld device can be located. When the un Authorised user changes the SIM card the new number is also notified to registered user

Keywords: *Antitheft, Gait Recognition*

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Gesture Recognition using 3-D Accelerometer

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Abstract

Gesture-based interaction, as a natural way for human-computer interaction, has a wide range of applications in ubiquitous computing environment. This paper presents an acceleration-based gesture recognition approach, called FDSVM (Frame-based Descriptor and multi-class SVM), which needs only a wearable 3-dimensional accelerometer. With FDSVM, firstly, the acceleration data of a gesture is collected and represented by a frame-based descriptor, to extract the discriminative information. Then a SVM-based multi-class gesture classifier is built for recognition in the non linear gesture feature space. Extensive experimental results on a data set with 3360 gesture samples of 12 gestures over weeks demonstrate that the proposed FDSVM approach significantly outperforms other four methods: DTW, Naïve Bayes, C4.5 and HMM. In the user-dependent case, FDSVM achieves the recognition rate of 99.38% for the 4 direction gestures and 95.21% for all the 12 gestures. In the user-independent case, it obtains the recognition rate of 98.93% for 4 gestures and 89.29% for 12 gestures. Compared to other accelerometer-based gesture recognition approaches reported in literature FDSVM gives the best results for both user-dependent and user-independent cases.

Keywords: *SVM, DTW, Acceleration, Gesture.*

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A Comparative Study and Analysis of Multispectral Image Denoising Methods: Intrinsic Tensor Sparsity Regularization and Nonlocal Multitask Sparse Learning

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Abstract

This paper provides an analysis of multispectral image denoising by nonlocal multitask sparse learning and intrinsic tensor sparsity regularization. In disparity with the typical gray scale or RGB images, the multispectral images tends to convey faithful representation for real world scenes to enhance the performance of many computer vision, object detection and quantification tasks. In real scenario, nevertheless a multispectral image is alwayscorrupted by various types of noises like stripe noise, speckle noise, Gaussian noise etc. The basic aim of multispectral imaging is to obtain the spectrum for each pixel in the image of a scene and deliver much more reliable information. The application areas of multispectral imaging include the fields of mineralogy, oceanography and astronomy. In specific, to remove the noise in multispectral image, a new tensor sparsity measure is constructed called intrinsic tensor sparsity method which considers the global correlation along spectrum and non local self similarity across space. In this paper, we propose a Multispectral Image (MSI) denoising model based on intrinsic tensor sparsity measure and nonlocal multitask sparse learning methods and a comparison is drawn between these two methods by means of picture quality indices. The nonlocal self-similarity across space and the high correlation of the MSI along the spectrum via multitask sparse learning are fully exploited. Experimental results on real data demonstrate that which method performs better in terms of various picture quality indices (PQIs) like Peak Signal to Noise Ratio (PSNR), Structural similarity (SSIM), Feature Similarity (FSIM) and Relative dimensionless Global Error (ERGAS).

Keywords: *Multispectral images, Intrinsic Tensor Sparsity Regularization, Nonlocal Multitask Sparse Learning, Picture Quality Indices*

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Automatic Railway Gate Control System Using Arduino Uno

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Abstract

The objective of this Paper is to provide an automatic railway gate at a level Crossing replacing the gates operated by the gatekeeper. It deals with two things. Firstly, It Deals with the reduction of time for which the gate is being kept closed. Secondly, to Provide safety to the road users by reducing the accidents. By the presently existing system, once the train leaves the station, the stationmaster informs the gatekeeper about the arrival of the train through the telephone. Once the gatekeeper receives the information, and it closes the Gate depending on the timing at which the train arrives. Hence, if the train is late due to certain, Reasons, then gate remain closed for a long time causing traffic near the gates. By employing the automatic railway gate control at the level crossing the arrival of the train is detected by the sensor placed near to the gate. Hence, the time for which it is closed is less compared to the manually operated gates and also reduces the human labour. This type of gates can be employed in an unmanned level crossing where the chances of accidents are higher and reliable operation is required. Since, the operation is automatic; error due to manual operation is prevented. Automatic railway gate control is highly economical microcontroller based arrangement, designed for use in almost all the unmanned level crossings in the country.

Keywords — *Arduino Uno, IR sensors, Servo motors, Ultrasonic sensors, L293D Motor Driver*

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Optimized Tracking using Firefly Algorithm in Wireless Sensor Network

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Abstract

This paper is about the Tracking of moving object by using firefly algorithm in wireless sensor network . Firefly algorithm is can determine the path, position and locations (past, present and future) of the object. Firefly algorithm is a met heuristic optimization algorithm that represents the social behavior of the fireflies, The fireflies attraction depends on brightness of the firefly. The speed and accuracy of the firefly algorithm is better compare to existing algorithms. In sensor network the power consumption is more (by using the nodes) to track the object. To over come this problem we activate the nodes which are near to the object and reaming nodes are in rest (sleep mode) position. The Simulations and results indicate that the proposed firefly algorithm is superior to existing meta heuristic algorithms.

Keywords: *Tracking, firefly algorithm, Mobility based tracking,*

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Non-Invasive Glucose Monitoring and Insulin Injector System

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Abstract

Diabetic patients and their death rates are increasing every day. The traditional treatment involves insulin infusion technique using syringe and needle which is unpleasant and painful when continuous monitoring is necessary. This method of blood sugar measurement collects a drop of blood by pricking the finger tip and analyzes the result. This invasive method is inconvenient and costlier even though the continuous blood glucose monitoring is essential for the control and management of glucose level. Thus it is necessary to find a noninvasive real time glucose monitoring system that is reliable and affordable. We introduce a noninvasive glucose monitoring system that detects the glucose level in the blood using NIR spectroscopy. According to the detected sugar level the amount of insulin injected can be controlled using insulin pump. Insulin pumps are comparatively a better option as they are easy to use and comfortable. Here we propose to modify the existing insulin pump to improve user experience. It is highly precise and accurate in delivering quantities of insulin irrespective of external environment. Hence this system is a more efficient and adaptable technique for diabetic patients.

Keywords—*Non-invasive glucose measurement, NIR technology,Image processing, Insulin infusion, insulin pump, Embedded controller, GSM module, Touch Screen.*

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Design and Implementation of High Speed and Low Power FIR Used in EEG Analysis

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Abstract

The power and area management of a transistor on silicon has become a vital role in finite impulse response (FIR) filters, both of the above parameters are important in current CMOS large scale integration manufacturing industry. Multiplier has become basic building block in electroencephalogram (EEG signal), Digital signal processing and in communication system. It is utilized in signal and image processing applications including fast Fourier transforms convolution and correlation. Hence it is mandatory to design and develop a low power and energy efficient finite impulse response filter. In this paper 2x2 and 4x4 finite impulse response filter has been proposed with simulation results which consume less power. The proposed Finite impulse response filter consist of Multiplier, adder, it has been designed with basic building blocks of universal gates, half adder and full adder by using CMOS physical designed tool Mentor graphics 0.25um based Tanner tool to reduce the number of transistors utilized in compare with other ISE EDA simulation soft wears.

Keywords— *FIR, universal digital gates, combinational multiplier, low power, high throughput*

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The IoT Based Pulse Rate Monitoring System to Avoid Suicide

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Abstract

Internet of thing and machine learning has been widely applied in smart health care application. All these smart health care application are interconnected IOT devices to perform predictive analysis, diagnosis, remote monitoring and analytical analysis. We can control suicide by monitoring the pulse rate using artificial intelligence, machine learning and IOT. The main reason of suicide is mental disorders. Mental disorder includes depression, autism, schizophrenia, personality disorder, anxiety disorders. Now a day's most of the suicide cases are because of stress such as financial difficulties, relationship problem etc. And those who are attempted suicide previously are more chance for future attempt. According to a report of WHO India has the highest suicide rate in the south East Asian region. Now for the pandemic of corona many of the people suffer in stress, which may increase the suicide attempt in future. This article presents a protocol to monitor the pulse rate and minimize the suicidal behavior.

Keyword – *Pulse Rate, Artificial Intelligence, Internet of Things, Machine Learning*

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Skintone Steganography for Real Time Images

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Abstract

Maintaining the secrecy of digital information when being communicated over the internet is presently a challenge. Given the amount of cheap computation power available and certain known limitations of the encryption methods it is not too difficult to launch attacks on cipher text. An ideal steganography technique embeds message information into a carrier image with virtually imperceptible modification of the image. Adaptive steganography comes closer to this ideal since it exploits the natural variations in the pixel intensities of a cover image to hide the secret message. The objective of steganography is a method of embedding additional information into the digital contents that is undetectable to listeners. We are investigating its embedding, detecting, and coding techniques. The idea behind the LSB algorithm is to insert the bits of the hidden message into the least significant bits of the pixels. As the application domain of embedding data in digital multimedia sources becomes broaden, several terms are used by various groups of researchers, including steganography, digital watermarking, and data hiding. This paper introduces a new, principled approach to detecting least significant bit (LSB) steganography in digital signals such as images and audio. It is shown that the length of hidden messages embedded in the least significant bits of signal samples can be estimated with relatively high precision. The new steganalytic approach is based on some statistical measures of sample pairs that are highly sensitive to LSB embedding operations. The resulting detection algorithm is simple and fast. To evaluate the robustness of the proposed steganalytic approach, bounds on estimation errors are developed. Furthermore, the vulnerability of the new approach to possible attacks is also assessed, and counter measures are suggested a detailed algorithm is presented along with result of its application on some sample images.

Keywords: *Cryptography, Steganography, Wavelet Image Compression, Huffman Coding.*

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EEG Classification using Wavelet Transform

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Abstract

This project describes the application of an Artificial Neural Network(ANN) technique together with a feature extraction technique together i.e., the wavelet transform for the classification of EEG signals. Three classes of EEG signals are used: normal, schizophrenia (SCH) and obsessive compulsive disorder(OCD).The architecture of ANN used in the classification is a three layered feed forward network which implements the back propagation of error learning algorithm after training the network with wavelet coefficients was able to correctly classify over 66% of the normal class and 71% of schizophrenia class of EEG'S. The wavelet transform thus provides a potentially powerful technique for pre processing EEG signals prior to classification. Segmentation, feature extraction and signal components belong to very common problems in various engineering, economical and biomedical applications. The paper is devoted to the use of discrete wavelet transform (DWT) both for signal preprocessing and signal segments feature extraction as an alternative to the commonly used discrete Fourier transform (DFT). Feature vectors belonging to separate signal segments are then classified by a competitive neural network as one of methods of cluster analysis and processing. The paper provides a comparison of classification results using different methods of feature extraction most appropriate for EEG signal components detection. Problems of multichannel segmentation are mentioned in this connection as well. Index Terms—Segmentation, change-point detection, feature extraction, classification, multichannel signal processing, discrete wavelet transform, neural networks.

Keywords: *ANN, DWT, EEG signal, Multi channel signal Processing.*

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Energy-Saving System for Classroom Based on RFID

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Abstract

The introduction of wireless technology along with other communication techniques has made people adopt e-commerce. A contemporary is to look forward to a product is one that aids the comfort, convenience and efficiency in everyday life. This project describes about the designing of a campus card based on RFID reader for college automation. When the card holder enters into the classroom during the allowed time period, his card should be slashed on the card reader. Control nodes will read the card information, to determine whether it is effective. If it is effective, classroom power switch will be open, otherwise the power switch will not dispose. When the card is removed the voice prompt will be produced, reminding others continuing card operation. If there is wrong card, classroom power will automatically shut down. Meanwhile, the control nodes can determine the time period of the lighting and lighting conditions according to the settings of main control center. This data will be displays on the IOT APP. It will monitor continuously. This project "Energy-Saving System for Classroom Based on RFID" uses Arduino Uno R3

Keywords: *Energy saving system, RFID, Arduino Uno R3*

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Implementation of GROG Exposure Protocol

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Abstract

Aimed at the serious phenomenon of drunk driving in modern society, a MCU electronic circuit board is used in the system. With alcohol sensor MQ303A, the alcohol concentration is detected. Through ADC0809, the detection signal is converted to digital signal, which is handled directly by MCU. According to the digital signal, the car is controlled automatically, can't be driving after driver drinking, thus avoid the occurrence of drunk driving [1]. The majority of the accidents these days have a basic and simple reason named "ALCOHOL". The drunken drivers will not be in stable condition to react for some consequences which in turn become a danger to themselves as well as the pedestrians around. This situation raises a question on the lives of people. The main purpose behind our project is "the detection of alcohol" consumed by drivers to take a precaution on the spiking rate of deaths due to drunk and driving. The device must be installed in the vehicle, which consists a gas sensor used to detect the amount of alcohol consumed by driver. If it is more than the set limit the buzzer rings out loud as a caution. The Arduino plays a major role as it takes the input from the user, executes the required program that is being dumped into it and gives the output value. If the output value is out of the limit it doesn't let the vehicle move forward and alerts the user by a buzzer alarm as well.

KEYWORDS: *Arduino software, Sensor and Relay application, Arduino application database.*

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Fingertip Based Heart Rate and Temperature Monitoring System with Wireless Information Transfer Technology

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Abstract

The main purpose behind this paper is "Fingertip Based Heart Rate and Temperature Monitoring System with Wireless Information Transfer Technology" is to design a cheap accurate and reliable device which can easily measure the heart rate of a human body. This paper describes the design of a simple, low-cost controller based patient health monitoring system. These devices are mostly used in hospitals and clinics but are gradually finding their way into domestic use. The components used in the project are Arduino UNO through which Temperature sensor, Heartrate sensor, LCD display and ZigBee transmitter are connected. The data which is transmitted through the ZigBee TX will be received by ZigBee receiver connected in PC through USB TTL converter which converts the data and displays it and send it to person on mobile via SMS. It will help us to check our heart rate and temperature and also in keeping track of your loved ones when we are at work or we are not with them.

Keywords: *Arduino, Heartrate sensor, LCD display and ZigBee transmitter*.

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Spectrum Harvesting using Aggressive and Conservative Techniques in Cognitive Radio

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Abstract

In underlay cognitive radio, a secondary user transmits in the transmission band of a primary user without serious degradation in the performance of the primary user. It proposes a method of underlay cognitive radio where the secondary pair listens to the primary ARQ feedback to glean information about the primary channel. The secondary transmitter may also probe the channel by transmitting a packet and listening to the primary ARQ, thus getting additional information about the relative strength of the cross channel and primary channel. The method is entitled Spectrum Harvesting with ARQ Retransmission and Probing (SHARP). The probing is done only infrequently to minimize its impact on the primary throughput. Two varieties of spectrum sharing, named conservative and aggressive SHARP, are introduced. Both methods avoid introducing any outage in the primary; their difference is that conservative SHARP leaves the primary operations altogether unaffected, while aggressive SHARP may occasionally force the primary to use two instead of one transmission cycle for a packet, in order to harvest a better throughput for the secondary. The performance of the proposed system is analyzed and it is shown that the secondary throughput can be significantly improved via the proposed approach, possibly with a small loss of the primary throughput during the transmission as well as probing period.

Keywords: *Cognitive radio, Outage probability, Spectrum harvesting, probing, Conservative, Aggressive.*

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Breath and Lungs health Analyzer with Respiratory Analyzer over Internet of Things (IoT) Protocol IPV6

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Abstract

Now a day's portable / compact biomedical devices are becoming daily needs of people with chronic diseases .The proposed method is a compact low power device model for measuring human body vital signals through which lungs health can be monitored onboard and by internet form anywhere on earth with existing IoT technology. Tele medicine has already become popular where patient vitals can be scanned by a remote doctor and appropriate medicine prescription can be given;such type of situation the proposed system is more useful.

Keywords: *IoT, Lungs, Blood oxygen saturation, oxymetry, respiration, body-temperature, telemedicine.*

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Obstacle Avoidance Robot

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Abstract

Trajectory planning is one of the most important pivotal point in pick and place tasks done by robotic manipulators. In this work, we have presented an Autonomous robot, which is compact, autonomous and fully functional. This robot or a smart-car is built to sense any obstacle in its path, to avoid it and resume its running involving the pre-computation of an obstacle free path. Ultrasonic sensors were adapted to implement a real-time obstacle avoidance system for wheeled robots, so that the robot can continually detect surroundings, avoid obstacles, and move toward the target area. This model has tremendous applications in vacuum cleaners, avoiding concealed paths, parking systems, assembling automobiles and in chemical industries, in scientific exploration, emergency rescue and in other isolated environments.

We use an Arduino UNO with a Motor Shield along with Stepper Motors to make the car, and for sensing we incorporate an Ultrasonic Sensor which accurately and efficiently detects any obstacles in the smart car's path. The Arduino is coded such that the smart-car moves backward when an obstacle arises in front of it with a maximum limit of 50cms in ideal testing conditions. Throughout the construction of this model, we educated ourselves to the Arduino coding language, the Motor Shield functionality, and comprehensively, with the working of an ultrasonic sensor and its features. In conclusion, through this project, we aim to construct a model of a smart-car that is beneficial to the quotidian problems of the present generation.

Key words: *Wheeled ROBOT, Autonomous, Intelligent, Arduino Micro Controller, Artificial Intelligence.*

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Towards attaining Flexible Global Reconfiguration in NoCs using Dynamic Topology

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Abstract

The key thought of this proposition is to analyze the stringent issues of Network on Chips in a lot more applications like multi-processor communication, computer architectures, and network interface processors. This paper investigates the merits of low congestion conventions in realistic environment like multiple Master multiple slave interconnections. Active enhancements with ring based architectures using cross breed NOC architectures is the fundamental concept of executing this paper. A switch based work network with a lot of reconfigurable rings are proposed in this paper.The dynamic topology concept is studied by dividing the Wireless Mesh Nterwork into clusters .The clusters are then evaluated for packet delivery through active and proactive approach of the nodes in the clusters. The new routing protocol dynamic source routing protocol (DSR) has been proposed for packet transmission. The simulation is carried on NS2 simulator and the results suggest that the dynamic topology considerably reduces the power consumption and latency through reconfigurable structures in NoC by increasing the packet delivery ratio in realistic traffic congestion networks.

Keywords: *NOC, Routing algorithm, MCDP, PDR (packet delivery ratio),Reconfigurable ring.*

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Fall Prevention and Detection in Dementia Patients.

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Abstract

Dementia Disease is common in aged people. Dementia is a condition characterized by a loss in memory, vocabulary, problem-solving and other cognitive skills that impair the ability of a individual to perform everyday activities. People with Dementia are more prone to fall. Due to fall they suffer from injury which in most cases leads to death, hence there is a requirement for a care-taker and the patients are restricted to stay at their home. The paper consists of localization, fall detection and fall prevention of dementia patients. In the fall detection part, an accelerometer of specification MPU6050 is used to detect the sudden fall of the patient. In the localization part, GSM module of specification 900 has been interfaced, to send a message to the care taker intimating about the fall of the patient. The aim of the project is to retain their independence and reduce the risk of falling by early prediction.

Keywords — *Dementia, fall prediction, fall detection, Galvanic Skin response.*

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Vehicle Compartment Security Observing and Warning System through Embedded Technology

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Abstract

Engine vehicles are the prime wellspring of conveyance anywhere vehicles with A/C has a significant impact. This paper plans an implanted framework meant for a vehicle lodge, which detects the fumes like "carbon-monoxide and oxygen" and showed at every single second. In the event that the degree of the CO increments than the typical level (30ppm) or the degree of the oxygen diminishes than the ordinary level (19%) at that point a caution is created naturally and furthermore ventilation is given right away. An admonition message is sent to the approved client by revenues of GSM. The benefit of this framework is legitimate recognition and quicker reaction time prompting quicker dissemination of the circumstance, contrasted and the manual strategies.

Keywords: *Atmel microcontroller; Embedded System; Gas detecting sensors; GSM Modem; Vehicle Safety;*

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Modern Car Parking Management System using Microcontroller and Smart Intelligent Applications

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Abstract

Parking the car is one of the difficult tasks in this busy world. Nowadays it's very difficult to find the availability of parking slots. There are many lanes for car parking so to park the car one must look for all the lanes. To overcome this, the Smart car parking system which is based on IoT that is equipped with IR sensors and microcontroller**.** In this system, the user will automatically find the parking space through the display unit installed on the entrance which will show on the screen. This design is mainly comprised of low manual operations and efficient equipment for commercial, industrial, apartments, institutions/universities, etc., there are fewer chances for vehicle vandalism and the emissions are greatly brought down and reduced. Hence it is a low-cost device as it mainly uses a programmable microcontroller.

Keywords—*Microcontroller, IR Sensor, Parking System*

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Comparative Analysis of TCM-OSTBC MIMO System in Different Fading Environment

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Abstract

Advanced wireless networks are become part of our every day's life. The throughput and range in wireless devices are limited. To overcome this limitation one method is used named MIMO(Multiple input multiple output) is used. Multiple Input Multiple Output (MIMO) systems are wireless systems with multiple antenna elements at both ends of the wireless link. MIMO systems have the ability to exploit, rather than combat, multipath propagation and promise a significant increase in capacity. MIMO communications use multiple antennas at both the transmitter and receiver to exploit the spatial domain for spatial multiplexing and/or spatial diversity. In contrast to spatial multiplexing the purpose of spatial diversity is to increase the diversity order of a MIMO link to mitigate fading by coding a signal across space and time, so that a receiver could receive the replicas of the signal and combine those received signals constructively to achieve a diversity gain. For improving the diversity gain with MIMO OSTBC (Orthogonal Space Time Block Code). This MIMO OSTBC is used with conventional modulation scheme. Then this system is used using TCM (Trellis Coded Modulation). By using TCM OSTBC MIMO diversity can be achieved higher.

Keywords-*TCM ,OSTBC,TCM+OSTBC*

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Low Power Test Pattern Generator through BIST Development

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Abstract

Blended mode BIST plans utilize pseudo-irregular examples to recognize most blames. Hypothetical examination recommends that altogether more consideration bits can be encoded in the seed of a Linear Feedback Shift Register (LFS R). In this paper we actualize low force BIST for 32-piece Vedic multiplier. Principle part of this is to execute low force BIST with expanded deficiency inclusion. This utilization the LFSR as test design generator with changing the seed esteems for each 2 force m cycle, so for this reason which utilizes the counter for observing the quantity of cycles. The goal of this work is to diminish power scattering in BIST with expanded flaw inclusion. Different strategies for design age are compared keeping taking into account power utilization. For this reason m bit double counter and dim code generator is utilized. Mark examination is finished with the assistance of numerous information Signature Register (MISR). The mark of MISR will show whether the circuit under test (CUT) i.e Vedic multiplier is broken or not. The outcomes are organized and looked at. From the execution results, Simulation is done in Xilinx ISE and the plan is actualized utilizing Vertex 5 Field Programmable Gate Array (FPGA).

Keywords: *Vedic multiplier, Test Pattern Generation, MISR, CUT*

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GPS & GSM Based Human Health Monitoring System

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Abstract

The primary function of this system is to monitor the temperature, Blood Pressure and Heart Beat of the Patient and the Data collected by the sensors are sent to the Microcontroller. The Microcontroller transmits the data over the air. Here we are using the GSM modem in order to transmit the information.

From the transmitter the recordings are sent as an SMS to the care taker or the expert which have been given as the recipient. Not only we send the information through GSM module as SMS we also display the readings on LCD. Here we get alerting message from the GSM Modem (SMS message) and the location of that person can be found out with the help of GPS .When the conditions go abnormal then we sense those values and then alarm the people around by blowing the alarm and also by sending SMS.

This project uses regulated 5V, 750mA power supply. 7805 three terminal voltage regulator is used for voltage regulation. Bridge type full wave rectifier is used to rectify the ac output of secondary of 230/18V step down transformer.

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Device to Save Children from Falling into Borehole

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ABSTRACT

The project aims in designing a "Device to save children from falling into a borehole" which is capable of moving inside the pipe using rack and pinion mechanism. Whole project is done by PIC microcontroller. Using IR sensor to detect the child and send the alert message using GSM. It is a low cost project used to monitor the changes of different parameters in the industrial pipes. This project makes use of an onboard computer, which is usually termed as micro controller. It acts as heart of the project. This onboard computer can efficiently communicate with the output and input modules which are getting used . The controller is given some internal memory to carry the code. This memory is employed to dump some set of assembly instructions into the controller. And the functioning of the controller depends on these assembly instructions. The controlling device of the whole system is a PIC micro controller. When child falls into the borehole then the IR sensor detects that and this data fed as input to the micro controller .The micro controller send the alert message to the predefine mobile number through GSM and give the buzzer alert. As well as the Micro controller controls the DC motor is which is attached to the rack and pinion mechanism. We can easily bring out the child from inside the bore well which is attached to the servo motor mechanism. The status will display on LCD. Using one button to keep the inside bore well setup exact. To perform the intelligent task, microcontroller is loaded with a program written using embedded 'C' language.

Keywords: *GSM Module, Pic micro-controller, LCD Display, DC motor, IR Sensor.*

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Enhancement of Medical Images using MatLab

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Abstract

Fusion of Medical images derives useful information from medical images containing the info which has important clinical significance for doctors during their analysis. The idea behind the concept of image fusion is to enhance the image content by fusing two images like MRI (Magnetic resonance imaging) & CT (Computer tomography) images to provide useful &precise information for doctor for his or her clinical treatment. In this project Discrete Wavelet Transforms (DWT) method has been used to fuse two medical images to decompose the functional & anatomical images. The fused image contains both functional information and more spatial characteristics with no color distortion.

Image processing is a method to convert an image into digital form and perform some operations on it, in order to get an enhanced image or to extract some useful information from it. It is a kind of signal dispensation during which input is image, like video frame or photograph and output could also be image or characteristics related to that image. Usually Image Processing system includes treating images as two dimensional signals while applying already set signal processing methods to them. It is among rapidly growing technologies today, with its applications in various aspects of a business. Image Processing forms core research area within engineering and computing disciplines too.

Keywords: *MRI (Magnetic resonance imaging) & CT (Computer tomography), Discrete Wavelet Transforms (*DWT)

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DESIGN AND IMPLEMENTATION OF WEIGHT VERIFICATION FOR PACKAGED PRODUCT

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Abstract

The world is nowadays running with lot of industries everywhere in the form of packaged product. Whatever may be the industry and problem in the weight of a product is estimated by this project for optimized solution. The development in the industry lot of product are facing problem with weight loss. The weight of any product is one of the biggest issues dealing nowadays. Various algorithms have been implemented from embedded domain with the help of microcontrollers, sensors and software development tools. Different hardware components have been manufactured for different solutions. Texas Instruments is one of the leading semiconductor companies which provide large varieties of microcontrollers and processors. MSP430 G2553 is the one of the ultra low power microcontroller from Texas Instruments.

The MSP430, IR Sensor, Load Sensor, Buzzer, LCD, GSM Sim900A Modem are the hardware components used in this project. GSM Sim900A modem which is used to send the information to predefined mobile number in the form of calling. Energia Integrated Development Environment (IDE) is one of the software development tools for programming MSP430. It has friendly programming environment for developing firmware to microcontrollers.

The algorithm for this project is to interface all the components to MSP430 and with the help of Energia software tool we debug a program. It was developed to make available for small scale industries. MSP430 uses 3.3V and even the components are supplied form MSP430. The detailed explanation of this project is described in the report.

Keywords:*MSP430, Energia IDE, GSM Sim900A*

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RFID Shopping Cart using Arduino

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Abstract

Nowadays, buying and searching at huge malls is turning into a daily activity in subway cities. We can see large rush at malls on holidays and weekends. The rush is even a lot of once there are special offers and discount. People purchase totally different things and place them in trolley. After total purchase one needs to go to cashier for payments. The cashier prepares the bill victimization bar code reader that could be a time overwhelming method and leads to long queues at charge counters. This project is targeted to minimize the Queue at a billing counter in a shopping complex. Smart Trolley does the same by displaying the total price of the product kept inside the cart. In this way the customer can directly pay the amount at the billing counter and leave with the commodities he/she has bought. The hardware is based on Arduino Uno, RFID Reader Module, RFID Card and Buzzer .It eliminates the traditional scanning of products at the counter and in turn speeds up the entire process of shopping, also with this system the customer shall know the total amount to be paid and hence can accordingly plan his shopping only buying the essential commodities resulting in enhanced savings. Since the entire process of billing is automated it reduces the possibility of human error substantially. Also the system has a feature to delete the scanned products by customer to further optimize the shopping experience.

Keywords :*RFID Reader Module; Electronic Services; Grocery Stores; RFID CARD; Intelligent cart ; BUZZER; Arduino Uno*

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A Novel Approach in Electronic Voting Machine Biometric System Based Using ARM 9 Microcontroller

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Abstract

This paper focus on simple, low cost unique finger impression based electronic democratic machine utilizing ARM9 microcontroller. An electronic democratic framework is an autonomous framework anywhere the voters' and casting ballot information is recorded, stored and handled carefully. The proposed system consists of controller equipment and programming. The equipment is executed with ARM9 microcontroller alongside KY-M6 unique finger impression module. The product code is created in WINCE6 improvement condition for interfacing the ARM processor with unique finger impression module. The proposed framework gives the best answer for limiting the time taken for distinguishing the voter. The plan executed in the FP-EVM is portable, flexible and with least force utilization. The structured framework is client friendly, easily adaptable and financially savvy. Further, the structured framework has basic architecture, fast reaction time and extension for additional development.

Keywords:-*KY-M6 Fingerprint sensor, ARM9 (mini2440)*

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A New Approach in Data Structure and Parking Supervision through ARM9 Microcontroller

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Abstract

This paper presents a wise stopping direction and data framework with ARM9 microcontroller. The discontinuing subject in massive urban societies, predominantly the super urban parts, has grown one of the important motives for the city traffic blockage. The Space Guidance and Information System (PGIS) is viewed as a compelling method to improve stopping circumstance. When all is said in done stopping frameworks are planned by utilizing various instruments like IR or ultrasonic sensors. By utilizing these sensors they distinguish in the case of leaving opening is free or it as of now contains vehicle. In any case, really these sensors are not utilized for identifying especially vehicle they can distinguish any item. .By utilizing picture handling strategy it recognizes vehicle just or if any article supplementary than vehicle is at leaving opening it don't thought about that space is reserved. In this paper we likewise present a significant element like getting the overhead said position of the stopping space on the web or Web and position can refreshed for specific time. Along these lines the vehicle leaving framework is increasingly simpler and adaptable for the individual to assessment and book the space after anyplace. "It is finished by utilizing Image Processing, Embedded Linux, ARM9, andGSM".

Keywords – *Image Processing, Embedded Linux, ARM9, GSM.*

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PAPER ID: ICSMEC-2020/0284

Electric Shock Gun

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Abstract

This is a fantastic circuit for self-protection. In case a burglar intrudes your house, you can use this electric shock gun as a weapon for self-protection by electric giving a mild shock to the attacker. An electric shock gun is an incapacitating weapon. It delivers an electric shock aimed at temporarily disrupting muscle functions and/or inflicting pain without causing significant injury.

Keywords: - *Transformer, Transistors, Switch, Battery, Aluminum pieces.*

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Radar System using Arduino

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ABSTRACT

A radar system capable of identifying discriminatively multiple reflected waves generated between the radar system and a target to thereby identify discriminatively a first echo indicating a real image from a target. The system includes a range finding unit for determining arithmetically distance (R) to the target , a distance data processing unit for selecting from plural distance data as obtained a set of distance data indicating the distances which bear an integral multiple relation to one another, a detecting unit for comparing reception amplitude levels (Pr) for individual distance data of data sets with a predetermined threshold level (S) to thereby detect a set of distance data having the reception amplitude levels (Pr) exceeding the threshold level (S), and an identifying unit for identifying discriminatively the distance data based on the first echo from the distance data ascribable to the succeeding multiple reflected waves in the distance data set detected.

Keywords: *Arduino UNO, Ultrasonic Sensor, Servo Motor, LCD*

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Electromagnetic Pulse Generator

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Abstract

In today's world we are surrounded by the most sophisticated & hi-tech microprocessor & microcontroller technology, which controls transport, finance, Electricity, Communications, etc. An EMP (Electro-Magnetic Pulse) has the destructive tendency to devastate any electronic equipment in its specified path range, causing electronic equipment to burn out. With the continuous development, use & dependability of modern day equipment, it is almost impossible for us go back from the current microelectronic generation. This makes the Electro-Magnetic Pulse one of the most deadly& Terrifying weapon in the world causing huge collateral & infrastructural damage to any nation & her interests. This paper includes all the basses of Electro-Magnetic Pulse generation.

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Smart Fodder Cultivation using IoT

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Abstract

Water resources are intermittent due to unpredictable climatic conditions, shortage of rainfall, lack of rainwater harvesting, dropping down of ground water level and the demand for providing is renewable source for vegetation is herculean task in future due to scarceness. The world health organization predicts greater than 3,400,000 lives die yearly due to lack of water. Providing fresh fodder for cattle at a large scale requires enormous water supply. The future smart fodder system should incorporate proper monitoring of moisture control so that we can supply correct amount of water. Some real time monitoring includes deploying smart sensors over entire field that demands more time and resource, other techniques requires monitoring, the quality of underground water pipes and predicts replacement if any. The improvised water harvesting techniques includes condensing the water vapor in air using single thermoelectric unit.

Index Terms – *BLYNK, IoT, Thing Speak, Tinkercad*

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Design of ALU Using HNG Logic Gates Using Xilinx

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Abstract

The Urdhva Triyambakam method derived from the ancient Indian mathematics will be used in the proposed project. HNG circuits, on the other hand, reduces the power dissipation incurred due information/bits loss as in the case of an irreversible circuit making way for better power utilization .The proposed ALU design has a four bit control signal. It performs six arithmetic operations and ten logical operations.

The proposed ALU uses both HNG and semi reversible gates in it. Arithmetic operations are addition, subtraction, multiplication, division, increment and decrement. Logical operations are and gate, or gate, not gate, nand gate, nor gate, xor gate, xnor gate, a'b, barrel left shifter, barrel right shifter. The operations performed based on the control bits are as follows. Total of sixteen operations are performed by the proposed ALU.The proposed ALU is coded in Verilog followed by synthesization using XilinxISE13.2i.

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Rectangular Patch MIMO Antenna with Defected Ground structure for 5G Applications

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Abstract

In this paper, a rectangular patch MIMO antenna is designed to operate 3.4-3.6 GHZ band for 5G applications. The geometry of antenna incorporates two rectangular patches fed by microstrip line individually. Rectangular slots are incorporated in the rectangular patch to increase the bandwidth of the antenna. The ground plane is defected with periodic square metallic patches, for increasing the bandwidth. FR4 Epoxy material with 1.6mm thickness and dielectric constant 4.4 is used as substrate. The parameters such as S_{11}(dB), radiation pattern, gain (dB) and radiation efficiency are analyzed. This antenna can be used for 5G applications in the sub 6 GHz band.

Keywords - *MIMO patch antenna, 5G, Defected Ground structure (DGS)VSWR, Return loss, Radiation pattern.*

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A Survey on Different Types of Power Amplifiers Used in CMOS Technology

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Abstract

Radio frequency (RF) power amplifiers are an essential part regarding the base station and also in the communication. Networking devices energy consumption and power dissipation. There is also the environmental impact of the PA, as the power consumption affects the environmental impact to get a reduction of the radio access network. This paper describes the key technology and circuit design issues facing the design of an efficient linear RF CMOS power amplifier for modern communication standards incorporating high peak-to average ratio signals. We show that most important limitations arise from the partial breakdown voltage of nanoscale CMOS devices and the large back-off requirements to achieve the essential linearity, both of which result in reduced average efficiency. Two fundamentally different approaches to attempt these problems are presented along with silicon prototype measurements. In the first approach, transformer power combining and bias-point optimization are used to raise the output power and linearity of the Analog Amplifier.

Index Terms — *Power Amplifiers, ADS-2009*

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Automatic Garage Door Opening and Closing Using Pi Controlled Car

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Abstract

Automatic garage pi controlled car is highly demanded and applicable project which can be used in garage in order to reduce man power. Arduino controls the door mechanism according to the motor output. A garage door is a large door on a garage that opens either manually or by an electric motor. Garage doors are frequently large enough to accommodate automobiles and other vehicles.

The operating mechanism is spring loaded or counterbalanced to offset the weight of the door and reduce human or motor effort required to operate the door. Garage door slide or swing horizontally. It has been developed by integrating features of all the hardware components used. Presence of every module has been reasoned out and placed carefully thus contributing to the best working of the unit. Personal digital assistants (PDAs) or handheld computers are generally considered embedded devices because of the nature of their hardware design, even though they are more expandable in software terms. This line of definition continues to blur as devices expand. With the introduction of the OQO Model 2 with the Windows XP operating system and ports such as a USB port.

Keywords: *Personal digital assistants (PDAs), Arduino, OQO Model 2*

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Analysis and Development of MIMO FSO for Long Range Wireless Communication

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Abstract

Optical Wireless communication which refers to the transmission of the data through medium to obtain communication. Like fiber, Free Space Optics uses LASERs to transmit a data but instead of enclosing in the fiber, it is transmitted through the air as the medium. It is cost-effective alternative to other wireless connectivity options. In this paper, we analyzed the FSO system under different weather conditions such as clear sky, haze, fog and snow, will compared the result of the system using Multiple Input and Multiple Output (MIMO). Data rate achieved for distance of 5km is upto 10Gbps for all weather conditions. Proposed FSO networks offers acceptable result of BER and high quality factor.

Keywords— *Continuous Wave (CW), Bit Error Rate, Free Space Optics (FSO), Q factor, MIMO*

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A Novel HDL design of Digital Controlled Oscillator for DSP Applications

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ABSTRACT

Nowaday's digital signal processing plays a vital role in communication systems and technology tolerance of design with stable performance are important. This paper presents various design solutions of digitally controlled oscillator (DCO) for all-digital PLL (ADPLL) in which all functional blocks have been synthesized from standard digital cells and automatically placed and routed. DCO functions as the local oscillator supplying internal timing for all the synchronous circuits. In this paper, implementation of DCO, as a core of ADPLL is described in detail. It also presents simulation and the FPGA implementation using Xilinx of proposed DCO and its results.

Keywords – *Digital controlled oscillator; all-digital phase locked loop; FPGA; ASIC, HDL; standard cell library*

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Simulated Performance Study of Dual-Mode Fractal Bandpass Filter on Various Substrates

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Abstract

This paper presents a design and simulation of miniaturized dual-mode microstrip bandpass filter (BPF) based on fractally slotted patch resonator. The proposed filter is centered at 2.4 GHz desirable for Wireless LAN applications. The design offers transmission zeros (TZs) at 2.16 GHz and 2.66 GHz, 2.25 GHz and 2.67 GHz, 2.125 GHz and 2.98 GHz for RT/Duroid 6010, RT/Duroid 5880 and FR-4 (lossy) respectively on either side of the filter passband ensuring high selectivity. The filter is found to have a 3-dB fractional bandwidth (FBW) of 3.5%, 2.06% and 9.3% for RT/Duroid 6010, RT/Duroid 5880 and FR-4 (lossy) respectively in the passband. The purpose of this work is to design a compact dual-mode fractal-based microstrip BPF with low-loss and high selectivity. Also, a performance comparison study is done based on simulation to choose a proper substrate with low insertion loss and high return loss for the filter design. The simulation of insertion loss and return loss characteristics of the dual-mode filter on different substrates is carried out using CST Microwave Studio simulation tool. The design of such compact BPF with high selectivity will be suitable for applications in wireless communication systems.

Keywords—*Dual-Mode, Fractal, Bandpass Filter, Transmission Zero*

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Automatic Vehicle Sensing And Street Light Control System

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Abstract

This project talks about the street light in highway,normal roads or any roads where we require light. This street light is not an ordinary one because there are lot of facilities involved in it like the solar energy is used to run the LED lights and different kind of sensors are used for objectifying vehicle and non-vehicle .In this street light the energy is stored in the morning time due to the solar and blinks at the night time whenever a vehicle or non-vehicle appears.

Keywords: *Automated, Street light , Sensor , Solar energy*

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Automatic Rain Sensing Car Wiper

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Abstract

The issue of driver's safety is of great importance in today's automotive industry. In many cases, a lack of proper vision is responsible for accidents during heavy rainfall. In many cases, manual errors like not increasing the speed of the wiper by the driver lead to accidents. Today's car wipers work on the principle of manual switching. In this project, we proposed an automatic rain sensing wiper system that detects rain and starts automatically and stops when the rain stops. The automatic rain sensing car wiper system is not only automatic but also intelligent. The wiper system detects the rainfall automatically and starts itself. In this project, we use Arduino along with a rain sensor, an LCD 16x2 modules, and a servo motor. The information sensed by the rain sensor is sent to Arduino. The collected information from the rain sensor is processed and analyzed by Arduino and it further controls the servo motor based on the processed information. The blades of the wiper are connected to the servo motor. All the devices are connected to Arduino which is connected to the power source inside the car.

Keywords—*Rain sensor, Arduino UNO, Comparator circuit, Servo motor*

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Design of Self-Balancing Motorcycle

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Abstract

Currently, many investigations have been done regarding to the problems of controlling two-wheeled self-balancing robot. This paper describes the design of a self-balancing motorcycle. This self-balancing bicycle is a vehicle which uses control moment of gyroscope (CMG), mass balancing, steering control and reaction wheel. Based on previous research, CMG is the suitable choice since it can produce large amount of torque, it has no ground reaction forces, so that the system can be stable even when the bicycle is not moving. To design and build a bicycle prototype that's capable of driving and balancing without a rider, the Automatic Balancing bicycle will employ an impact system to stay itself from falling over while in motion, and be propelled by a motor. The goal of this project was to build a two-inline-wheel bicycle capable of balancing itself using a reaction wheel. This self-balancing motorcycle is able to drive and can stop without losing its balance. So as to maintain balance, the robot reads sensor input to detect its angle and correctly reacts to maintain a steady vertical position. Sensor data is recorded into a control system which produces a balancing torque to a motor spinning the reaction wheel. This include the capability of accelerating, driving in a straight line and stopping without falling. This is a environmental friendly vehicle with zero pollution.

Keywords: *Tilt angle, Wheel Balanced bicycle, Gyroscopic Effect, Balancing Control, 3 Axis-Accelerometer*

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An Innovation for 5G-Multi-tier Wireless Networks Capacity Improvement

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Abstract

Presently days there is progressively number of exploration examines continuing rising remote correspondence innovation called 5G. 5G systems are individual the blend of numerous organizationplanes with differing sizes, the different sorts of sizes, moves the forces, exploiting the backhaul relations, there are dissimilar kinds of radio access revolutions that are become to by a astounding quantities of keen and heterogeneous remote appliances. In the multi-level schemes, there is key subject of is useful and impediment the board In this paper, we originally introducing the OFDM-MIMO remote transmitter and collector future for 5G organize in MATLAB exploiting QPSK balance and turbo encoding method, and afterward furthermore proposed improved joint disseminated the cell association and force control (CAPC) technique that fulfill the destinations, for example, supplementing strategy amount, less vitality operation, less deferral, less inertness and to the high need clients the parity traffic load subject to a base SIR. The down to earth recreation and examination of anticipated half and half asset the board strategy is overexploiting NS2. This paper offering both "MATLAB and NS2 results".

Keywords: *Cell Association, Resource, Interference, 5G Networks, CAPC, Wireless Networks, OFDM-MIMO*

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Self-Localization for IoT Based Wireless Sensor Networks

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Abstract

In this paper we propose an embedded optimization framework for the simultaneous self-localization of all sensors in wireless sensor networks making use of range measurements from ultra-wideband (UWB) signals. Low-power UWB radios, which provide time-of-arrival measurements with deci meter accuracy over large distances, have been increasingly envisioned for real-time localization of IoT devices in GPS-denied environments and large sensor networks. In this work, we therefore explore different non- linear least-squares optimization problems to formulate the localization task based on UWB range measurements. We solve the resulting optimization problems directly using non-linear- programming algorithms that guarantee convergence to locally optimal solutions. This optimization framework allows the con-sistent comparison of different optimization methods for sensor localization. We propose and demonstrate the best optimization approach for the self-localization of sensors equipped with off-the-shelf micro controllers using state-of-the-art code generation techniques for the plug-and-play deployment of the optimal localization algorithm. Numerical results indicate that the pro-posed approach improves localization accuracy and decreases computation times relative to existing iterative methods.

Index Terms — *Localization, Ultra-Wideband Ranging, Non-Linear Embedded Optimization, Wireless Sensor Networks*

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Analysis of Sub-Clustering in Group Recommender System

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Abstract

In today's scenario recommender systems are part of most websites, mostly e-commerce websites and video streaming websites. Since most of the websites have millions of users and it is very tedious task to build personal recommender systems, the concept of group recommender systems comes into picture. Group recommender systems consider the preferences of all users in the group and generates a recommendation list to the group. In this paper we have presented a solution to provide a group recommendation system with sub-clusters, taking into account the element of diversity to avoid over-fitting. Similar users are made into groups and sub-clusters are formed by grouping more similar users in the group. We have also added popular items and unpopular items to avoid recommendations from a narrow domain. After evaluating and analysing the results it is found out that sub-clustering in group recommender system does not result in over-fitting but also it does not perform well.

Keywords: *Recommender system, collaborative filtering, Recommendations, sub-clusters, over-fitting, group recommender system.*

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Fractal Inspired Quad Frequency CPW Fed Antenna For WirelessApplications

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Abstract

A Quad Frequency CPW feed fractal Inspired patch antenna has been designed for S and C band applications with the operating frequencies of 2.02GHz, 3.47GHz, 5.04GHz and 5.99GHz. Patch has been etched with slots in a dissimilar manner which led for the generation of Quad band of resonance. Flame Retardant Glass epoxy is taken as substrate material which is having a thickness of 1.6mm and a 50Ω stripline has been used to excite the antenna. Fractal Inspired CPW fed technique has been implemented to attain the Quad frequency of operation. The overall dimension of the antenna is 60mm×60mm×1.6mm. The Proposed antenna is having resonance which is covering S and C band frequencies with a return loss value less than -10dB for entire bandwidth. Commercially available 3D simulator Ansys HFSS software has been used to design the proposed antenna.

Keywords—*Wireless, Quad Frequency, CPW fed.*

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Novel Dataset Modeling Technique for Lip-Reading

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Abstract

The art of Lip-reading is an impressive skill to recognize what is being said from visual informationalone. The art of lip-reading performed by human is very challenging because it gives rise to more ambiguities at the word level, due to the words or letters that produce exactly same lip sequence. The combination of computer vision algorithms with machine learning techniques are so efficient in developing a visual-only speech recognition system which recognizes the uttered words by using the art of lip-reading. The visual-only speech recognition systemrequiresauniquedatasettotraintheconvolutionalneural network (CNN) to predict the words and phrases uttered by speaker present in the video file. This paper presents a novel dataset modeling technique forlip-reading.

Index Terms—dataset modelling for lip-reading, Visual-only speech

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Investigations on Performance of Flyback and Buck-Boost Converters in PV Energy Conversion System

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Abstract

In this paper presents a three level & five- level inverters fed from photovoltaic (PV) and wind energy topology for grid-connected PV system with a pulse-width-modulated (PWM) control scheme. Some of the distributed power generation sources that are used to increase the total power produced in the world include renewable energy sources such as photovoltaic, wind, and geothermal. Photovoltaic (PV) is a method of generating electrical power by converting solar radiation into direct current electricity using semiconductors that exhibit the photovoltaic effect. Photovoltaic power generation employs solar panels composed of a number of solar cells containing a photovoltaic material. Multilevel inverter structures have been developed to overcome shortcomings in solid-state switching device ratings so that they can be applied to high voltage electrical systems. The multilevel voltage source inverters unique structure allows them to reach high voltages with low harmonics. This makes unique power electronics topologies suitable for Flexible AC Transmission Systems and custom power applications. The use of a multilevel converter to control the frequency, voltage output including phase angle, real and reactive power flow at a dc/ac interface provides significant opportunities in the control of distributed power systems. In this work, new system architecture for hybrid Photovoltaic and Wind energy system is connected to the grid. This method allows the renewable energy sources to deliver the load together or independently depending upon their availability. The proposed inverter uses less number of switches when compared with the conventional Multilevel Inverter. The simulations results are obtained using MATLAB/SIMULINK software.

Index Terms--*Photovoltaic (PV), Wind energy system, hybrid system and Multilevel Inverter.*

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LIVE VIDEO STREAMING FOR BOARDER SECURITY

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Abstract

This project aims to identify harmful contents, intruders, and to provide live video capture and transmission to higher authorities. In this project, Node MCU is used as a main controller which can control all connected sensors. It's a vehicle type robot which can move in all directions and record the live video and send it to registered mobile App user so that he can view the conditions at boarder and he can take the decisions according the condition occurs. If any intruder is identified then that can be given as notification by activating the buzzer to alert the security force so that they will react to that situation. Proximity sensor is there to detect the bombs which will be kept by the enemies at boarder. Our vehicle will continuously moves around the boarder for monitoring the conditions. Ultrasonic sensor in our vehicle will detect the intruders or suspicious persons. Gas sensor will detect the dangerous gases released and if any person had alcohol, our vehicle will detect.

Keywords-Node MCU, Metal Sensor, cloud, Gas sensor

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ARM9 Based Real Time Embedded System Video Capture and SMS Notifying System

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Abstract

In This paper, Network video catch framework utilizing well-disposed ARM9 board bolster bundle (BSP) S3C2440 is introduced. This submission framework catches video, shares between arranged frameworks and furthermore cautions the regulatory individual with smallcommunication administration alert as compulsory by the customer. This framework everything in a continuous situation and is upheld by inserted RT Linux. This framework gives minimal effort and high compelling savvy checking framework like in lifts, home security frameworks and so on with low force utilization. Not at all like other inserted frameworks this on-going framework furnishes customer video screen with the assistance of cordial "ARM9 BSP".

Keywords—"*BSP, Friendly ARM9, Embedded RTLinux, real time environment, Client video monitor"*

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Design of Corner Etched Square Patch Antenna

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Abstract

The corner etched square patch antenna is aultra wide band antenna. The designed antenna operated from 3.5 to 12GHz frequency range. The designed antenna return loss is throughout The frequency band below -10 db. The antenna feeding method is excited with microstrip feeding. The advantage of cutting down the corners of the square patch as curves .It is evident that in VSWR plot the magnitude is maintained well below '2'.This level is continuously managed over the entire UWB. Similarly, the radiation characteristics are verified for a selected frequency of 8 GHz in the band.

Keywords: *UWB(Ultra wide Band), patch, stripline*

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Agricultural Field Motor Controlling Through IVR Service

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Abstract

Agricultural area is significant to the extent Indian resident's perspective. Profitability of agribusiness field's doesn't rely upon abundance of water sprinkled to the field, yet relies upon better coordinating of water flexibly with crop request and uniform ecological conditions that are reasonable for cultivating. Under water system or over-water system framework prompts unreasonable or less water flexibly which may cause more terrible outcomes for example yield decrease. The venture depends on initiation or deactivation of machines remotely, which is utilized by essential cell phones that incorporate a working framework. The IVR administrations assumes a urgent job in this venture where the rancher can comprehend the guidance by the language which he knew. In this undertaking Commands are given as voice guidelines to the portable utilized by individual, who will actuate or deactivate (or) Turn it on/off the water system engine and furthermore know the ebb and flow status of engine by the assistance of GSM module and Raspberry pi.

Keywords: *IVR services, Raspberry pi, Monitoring And Controlling System, GSM, AT commands, DTMF.*

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A MFO Optimized Fuzzy Handover Controller Design for Reducing Handover Probability in Network

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Abstract

With the growing number of mobile subscribers, wireless communication is also rising quickly. The technologies like LTE and LTE-A are highly preferred and these are being adopted by number of users. In order to accomplish the demand for higher information rates along with that managing the service quality, the continuous handover (HO) connectivity in the LTE network is very significant and HO optimization is essential for enhancing the satisfaction of user. However, Handover failures (HOF), RLFs and ping-pongs (PPs) are the main Handover problems that affect continuous connectivity. In recent years, number of researchers proposed various approaches to overcome the problems of handover, however, it consists of some drawbacks. Therefore, to cope with these issues, the novel approach is presented in the proposed work in which only one fuzzy-system is used to reduce the complexity and the MFO algorithm is used to define optimal ΔHOM value by varying membership function, thus leads to make accurate decisions. The simulation of the proposed approach is then performed in MATLAB environment and also the proposed approach is contrasted with previous approaches in terms of two evaluation parameters i.e. too late HO and ping-pong by considering different users types i.e. real-time (HR and SR) and non-real-time (HN and SN) users and the obtained results demonstrate the efficacy of proposed approach as compared to previous approaches.

Keywords: *LTE network, Handover (HO), Ping-pong, Too Late HO, Real-time users, Non-real time users.*

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IoT Simulators and Simple IoT Simulator's Implementation

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Abstract

The Internet of Things (IoT) is a world-wide, interconnected network of smart physical entities. The entities are sensors, networks, wireless sensor networks etc. To study the IoT application infrastructure various IoT simulators are used. IoT simulators are useful in making IoT environment's simulation. In IoT environment thousands of connected devices can be added. In IoT, security is very important. In this paper majorly high security IoT simulators are discussed. Comparison details are given for the IoT simulators. SimpleIoTSimulator is discussed. Implementation of SimpleIoTSimulator for Message Queuing Telemetry Transport (MQTT) is given.

Keywords:*Internet of Things (IoT), An Application Programming Interface (API), Message Queuing Telemetry Transport (MQTT)*

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FOG COMPUTING SECURITY THREATS AND ENCRYPTION TECHNIQUES: A REVIEW

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Abstract

In today's scenario all the devices are connected for communicating huge and heterogeneous amount of data.The escalating use of sensor devices is also intensifying the data generation.With this increased data, the computing and storage is also becoming important. The Fog has given a new era of communication infrastructure by processing data near the generation of the data. The security of the data generated is of prime importance. The security of the data can be achieved with encryption. The devices used in the communication are energy constrained devices. So the methodology should be such as to fulfill the requirements of resource constrained environment. The principal idea of this paper is to provide systematic literature review of security threats on Fog Computing and the encryption techniques used for secure communication in Fog Computing

Keywords:*Fog Computing, Encryption, Security, Advanced Encryption Standard, Elliptic Curve Cryptography, Internet of Things(IOT).*

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Monitoring and Controlling Various Environmental Conditions Based on IOT

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Abstract

The central theme is the monitoring and control system for the greenhouse through the Internet of Things (IOT). The system monitors various environmental conditions such as humidity, soil moisture, temperature, fire presence, and so on. If any situation exceeds certain limits, the message will be sent to the registered number through the GSM module. The microcontroller will automatically turn on the motor if the ground moisture is below a certain value. The color sensor absorbs the color of the leaves and sends the message. The prototype was tested on a combination of different inputs and the experimental results were found as expected.

Keywords-*GSM Module, Microcontroller, Internet of Things, Sensors*

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Using Data Science and Machine Learning for Cricket Prediction

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Abstract

Cricket is a game that doesn't require any presentation in India. A game for which individuals worship to make their team to win the battle. Cricket is played all around the world across 106 parts of the International Cricket Council, with an estimated 2.8billion fans worldwide. Cricket betting is a multi-billion dollar business. In this way, there is a solid motivating force for machine learning models that can foresee the results of games and beat the chances given by bookies. Here our point is to explore to what degree it is conceivable to anticipate the result of cricket matches. Given thesize of the business around the world, there are clearly money related additions for anybody with access to superior prediction techniques. Utilizing different Machine Learning models so as to anticipate results of the cricket, Random Forest, Support Vector Machine and Logistic Regression Algorithm where used to break down the data. The fundamental target of sports prediction is to improve team performance and upgrade the odds. The estimation of a success takes on various structures like streamsdown to the fans filling the arena seats, TV contracts, fan store stock, stopping, concessions, backers, enlistment and retention. Some of the highlights of the significant this AI based modes incorporates, anticipating the result of predicting the result of a match before and during a match. There can be a great deal of highlights for this issue, for example, the country where the match is being played, ground, batting averages of each batsman, bowling averages of each bowler, win ratio of both teams against eachotheroverallandinthespecificgroundandcountry.

Keywords: Random Forest Classification, Support Vector Machine, Logistic Regression, Visualization, Data Analysis.

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Prediction of Age and Gender from Facial Images Using Convolutional Neural Network

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Abstract

Prediction of age and gender from facial images is more challenging as the complex structure of face aging method and availability of labelled data is less.Moreover, its applications in the different field demand the accurate predictions. The process of age estimation is to evaluate the human's age with the help of biometric features, though the age estimation performance can be evaluated by various other biometric tasks. But the proposed work focusses on age and gender estimation using facial features. The proposed work is evaluated on three datasets namely: CACD, FGNET, IMDBWIKI. The model used is generalized for different datasets.

Keyword:*Age estimation. Gender estimation.Facial feature extraction. Deep Convolutional neural network.*

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Verification of Communication Bus Protocol Using UVM

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Abstract

VLSI technology deals with designing of SOC and integrated circuit chips. Many VLSI applications use Advanced Microcontroller Bus Architecture (AMBA) as the bus protocol for communication. In this paper, one of AMBA known as AMBA APB (Advanced Peripheral Bus) is designed which provides minimum power consumption and low bandwidth. For this, an APB Bridge has been designed in System Verilog language. In this paper, we present the design of Advanced Peripheral Bus (APB) controller (or APB Bridge) usingUniversal Verification Methodology (UVM) and discusses the AHB to APB Bridge in detail. UVM Class Library is utilised for building blocks needed to develop reusable verification components and test environments using System Verilog.APB slave is connected to the UART protocol which is also designed using the System Verilog language and verified using UVM.All the designs are simulated and verified on the EDA playground. The verification of UART connected to APB slave is implemented on the Zedboard.

Keywords—*AMBA, APB, AHB, UART, UVM, System Verilog*

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FPGA based SOC for the Hardware Implementation of a Nuclear Pulse Simulator

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Abstract

Radiation is difficult to be identified by human perception but it can be hazardous for human life. A pulse generator that can simulate nuclear pulse signals is useful for nuclear data acquisition systems so that the risk of radioactive sources can be reduced. This process can be made easier with the presence of systems that work in the lieu of emulators. Hence this is a safer way to simulate this system by similar type of electric pulses like Gaussian pulses coming from the front end electronics including radiation detectors and corresponding pulse shaping devices. So this work describes a pulse simulator device setup capable to simulate the detector signals, in a way to mimic the performances from a radiation detector. In this work, pulses are generated by field programmable gate array (FPGA) technique using hardware description language coding and the nuclear radiation detecting system is developed as a system on programmable chip (SOPC). This work is done by the design and implementation of intellectual property cores (ip cores), which acts as a generator of nuclear pulses and incorporating soft-core processor. It is capable of forming pulses with an exponential shape such as those from a radiation detector after pulse shaping or Gaussian-shaped pulses such as those provided by spectroscopy amplifiers. Initially digital values of exponential pulse have been generated and implemented on FPGA development board described in the Altera Quartus design software tool. A system on programmable chip is made up of FPGA. Then these values are transferred to the input of a digital to analog convertor (DAC) through high speed mezzanine connector. DAC output generates analog output pulses.

Index Terms — DAC, Cyclone FPGA, IP cores, SOPC, pulse.

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Analyzing the Coupling Characteristics of Rectangular Metallic Nano Coupler with Metallic-Insulator-Metallic Waveguide Structure

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Abstract

In this paper, a rectangular metallic-insulator-metallic waveguide (MIMW) coupler in nanoscale has been simulated and analyzed using the Lumerical FDTD software. Couplers are generally photonic structures which couples or allows the transfer of light information from one circuit to other circuit(s). Various analytics on dispersion, beta and loss characteristics with the application of light at the working wavelength of 365 nm have been analyzed with the proposed scheme. The various coupling characteristics have been exhibited, in order to achieve and enable an efficient coupling action.

Keywords: *coupler; nanoscale; waveguide.*

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Enhancing Image Encryption Approach Through Elliptic Curve Cryptography

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Abstract

In this paper an approach for secured transmission of images and its implementation is proposed. The proposed method proves to be better compared to various presently existing cryptographic algorithms. The basic application of this algorithm is to provide secured transmission of digital images for various multimedia usages. These encrypted messages can further be used for compact storage of information for secured applications. In this paper replaced code algorithm is used for storage efficiency, and usage of elliptic curve cryptographic algorithm provides high security.

Key Words:*ECC- Elliptic Curve Cryptography, Discrete Logarithm, Authenticity, Integrity, compression, block substitution.*

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Algorithmic Approach of Image Transmission Over Wireless Channel With Security and Authentication

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Abstract

In the present world of communications for various multimedia applications, wireless channels have become medium for means of data transfer. This wireless channel is subjected to many challenges in the process of transmission. For image transmission over this wireless channel which is prone to noise would corrupt the image due to which image quality is affected. The overall performance mainly depends on the algorithm chosen to encrypt the data, the behavior of the wireless channel. Apart from these the computational complexity, Bit Error Rate (BER), architectural perspective, the security aspects also play a vital role. In this paper the algorithmic approach for transmitting an image the importance of algorithm for image encryption process so as to propagate through internet for compact storage, secured transmission for embedding the text in to the medical image retaining the quality and obtain better performance is presented. In the proposed approach an input patient information consisting of their personal details are encrypted with standard encryption algorithm (AES, ECC) this information is hidden with a cover medical image termed as watermarked image which is then encoded with forward error correcting code and transmitted through the wireless channel. The scheme focuses on the encryption algorithm, watermarking process to embedded the data and the extraction process to retrieve the details that are the objectives to achieve improvements in terms of quality, BER and also performance for secured applications

KEYWORDS: *Encryption algorithm, security, BER, performance, wireless channels.*

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An Area Efficient Low Power High Performance VLSI Design for Deep Learning based Convolutional Encoder and Adaptive Viterbi Decoder

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Abstract

Very large scale integration (VLSI) is a process of embedding or integrating enormous transistors on a single micro chip. Computing devices, digital camera, embedded processors, microprocessors, personal computer, work station and automobile are some applications of VLSI. Power consumption is important one in VLSI. If, it has very high power consumption, it will lead to severe hazards to all units. If, have low power, it may affect performance and efficiency of VLSI. These problems lead to power dissipation, leakage power problems etc. To overcome these problems, in this paper, we propose an area efficient low power high performance VLSI design for deep learning based convolutional encoder and adaptive Viterbi decoder (ALH-CV) for future communication system. The first contribution of the proposed ALH-CV design is to illustrate a deep learning-based fully convolutional encoder, which makes it especially suitable for low power design. The second contribution is to introduce the adaptive Viterbi decoder based on state-exchange algorithm which uses the trace forward (TF) units and the idea of trace back. Finally, a parallel sub pipeline (PSP) technique is used to improve the performance of combined ALH-CV design. The proposed ALH-CV design is synthesized and simulated in Xilinx ISE with Vertex 7 (XC7VX485T) device. The performance of proposed ALH-CV design is compared with the existing state-of-art design in terms of hardware utilization, power consumption and maximum operating frequency.

Keywords— *ALH-CV, deep learning-based fully convolutional encoder, adaptive Viterbi decoder based on state-exchange algorithm, parallel sub pipeline, low power design*

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War Field Spying Robot With Wireless Night Vision Camera

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Abstract

Currently international border surveillance is a difficult task for border guards patrolling the borders, but it is not possible to view the border at every moment. An essential requirement for this situation is the robot, which automatically detects trespasser at the border and report to the nearest board security control unit. Many of the military departments now use robots to perform dangerous tasks that soldiers cannot. In this current work ,the Raspbian operating system with the remote monitoring and control algorithm over the basic spy robot platform. Several of the military departments currently utilize the robots to handle risky jobs that can't be done by the troopers. In this paper, a Raspbian OS along with Arduino Mega 2560 are combined together with remote observation and management algorithmic program through Internet of Things (IoT) which could save human lives, reduce manual error and shield the country from enemies. The spy mechanism system contains the Raspberry Pi (small single-board computer), Arduino Mega 2560, night vision pi camera and sensors. The information regarding the detection of human beings by PIR sensors is sent to the users through online server. The pi camera captures the image of intruder movements and sends it to the authorized email ID. The user in control room is able to control the movement of robot using the android application. The movement of a robot is automatically controlled through obstacle detecting sensors to avoid the collision. This spy robot can be used in numerous fields like industries, banks and shoppingmalls.

Keywords—*Border security, Raspbian OS, Spy Robot, Raspberry Pi, PIR sensor, Obstacle Detecting Sensor*.

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An Efficient Technique for Pilot Decontamination in Multi-Cell Massive MIMO Systems

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Abstract

Massive multiple-input multiple-output (MIMO) encounters inter-cell interference called pilot contamination in multi-cellular system. An improved pilot assignment strategy is proposed in this paper to mitigate this interference. The users present in the serving cell are separated into two groups according to their coefficients of large scale fading. The group of weak users are allocated pilots based on the exhaustive search strategy and the group of strong users are allocated pilots based on the intensity of pilot contamination. The simulations in this paper show that the performance of the proposed strategy is superior to the smart pilot assignment strategy and tends toward the exhaustive search strategy. Furthermore the time complexity of proposed strategy is less than that of exhaustive search strategy.

Keywords- *Inter-cell interference, large scale fading, Massive MIMO, Pilot assignment strategy, Pilot contamination*

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Machine Learning using Clustering Method used for Toxic Liquid Detection

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Abstract

This paper has been proposed to examine thick film gas sensor recognition for methanol, proponal and acetone. 1" x 1" alumina substrate was artificial for a thick film gas sensor. Its selection of the basic gas perilous laminated surface SnO_2 based on PD doped thick film gas sensors was devised in such way electrodes for the gas perilouslaminatedsurface.Thecontactpadinteractswiththe sensor. The heater element was printed as posterior as a substrate.Fromthebottomthegasservingperilouslaminated surface as a contact pad for the sensor. The sensitivity of the sensor has been studied at different Pd-doped concentrations (1 % Pd doped) at an everlasting temperature 3000C upon exposure Methanol, Propanol & Acetone. The proposed paper emulates in anaconda software through spider tool(spyder-3) exploitation python programming language. Python programming language scripted in machine learning using clustering techniques for appreciated of toxic liquids. Emulative result suits with hand on results with simulated results at dissimilar operatingtemperature.

Keywords—Thick film gas sensor, Sensitivity, Clustering

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Design of Fast FIR Filter using Compressor and Carry Select Adder

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Abstract

Speed and area are now a day's one of the fundamental design issues in digital era. To increase speed, while doing the multiplication or addition operations, has always been a basic requirement of designing of advanced system and application. Carry Select Adder (CSA) is a fastest adder used in many processors to accomplish fast arithmetic function. Many different adder architecture designs have been developed to increase the efficiency of the adder. It is very commonly known that per second any processors performed millions of work functions in semiconductor industry.

So when we do designing of multipliers, one of the main standards is performing speed that should be taken in the mind. In this paper, we propose a technique for designing of FIR filter using multiplier based on compressor and carry select adder. Performance of all adder designs is implemented for 16, 32 and 64 bit circuits. These structures are synthesized on Xilinx device family.

Key words: *CSA, FIR.*

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Virtual Banking System using IoT

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Abstract

A wide variety of system needs reliable personal recognition system to either authorize or determine the identity of an individual demanding their services. The goal of such systems is to warrant that the rendered services are accessed only by a genuine user and no one else. In this project, we proposed a multifactor (OTP and fingerprint) based authentication security arrangements to enhance the security and safety of virtual banking and its users. For example, Automated Teller Machine (ATM)'s now a day are extensively used all over the world for the withdrawal of cash. But there is a number of disadvantages to these machines. Frauds attacking the automated teller machine has increased over the decade which has motivated us to use the biometrics for personal identification to procure high level of security and accuracy. This project describes a system that replaces the ATM cards and PINs by the physiological biometric fingerprint scanner. Moreover, the feature of the one-time password (OTP) imparts privacy to the users and emancipates him/her from recalling PINs. One Time Password (OTP) is sent to the user registration mobile number through GSM Module system. After that, the user will be able to complete the transaction securely.

Key words: *GSM, ATM.*

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Various Approaches on Radiation Hardened Coding for Soft Errors: A Review

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Abstract

In VLSI technologies radiation hardened soft errors are considered as a major concern in electronic devices for space, military and in many other appliances due to high reliability. Memories are the major part of the circuit which gets affected due to these soft errors by flipping the stored data bits. Many error correcting and detecting codes are analyzed and reviewed in this paper for correction of soft errors. But these correcting/detecting techniques are varied in terms of soft error rate, cost, performance, area, power, delay and number of redundant bits. Detailed survey on various error coding approaches is reviewed in this paper for the future scope of the work. The paper also describes about the implementation results and some of the previous challenges contributed towards the induced soft error correction.

Index Terms - *Reliability, Soft Errors, Single Event Upset, Single Event Transient, Exponential Current.*

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Automation of Dry-Wet Dust Collection and Monitoring Using Internet of Things (IoT)

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Abstract

Swachh Bharat Abhiyan (English: Clean India Mission and abbreviated as SBA or SBM for "Swachh Bharat Mission") is a national campaign by the Government of India, covering across 4,000 statutory cities and towns, to clean the streets, roads and infrastructure of the country.

The aim of the mission is to cover all the rural and urban areas of the country to present this country as an ideal country before the world. With the proliferation of Internet of Things (IoT) devices such as smartphones, sensors, cameras. It is possible to collect massive amount of garbage.

This project is designed for the effective dry and wet dirt collection using Embedded System. The main motto of this application collecting of dry and wet waste separately into the dumping vehicles. On which the dry waste collected dust bins are placed left side and wet waste collected bins on right side.

Keywords— *SBA, SBM, Proliferation, IoT*

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Monitoring and Controlling of Hydroponic System Through IoT for Better Crop Productivity Framework

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Abstract

Hydroponic is a thriving framework is known as urban agribusiness. This framework does not expected soil to develop plants. This development is a decent substitute framework for creating solid yields, vegetables and nursery. The implanted framework inserted IOT system to screen and control the hydroponic necessities, for example, light intensity, temperature, water level, Ph estimation of hydroponic solution. IOT arrange gets the information from installed framework and recovered information to internet, the portable application is utilized to send data of framework to client through the internet, so that checking and controlling will be anything but difficult to client.

Keywords—: *Hydroponic System, IOT, NodeMCU, Light Intensity, Mobile Application.*

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Automated Car Audio System Based On Driver's Facial Expression Using Deep Learning

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Abstract

Human emotions remain an important and challenging task in the forthcoming generations in form of computer vision algorithms, especially in the area of human robots which coexist with humans in their day to day life. Facial expression can also be called as non-verbal means of communication. It helps to express the human attitude from their face and also recognize his or her mental condition. By this the attitude of the any particular person to know simultaneously their mental condition is also. Scholar and research are creating human computer relations. This project investigates the idea of performing emotion analysis of Driver Moods by using deep learning. Drowsiness of the driver is the major problem and fatigue which ends in more number of accidents. Developing and maintaining technologies which can efficiently detect the driver's mood and automatically plays an appropriate music to enhance his mood and make him enjoy hisdriving. By monitoring his expressions, driver can be detected early enough to avoid a car accident.

Keywords:*Facial Emotion Detection, Facial Expression Recognition, Audio Feature Recognition, Emotion Based Music player.*

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Neuron Signal Processing: An overview

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Abstract

It is now known that how the multitasking processed by the brain involves number of environmental, behavioral factors. We know how anatomy of brain contributes in information flow. This paper throws light on how and what chemical changes takes place across neurons for transferring signal generated by one neuron across a network of neurons. This paper will be very helpful for the entire researcher community, people in medical profession and students as all the important aspects are discussed at one place. Besides this, in depth knowledge of ions exchange along neuron and synapses can later help to study and solve many neurological disorders.

Keywords:*Information flow, brain, anatomy, multitasking, complex, electrical, signals, synapses, knowledge, ions, action potential.*

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AUTOSAR Development on UDP Network Management Module 4.2.2 for Ethernet Protocol

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Abstract

Electronic Control Unit (ECU) and Embedded System used for a wide variety of purposes from vehicle control to entertainment in modern automotive industries. The industry tries to develop new and efficient systems periodically, to improve the performance of system. As the number of ECUs in an automobile increases, new technologies are going to develop day by day to interconnect the ECUs. As a result of much efficient ECUs, the data produced by these ECUs and the data to be transmitted between these ECUs increased to a very large scale [1]. So the industry tried to select new connectivity solutions which provide higher bandwidth. The automotive embedded system industry thus ended up in using the well accepted and highly standardized Ethernet connectivity [1]. So that to manage the network between ECUs for Ethernet connectivity UDP Network Management is the best option. This paper shows how to develop the UDPNM Module with using AUTOSAR standards.

Keywords: *Autosar, Ethernet, User datagram Protocol, Network Management, Udp Network Management, ECU.*

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ARM Cortex M4 Powered NIR Spectroscopy based Non-Invasive Blood Glucose Unit Design

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Abstract

According to WHO, Diabetes has become the most common disease all over the world. A huge number of blood samples are to be tested daily and sometimes even hours. Although many techniques are used for testing blood glucose levels, the Non-invasive technique is one of the suitable solutions. This paper discusses one of the non-invasive techniques using NIR Spectroscopy. The hardware used is MSP432P401R controller and IR Led for determination of blood glucose. The first part of the paper deals with interfacing controllers with liquid crystal displays and the later part discusses the monitoring of blood glucose values. Near infrared light is sent through the finger, the voltage variations received after transmission through fingertip are used to approximate glucose levels. The controller is coded using Energia IDE software. This method provides adequate control and greatly reduces complications in diabetic patients. The main advantage here is the probability of infections getting reduced and even there is no pain of pricking the blood.

Index Terms:*ARM, Microcontroller, NIR spectroscopy, Embedded software, embedded database, User Interface.*

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IOT Based Smart Farming and the Agrecaruss

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Abstract

Agriculture plays a vital role in socio-economic development of India. Agriculture is the most essential and foremost economic activity of all times. The smart farming and Agrecaruss aims at providing full automation at the farming field i.e. with the help of wireless technology and sensors the farmer will be able to monitor fields condition as well as farmers can take necessary actions as per the conditions of the field. This model aims at integrating both electronics domain with the IT domain we are designing dedicated PCBs (total PCBs 4) for farm fields which will be integrated with moisture sensor and DHT 11(Humidity and temperature sensor) in order to detect moisture level of the soil and accordingly switch on the water pump if the moisture level is less than the required threshold value. The sensor's data will be sent (using ESP-8266) to dedicated web server which can be accessed by the farmer on his/her mobile and also the web server can also be accessed globally. The second part of the model deals with integrating electronics domain with the mechanical domain i.e. we are designing a robot/vehicle which will have the capacity of doing the work of farm laborers like picking, ploughing, harvesting, seeding, collection and taking the products to the storage facility, soil health detection and plant health detection without any intervention from the farmer. The robot/vehicle can be controlled remotely as well as on the fields by using the given controls on the robot/vehicle. All the data of the robot/vehicle will be stored on the web server which again, is globally accessible.

Keywords:*Smart robot, IoT, Thermal printer, Smart farming vehicle.*

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E- Shaped Array Antenna for WLAN and WIMAX Applications

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Abstract

This paper presents a successful designing of microstrip patch antenna with slots for WLAN and WIMAX applications .In this slots are used to improve the bandwidth and (1*2) array is used to improve the gain.In our project we use 2 slots in the microstrip patch and formed E-shaped antenna.It finds applications in WiMax and Indoor and Outdoor WLAN. The proposed antenna generates multiple bands at 5.8GHz,7.8GHz,9.7GHz and 11.8GHz.Our resonant frequency is 5.8GHZ and this design offer proper impedance matching. This antenna has been simulated at 5.8GHz frequency using HFSS software. This design has shown return loss of -42.22dB and gain of 5.9dB

Keywords:*WLAN,WIMAX, Gain, Bandwidth, Directivity.*

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SLEEPY DRIVING ALERTING AND TRAFFIC ACCIDENT INFO SYSTEM USING IOT

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Abstract

The Digital Image Processing (DIP) is immense then significant exploration experiment; nearby are numerous grounds anywhere computerized picture preparing is usage aimed at number applications. Unique of them is to recognize the languid condition of human. The on-going blast in cell phone manufacturing consumes a lot of possible and container usage aimed at different requests. Consequently on the off chance that the computerized picture handling procedure implanted with cell phone, at that point we can must new compact item which will be productive for identification of driver's exhaustion. In this paper, we will speak to the structure way to deal with build up the android stage based request and IoT based equipment, which is propelled item identified with driver security on the streets utilizing mix of versatile figuring and advanced picture handling and controller. Our projected framework will distinguish driver laziness and gives cautioning in type of alert. What's more, car accident data framework will ceaselessly screen the good ways from vehicle which remains finished by the ultrasonic sensor. In the event that the ultrasonic sensor distinguishes the hindrance, at that point it will in like manner caution the driver. If some way or another crash happens it will identify crash utilizing sway sensor and give crisis help administration to driver.

Key Words:*Android,DIP,DrowsyDriving,IoT, Smartphone,TrafficCollision.*

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An Efficient Method for Surveillance Robot Using Arduino

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Abstract

We recommend a savvy four-wheeled observation robot utilizing an "Arduino UNO microcontroller" in addition a cell phone consecutively the "Android Operating" Structure. Observation robots commonly comprise of a camcorder, "a GPS module, and GSM radios". Android cell phones accompany astounding equipment fulfilling the overhead requirements. This can be utilized and recycled to benefit finished "APIs (Application Programming Interfaces)" accommodated the Android working framework. In accretion, the spending for building said robot abusing a cell phone is assuaged by and great. The robot can be measured in the least as of a PC exploiting the web and a microcontroller-"PDA interface dwelling on the robot". To catch and file the constant video after the robot, the inherent camera contribution of the telephone is used. The robot container remains measured dependent on graphic criticism after a similar advanced mobile phone. Four engines help accomplish a zero rotating span. The camera is connected to a stepper engine which brands it attainable to catch the division or thing of intrigue. The caught video container be improved and complete comprehensible utilizing additional picture preparing on the remote PC accordingly taking out the requirement for additional DSP equipment on the robot.

***Keywords*:** *SurveillanceRobots, Android, Arduino,Videostreaming.*

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IoT Based Humidity and Temperature Monitoring

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Abstract

In this modern world automation plays a vital role. The main purpose of automation is to provide comfort to the people by reducing the manual work and to improve the overall performance of any system without the user interaction. The fundamental purpose of this paper is to present aIoT based temperature and humidity sensor continuous monitoring system which will sense the temperature and humidity levels using DTH11 sensor. The sensed data by DHT 11 sensor will be directed to Node MCU (micro controller) with the help of Blynk application. In the application discussed in this paper DHT11 sensor is connected to a Node MCU with ESP8266 wi-fi module. The Arduino IDE environment is used to program the Node MCU to Integrate the Blynk server.

KEYWORDS: *Node MCU, ESP8266, Blynk application, DHT11 sensor*

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Smart Bin for Monitoring Garbage Using IoT towards a Smart City

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Abstract

Maintaining sanitation and cleanliness in major cities is important for the people staying there and the environment of the city. It is also an expensive and monotonous task. In India there is a lack of proper disposal of garbage which causes overfilling of dustbins and thus lead to various diseases. To addresses these problems, in this paper, I would like to present a device which will be able to monitor the level of garbage in the bin. It uses basic motion detection technology in a different way. The monitoring can be done via a dedicated webpage or mobile application.

Keywords— *Internet of Things, Smart City, Sanitation, Garbage Collection.*

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Designing Standard Cell Library for Ultra-Low Power Devices using 45nm Technology

S Anantha Kamath, Santan Edwin Fernandes, Shrunga KG, Sindhura S, Vijay Ganesh PC

Abstract

The proposed work focuses on the standard cell library (SCL) design, specifically for ultra-low power appli- cations using 45 nm technology. A few of the commonly used methodologies are Sub-threshold design and Near - threshold design. The technique used here is sizing of the FETs to obtain equal rise and fall time and reduction of the supply voltage to minimize the power consumption. Other techniques include the sub-threshold cell sizing under pro- cess variation, measuring the reliability of cells using noise margin, forward body bias technique in NTV region, supply voltage scaling, etc. Inverter, NAND, NOR, and AOI gates were simulated in ring, chain, and FO4 configurations. The supply voltages of 0.6V and 0.4V with Wp/Wn ratios of 390nm/260nm and 180nm/ 120nm are used respectively.

Keywords Standard Cell Library · Ultra-low power,·Inverter · Ring, Chain and FO4 · Simulations · Layout

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PAPER ID: ICSMEC-2020/0371

Hardware realization of Bathymetry rover using Embedded C

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Abstract

Bathymetry is a process of finding water bodies depth; it is widely employed method in most of the unexplored areas of oceans and lakes. Estimating Depth using bathymetry with incorporation of velocity of sound in underground water, which depends on pressure, temperature and salinity of water body. Need for the Rover is properly justified, because of the prevailing climatologically condition on high altitudes of Himalayas. On such altitudes with temperature of glacial lakes are mostly below zero degree Celsius, hence performing bathymetry by human inspection on floating boats are very hazardous to human life.

This main purpose of this paper is to Measure water depths in lakes by means of sonar or digital transducer for calculation of depths in lakes. We use GPS (global positioning system) for tracking out the location. Arduino is used for controlling system which acts as a micro controller for working of motor, measuring the depth, identifying the location and transmission purpose. At last we use latitude and longitude to point out way in maps. State-of-the-art robotic embedded sonar vehicles are too expensive and heavy. Robotic system provides less-cost, high-accuracy bathymetric surveys of lakes, rivers and oceans is proposed. It is able to identify the exact position of rover during transmission and reception of sonar pulse. It has ability to derive the bathymetry of glacial lakes thereby controlling from the longer distance.

Keywords: *Arduino; Bathymetry; GPS; Transducer.*

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An analytical approach to Haar Features selection for efficient face detection

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Abstract

Boosting based techniques have been most popularin performing the task of HAAR features selection for the task of face detection, although they have limitation of being computationally intensive, resulting in large amount of training time. In this work detailed investigations of the boosting based training process has been done for the efficient selection of HAAR featuresby using analytical approach and exercised modifications in the AdaBoost algorithm for more effective selection of parameters. The statistical analysis has been used as pre-screening stage prior to the boosting process so as to eliminate the in-eligible feature candidates. Considerable improvement in time efficiency of training and detection has been achieved without affecting theaccuracy of overall face detection process with reduced size of the features-set. Features reduction has been achieved at minimum of the order of 32.27% for the training images of size 14×14 and atmaximum of 41.20% for the training images of size 23 × 23.The proposed algorithm has been successfully tested in terms of training time efficiency, detection time efficiency as well as detection accuracy on the benchmark test datasets.

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Cross Project Software Defect Prediction Methods a Review

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Abstract

Cross project software defect prediction(CPSDP) is one of the prominent research areas of software defect prediction.It is found in various investigations on CPSDPthat it is a challenging task to predict software defects with top of the line precision and accuracy. This is review study of the three different methods used for the cross project software defect prediction and methodologies used for cross-project defect prediction

Keywords: *Cross project software defect prediction, HYDRA, HDA, ALTRA*

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Blue Eye Technology an Interaction Between Human and Machine

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Abstract

This paper aims to provide knowledge about Blue eyes technology in modern era. It is based on hard facts, research and experiences which is from different authors, books, journals, documents from websites in hope that it will serve as an adequate learning resource for intended readers. The paper discussed Blue eyes technology to aid understanding and significance of Blue eyes technology in modern engineering technology-identifying the advantages of using artificial intelligence technology and the limitations of artificial intelligence technology. The paper ends by recognizing benefits of using blue eyes technology in modern engineering, type of users that could operate the blue eyes technology system, and its effectiveness in modern world.

Keyword: *Blueeye, Artificial intelligence, Technology, Emotion sensors*

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ECG, EDR and Respiration n Predicting Respiratory Disorders

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Abstract

Physiological signals like ECG and respiratory signals play a vital part in predicting the patient's health status. Imprecise diagnosis of breathing patterns like tachypnea and bradypnea similar to cardiac arrhythmias will avoid erroneous treatment. In case when the respiratory signal cannot be acquired, it could be derived from ECG. This technique is called ECG derived respiration (EDR) technique and is useful in an ambulance and a home-based signal processing systems that help in Telemedicine. The processed signals are then classified with greater accuracy using a feed-forward neural network to be categorized into normal and abnormal signals. This helps in the precise diagnosis of multiple breathing disorders.

Keywords: *Electrocardiogram, EDR, Wavelet Transform*

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A Review on the Antenna Design for 5G Communication System

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Abstract

Wireless technology has raised the interest to place millimeter-wave (mm-wave) antennas in mobile devices. On a worldwide level, many people are connected through wireless technology. According to this, there's a requirement to review antenna devices and their functionality as they are considered the simplest tools to speak through wireless. In a wireless communication system, many different antennas are studied from last four decades and it's found that microstrip patch antennas considered an honest choice for researchers because it is straightforward to fabricate and cheap to manufacture. Furthermore, many pieces of research have been administered in antenna engineering. In this review, a broad investigation of previous and upcoming analysis acquirements of the microstrip patch antenna(MPA) at the millimeter-wave recurrence for future 5G is introduced. The different reception apparatus boundaries like receiving antenna gain, return loss, directivity, and so forth are relatively investigated by contrasting the results of the millimeter-wave antennas.

Index Terms: 5G Technology, Microstrip patch antennas, Millimeter-wave

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Design of Single Feed Circularly Polarized Microstrip Patch Antenna

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Abstract

A circularly polarized microstrip patch antenna with single feed design is elaborated in this paper. The patch of the antenna is given uneven slits at each edge to reduce the axial ratio below 3dB of the antenna and to enhance the bandwidth of the designed antenna. The four asymmetrical slits will excite the orthogonal modes for circular polarization radiation. The patch or the radiating element is being truncated at the four corners to enhance the bandwidth of axial ratio. The designed antenna shows a circular polarization bandwidth of 52.6MHz and gain greater than 6dBiC. The substrate thickness further enhances the bandwidth of the antenna. A low refractive index material is being used as the substrate. The antenna designed is used in RADAR, communication systems, GLONASS applications, GPS applications and also useful in military applications. A single feed antenna with a perfectly compact structure is being proposed and studied in this paper. The size of the proposed antenna is $0.3113\lambda_0 \times 0.3113\lambda_0$. The experimental results and the simulation results are presented and discussed briefly.

Keywords:*Microstrip patch antenna, Circular Polarization, Return loss, Directive Gain, Orthogonal Modes.*

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Robot Frame work with Automation

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Abstract

Manual testing may be a time intense method. Additionally, regression testing, owing to its repetitive nature, is fallible, thus automation is extremely fascinating. Golem Framework is straightforward, nevertheless powerful and simply protectable tool that utilizes the keyword driven testing approach. Straightforward to use tabular syntax allows making check cases in a very uniform means., for making customized check libraries in Python or Java, is on the market, It is a generic open source automation framework for acceptance testing, acceptance test driven development and robotic process automation. The logs and the reports generated from the automated testing. for instance continuous integration systems. Of these options make sure that Golem Framework are often quickly accustomed alter check cases. This paper describes however it's used for automation of existing practical regression cases among short time and with nice success and so saving prices and enhancing the standard of the computer code project.

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Industrial Automation

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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. Industrial automation eliminates healthcare costs and paid leave and holidays associated with a human operator. Further, industrial automation does not require other employee benefits such as bonuses, pension coverage etc. Above all, although it is associated with a high initial cost it saves the monthly wages of the workers which leads to substantial cost savings for the company. The maintenance cost associated with machinery used for industrial automation is less because it does not often fail. If it fails, only computer and maintenance engineers are required to repair it. Industrial automation has recently found more and more acceptance from various industries because of its huge benefits, such as increased productivity, quality and safety at low costs.

Keywords:*Arduino Uno, Fire Sensor, LM35 Temperature Sensor, MQ2 Gas Sensor, LDR, LCD.*

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Incorporation of Constraints into the Sequential Mining of a Progressive Database

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Abstract

In solving the real-world problems, researchers, scholars, scientistsare typically greater interested by the latest and common facts data than the antique ones. Tocapture the dynamic nature of records addition and deletion, this paper considers the database a progressive revolutionary version of the database wherein the facts within the database may be static, inserted, or deleted.We advise a brand new set of rules the use of gadget learning to train the gadget for the sample mining of the dataset. The system learning algorithm addition to facts mining will remedy the problems of an enough and comprehensive dataset. The objective of this set of rules is to expect the cost of a maximum suitable sequential pattern which satisfies all the constraints based at the values of other attributes. The characteristic to be anticipated is commonly referred to as the goal or established variable, while the attributes used for making the prediction are known as the technique variables.

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Driver Alertness Detection System

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Abstract

In the current scenario, the automobile usage rate is increasing. Consequently, the number of accidents is also increasing. Sleep-related issues are the major cause of accidents. The majority of these accidents are caused because of distraction or drowsiness of the driver. The main objective of this system is to present a technology that reduces the accidents caused due to human abnormalities. This is done by monitoring the eye blink rate or heart beat rate of the driver by employing Image Processing technique. Drowsiness Detection is accomplished by eye blink rate detection and heart beat rate detection. If any abnormalities are found during detection, an alert is given to the driver through an alarm for the safety of the driver. The State of the driver is continuously monitored and a warning in LCD display is actuated once the drowsiness is detected. This whole system is deployed on portable hardware which can be easily installed in the vehicle for use.

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Design and Analysis of Automatic Solar Panel Cleaning System

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Abstract

Solar photovoltaic systems have long been used to produce energy for different applications since the 1990s. The Government of India have revised India's solar power target to 100 GW from 20 GW, by 2022[1]. The Solar panel model efficiency determined by various environmental factors like dust, dirt, rain, snow, etc. This environmental factor decreases the performance of the photovoltaic modules. This paper discusses the introduction of the various technologies used for solar panel cleaning on the factor regarding efficiency due to nature and also discusses the varied problems involved with the solar panel cleaning.

Keywords:*Solar Panel Cleaner System; Dust Cleaner; Solar Photo voltaic.*

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PAPER ID: ICSMEC-2020/0397

Night Vision Patrolling Robot Using Raspberry pi

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Abstract

Nowadays women security is the burning issue in many parts of the world. Every time the police may not be available to rescue from the problems. So here we proposed a model 'Night vision patrolling robot using raspberry pi' so that we can overcome the problems. Here the robot is mounted with the night vision camera and a mice to capture and detect the sound. If the sound sensor detects any sound it sends an alert to the end user and the robot stops automatically. So that the user can control the robot by connecting it to the same WIFI as the robot has been connected. It establish a connection between robot and end user. The robot captures the details through camera and it provides the live streaming video by capturing image by images and form into a video by the use of MPEG streamer which is inbuilt in raspberry pi. Here we can track the location of the robot by placing the latitude and longitude values in the goggle maps.

Keywords:*Raspberry pi, Night vision camera, Sound sensor, GPS(Global Positing System), Electric motors, Battery.*

Softwares: HTML, C++, CGI(Common Gate Interface).

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Controlling of Home Appliances using Arduino Through Voice Commands

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Abstract

In olden days to control all electrical devices we need a lot of "MAN POWER". If manpower increases maintenance cost also rises. This doesn't cause any benefit to the industry. Home automation allows us to control household electrical appliances like door, fan, Ac etc. It also provides home security and emergency system to be activated. This system can be used by elder or disable persons who are unable to go to the switch board to control the devices. Remote operation is using smart phones or devices with Android operating system, upon a GUI (Graphical User Interface) based voice command. The device with low cost and scalable to less modification to the core is much important. It presents the design and implementation of automation system that can monitor and control home appliances via voice commands.

Keywords: *Arduino Uno, Voice recognition system, Bluetooth module(HC-05), Android phone application.*

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Path Planning and Parameter Analysis of Multi-Agents Using Hybrid CS-PSO Optimization Algorithm in the Known and Unknown Environment.

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Abstract

In order to attain the efficient operation of an autonomous robot, the optimization of the path becomes an important parameter. In this manuscript we have analyzed the parameters associated with the path planning of the Multi-Agent by the help of a hybrid approach. We have used the combination of Cuckoo Search and PSO to get the efficient result. By observing the nature of the cuckoo birds and the swarm flight of the birds these Meta heuristic algorithms are designed. In terms of Coverage, Time Movement and Energy we will show the different parameters of traversing by an agent. Then the comparison will be made with the Hybrid approach, CS and PSO depending on different parameters. With the help of hybrid approach we will try to show how the robot can reach its target by avoiding obstacle and by utilizing all the parameters in an efficient way.

Keywords: *Path Planning, CS-PSO hybrid approach, Parameter analysis.*

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Distributed Clustering Based Energy Level Routing for Improving QoS in Wireless Sensor Network

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Abstract

The failure in the node or links occurs in Wireless Sensor Networks (WSN)because of several various environmental risks like interference and internal faults within the sensor nodes that are deployed. The disconnections within the network i.e., link fail as well as the data sensed that cannot achieve a route towards the sink i.e., network failure are caused by the abovementioned issues. The WSN's Quality of Service (QoS) is degraded by these failures. Monitoring the failures in the network manually within a rough or adverse condition is quite complicated. This paper considers the tolerance of the network failure issues observed by the deployment of the sensor nodes within WSN. Initially a new clustering algorithm on behalf of WSNs named as Distributed Clustering based Energy level Routing (DCER) is proposed where the Cluster Heads (CHs) are selected in accordance with the residual energy of deployed sensor nodes using a secondary timer. Several spare neighbors on behalf of the original nodes are increased in this paper where the preservation of the transmission of the data is done by them when a failure occurs. Several network schemes are used to test this method and the efficiency of this method is shown by the comparison of the present state of the art techniques. NS-2 is used to simulate this approach. It is demonstrated by the outcomes that effective behavior is possessed by DCEER than DCER with respect to energy consumption, network delay, dropping ratio, and packet delivery ratio.

Keywords:*OPSSN, Distributed Clustering based Energy level Routing (DCER), WSN, QoS.*

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PAPER ID: ICSMEC-2020/0402

Technology Fights Covid-19: A Brief Overview on Rapid Inventions

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Abstract

Human species had come across various pandemics in the past. During every such occurrence, mankind fought for their survival using various invention to handle, resist and overcome the spread of disease. As the history repeats itself, the current COVID-19 pandemic has paved way for more intense research and development of technologies to help us overcome the impact of this disease. In this article we have highlighted the key areas of technologies that had rapid inventions throughout the globe to fight the spread of corona viruses and areas that needed more attention. This helps in sharing concentrated insights on recent trends in technical innovations to encourage local community researchers and student inventions.

Keywords—COVID-19, Technology, Inventions, 3D- printing, Robotics, Telemedicine, Mobile applications.

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Women Safety Night Patrolling IoT Robot

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Abstract

Dynamic—the suggested framework "IoT Based Child and Woman Safety" can be accustomed towards finding absent or lost youngsters and furthermore following the kid developments external after the home. The framework container likewise remains utilized to find ladies who are in harm's way. We must consolidated GPS through one of the essential service of an advanced cell which is GSM all the more explicitly SMS in a single framework. Our suggested perfect covers different sensors which amount various boundaries all the time. If there must raise an incidence of disaster a communication determination be referred to carers or possibly police, through which ever hugging the indicator for a back up response or articulating the catchphrase? The total framework is executed utilizing "Raspberry Pi 3 Model B". Python writing computer programs are utilized border altogether the sensors and other equipment. This implement is wearable (like a wrist watch), consequently it is everything but problematic to transport.

KeyWords: *Womensafety, childsafety, IoT, Raspberry Pi,VoiceRecognition,GPS, GSM, MySql database*

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Application of Octagon Iterations to Design and Analyze Fractal Antenna in Circular Shape

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Abstract

This paper presents a circular shaped fractal antenna loaded with fractal geometry. The first design of the antenna introduces four iterations of the fractal geometry which shows ultra-wide band behaviour for second iteration. The third iteration shows that antenna works in frequency range of 2.8 GHz up to 9.5 GHz and thus showing increased bandwidth. The second design introduces a fractal antenna with combination of four fractal geometry from the first design, which shows further increased bandwidth and antenna working in frequency range of 2 GHz up to 8.9 GHz, with gain of 3.8 DBI. The fractal antenna exhibits bi-directional pattern where the power is radiated equally in both directions. This fractal antenna can be used for WLAN, Hiper-LAN (High Frequency Radio LAN), satellite communication and radar imaging.

Keywords— Fractals, Fractal antenna, Sierpinski geometry, multi-frequency, return loss.

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Application of Triangular Arc Iterations to Design Homocentric-Arm Shaped Fractal Antenna

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Abstract

This paper presents the design of a homocentric shaped fractal antenna suitable for use in multiple frequency band. The CPW-feed and fractal concept have been used to achieve the wide bandwidth in multi frequency band. The shape of the fractal geometry, the number of iterations and the number of homocentric shapes is important factors for achieving wider impedance bandwidth. The Simulated result of the fractal antenna exhibits multiple frequency band characteristics in the frequency range of 1.09 GHz to 10.32 GHz corresponding to bandwidth in between range 50 MHz to 88 MHz. The obtained radiation patterns of the proposed antenna are close to omni-directional in the H–plane and bidirectional in the E-plane.

Keywords—*Planar Monopole antenna, Multiband antenna, Fractal Geometry, CPW Feed, UWB System*

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A Cyber Security Solution:Automation of Secure Boot in Industrial IoT(IIoT) Edge Devices

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Abstract

Industrial Internet of Things (IIoT) is one of the highly emerging technology. Also known as the Industrial Internet or Industry 4.0, IIoT refers to the use of smart sensors and actuators to enhance manufacturing and industrial processes. An unwelcome effect of IIoT is the expansion of the attack surfaces and cyber security threat vectors. Secure Booting of IIoT edge device is one of the prevailing solutions to implement device level security. In this project we automate the secure boot process. The major goal is to develop a user-friendly tool that simplifies the complexity of generating authenticated and encrypted images for secure boot of an edge device.

Keywords— Cyber Security, Secure Boot, i.MX 6UL, Industry 4.0, IIoT, Edge Device.

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PAPER ID: ICSMEC-2020/0409

Patch Antenna Parameters Analysis with and without SIW Cavity

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Abstract

In 5G wireless communication, designing of low-profile antenna with very good directivity, capable of resonating at mmWave frequency is important. In this paper a simple rectangular patch antenna resonating at 28GHz is designed. Antenna parameters are analyzed with and without cavity. A simple SIW cavity backing is provided for the patch, increase in Gain and front-to-back ratio is obtained.

The advantages of SIW cavity includes design of couplers resonator, antennas filters at microwave frequency on a single substrate layer. Using a cavity backing for an antenna increases the directivity an front-to-back ratio.

Index Terms—*mm Wave, Patch antenna, SIW cavity.*

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PAPER ID: ICSMEC-2020/0410

Performance Comparison of Quantum Chaos Based Image Encryption Techniques

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Abstract

In recent times, maintenance of data transmission with confidentiality is always a prime concern for both internet users and internet service providers. Several researches have been done in this field and it has proved that cryptography is the best solution for secure data transmission. Most of the information is continuously transferring in the form of digital images. Enciphering a digital image is much more complex and bulkier. On the other hand, time consumption must be low for real-time communication. Chaotic based techniques were implemented with high order of randomness and complexity. Presently Quantum based techniques with Enhanced properties are much more efficient and secure because of having large keyspace and less time complexity along with randomness. This paper is an effort to compare advanced quantum chaos-based image encryption schemes. MATLAB 2016a software is used for the implementations and the comparison is made based on various statistical and differential attacks. Based on all analyses and experimental results, the qubit-based quantum chaos techniques are a more effective, efficient, and trustworthy technique that can be adopted for image encryption. This increase urges the need for enhancement in the security level.

Keywords— *Encryption, Decryption, quantum chaos techniques, qubit quantum chaos techniques statistical Attacks, differential attacks.*

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PAPER ID: ICSMEC-2020/0411

Analysis of Brain Tumor Classification using CNN Transfer Learning

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Abstract

Brain tumor detection is one of the crucial tasks in medical image processing. The difference between normal cells and infected cells is very less and almost both appear similar. So, the detection by the radiologist is inaccurate and there is a need of automated system for brain tumor detection. This paper proposes an automated brain tumor classification system using 3D Magnetic Resonance Brain Images using Convolution neural network transfer learning concept. The transfer learning concept is used to modify or fine tune the standard CNNs according to the user applications. This concept reduces the huge amount of input data requirements and minimizes the training and thus in computation time of the process. The top layers of benchmark CNN architectures like VGG16, ResNet 50 and InceptionV3 are fine-tuned and utilized for the tumor detection. The performance of the CNN structures are analyzed in terms of performance metrics such as Accuracy, specificity, sensitivity and various losses.

Key Words: Brain tumor detection, magnetic resonance imaging, convolutional neural network and Transfer learning

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PAPER ID: ICSMEC-2020/0413

Intelligent IoT- Cloud Based Water Meter

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Abstract

Water crisis which have been proliferated from last few years is the biggest challenge the world is facing today, therefore to control the water wastage, it is necessary to first monitor the water usage and one of the better ways to do this is to use Smart water meter. The smart metering technique used in this proposed setup is different from the existing commercial methodologies just through the use of low cost IoT hardware and a web application. These Water meter permits the user to track the data of the consumed water using their Smartphones and internet connectivity apart from notifying the daily usage of the water to the particular customer by the means of a text message. It also provides the billing service for the user, so that the government spending in distribution of bill is reduced.

Keywords *–Water-Meter, Billing, Iot, At-commands, Flow measurement, Phpmyadmine, Esp-01, MySqL.*

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Modeling of Cylindrical Gate All Around Silicon Nanowire MOSFET to Suppress Short Channel Effects

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Abstract

In this paper Cylindrical Gate all around Silicon nanowire MOSFET (CG-GAA-NW-MOSFET)device has been proposed low power digital application. Simulation modeling and analysis of various performance parameters such as Drain current(Id), subthreshold slope(SS),threshold voltage(Vth) and Drain induce barrier lowering has been investigated to suppress the SCEs. Result observed that proposed device has improved ON current ,reduction in leakage current and improved of subthreshold slope(SS) and suppress the DIBL increase the threshold voltage(Vth).

Key Words: *SCE, DIBL, GAA, Subthreshold*

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SMART CLASS USING LIGHT COMMUNICATION

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Abstract

Every child gets the exact care required and meets up with the utmost expectations, with smart Classrooms the 'WH' questions can be easily answered with live explanations, which in return will increase the memory power of students and will help them to grasp the concept visually. The classroom technology solution that can transform teaching and learning into online by reaching out to millions of schools and colleges in this pandemic situation is possible with LI-FI. Li-Fi basically referred to as "light fidelity" is an outcome of twenty first century. The basic ideology behind this technology is that the data's are often transmitted through LED light whose intensity varies even faster than the human eye. As the transmission of the data takes place through the light emitting diodes (LED's) the technology is extremely new and was proposed by the German physicist Harald Haas in 2011. In this proposed system, online classes can be attended using Li-Fi technology instead of Wi-Fi. This modulated light supplies extra bandwidth capacity for gentle streaming signal for online users.

Keywords: Li-Fi Technology, Pandemic, Online Class, live streaming, High speed transmission.

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A Human Detection Method for Residential Smart Energy Systems Based on Microwave Motion Sensor

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Abstract

Here a long-range motion detection-based security system which saves the power consumption and the memory space of the recording system has been proposed. The Doppler radar-based motion sensor detects the change in the signals transmitted of moving object in its detection range. Also, the system consists of devices like LED, fan, DHT11 and LDR, for controlling and knowing the information at the location. It contains automatic mode. In Auto Mode the system will, perform autonomously by turning on led when there is low light, and fan on high temperature, etc.

Keywords: *Doppler radar, PIR Sensor, DHT11, LDR.*

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Performance Comparison on Various Methods of Object Detection and Tracking Techniques

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Abstract

Perception and tracing the moving objects in image sequence and computer applications is very important and a tough scrutiny is needed. In object detection, non-stationary or moving things are looked out for in the sequences of images. This is the very first step to be done. To track an object, Object Representation is the next thing on the list. Object tracking pins down the actual position of the non-stationary or moving thing. Recognizing the actual position of a moving object is a demanding chore. Object tracking is important for different purposes like traffic monitoring, surveillance, robotics and also, animation. Under this, we have deliberated various object detection and object tracking techniques. The aim is to scrutinize foregoing methods in this field Also, to recognize the rifts and propose new system or technique for the same.

Keywords—*Background Subtraction, Centroid Feature, Object Detection, Object Tracking, Performance Analysis, Greedy Algorithm, Object Representation.*

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Automatic Fish Feeding System

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Abstract

Automatic fish feeding system has been developed to overcome feed waste and aquarium based problems. This paper proposes a novel automated fish feeding system that combines the food dispensing and large-scale distribution in a single process. The smart feeding system aims to minimize food waste and maximize the Food Conversion Ratio (FCR). In this paper the usage of IoT based network system makes the project in a much simpler and easier way. Based on the IoT system, this fish feeder system utilizes the network protocol to control and manage the aquarium in a smart way. This makes the person to control the feeding system remotely. Due to remote based control the feeding will not be underfeed or overfeed. This paper proposes the project with the machine that consists of multiple modules and designed to survive extraordinary environmental conditions.

KEYWORDS:*Smart feeding, multi feed process, network-controlled feeding, time saving, effective performance.*

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Preprocessing Techniques of ECG Signals

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Abstract

Now a day to evaluate and interpret ECG signals, Signal Processing plays an important role. ECG signal processing has an important objective to give society full precision filtered results and information that is not easily extracted from the ECG signal visual evaluation. The ECG signals are produced by inserting electrodes on a human being's body surface. It leads to noise contamination on ECG signals. These are normal wandering sounds, power-line interference, electromyographic (EMG) noise, signs of electrode motion and much more. Such noises serve as barriers during the processing of the ECG signal and thus, the pre-processing of the ECG signal is an important task for the elimination and rejection of such noise. Filtering methods are therefore used mainly for the pre-processing of any signals, and also for ECG signals. The only care should be taken for the ECG signal that the actual information should not be skewed ECG is used by cardiologists to detect heart abnormalities (cardiovascular diseases), such as abnormal heart rhythms, heart attacks, drug dosage effects on the heart of the subject and awareness of past heart attacks. Various types of noise / distortion such as cardiac (isoelectric interval, excessive depolarization and atrial flutter) or extra cardiac (respiration, changes in electrode location, muscle contraction, and power line noise) usually corrupt recorded ECG signal. Due to the low signal-to-noise ratio (SNR), these variables mask the useful information and change the signal characteristic. In such cases, failure to correctly assess the ECG signal can lead to delay in care and damage the health of a subject (patient). Appropriate pre-processing technique is therefore needed to improve SNR to enable better treatment for the subject matter. Effects of various pre-processing techniques on the ECG signal analysis (based on R-peak detection) are compared using different Figures of merit (FoM) such as sensitivity (Se), accuracy (Acc) and error detection (DER) along with SNR.

Index Terms — *Electrocardiogram, Cardiologists, Fractional wavelet transform, Fractional Fourier transform, Independent principal, component analysis, Accuracy, Sensitivity, Heart anomalies, Figures of merit*.

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Analysis of PBFT Protocols along with the Faults in Blockchain

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Abstract

Blockchain is a decentralized peer to peer network where they exhibit transparency and trust while handling the digital ledger along with immutable security. This distributed environment is successfully driven by consensus they made while proposing the blocks of data into the network. These blocks are a collection of unconfirmed transactions which is later added into the blockchain. To achieve this, the consensus protocol should be able to withstand the faults which are common in a distributed environment. These faults range from a simple node failure fault to a complex Byzantine fault Tolerance (BFT). BFT is nothing but the nodes which act as a traitor and behave in a rogue way which makes the block chain environment risky to achieve the consensus while proposing the blocks. It deals with one of the consensus protocols called the Practical Byzantine Fault Tolerance (PBFT). PBFT protocol helps to tolerate the faults that happen in the distributed environment even if 1/3 of the faulty nodes are present in it. Many protocols and projects which make use of PBFT but one of them is Hyper ledger Fabric. It is a private permissioned block chain and the aim is to achieve the consensus using PBFT with the help of maximum of 2/3 nodes in the network even if it contains 1/3 faulty nodes. This work aims to study the research works addressing the behavior of PBFT protocols in the presence of multiple faults in block chain.

Keywords — *Blockchain, Fault Tolerance, Tendermint, Hyper ledger, Data Block, Security, Protocols, PBFT*

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Novel Approach to Smart Power Generation in Smart Vehicle

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Abstract

In recent years most countries are trying to reduce the use of fossil fuel as a source of energy. Hence green energy industry is getting more and more attentions. The vehicle with the generating power is a miracle. This paper shows the use of renewable energy. Here the renewable energy is used in automotive systems as an alternative source of energy which can be used to drive the appliances present in the car without affecting the present environment neither causing pollution.

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Face Recognition Using LBP-Based Adaptive Directional Wavelet (ADIW)

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Abstract

Face recognition is the most active area of research in computer vision and biometric authentication. Various face recognition methods are developed till the time still, numerous situations are needed to deal with such as facial expression, pose variation, and illumination variation in unconstrained conditions which impose immense disquiet in designing effective face recognition methods. It is desirable to extract robust local descriptive features to effectively represent such facial variations. This paper discusses such methods that incorporate a popular local descriptor such as local binary patterns (LBP) based adaptive directional wavelet (ADIW) method to extract facial features. This designed method is applied to a complex database CASIA-WebFace database which consists of a large number of images collected under an unconstrained environment with extreme facial variations in expression, pose, illumination and age. Experiments and comparison with various methods which include not only the local descriptive methods but also local descriptive based multiresolution analysis (MRA) based methods demonstrate the efficacy of the LBP-based ADIW method.

Keywords: *Face Recognition, Local binary pattern, Adaptive directional wavelet.*

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Eye Blink Controlled Virtual Keyboard Using Raspberry Pi and Brain Sensor

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Abstract

In our society there are additional people suffered by paralytic illnesses causes them some disabilities like they are powerless to talk and incapable to move physically and incapable to direct their everyday straight forward requirements, but they can motionless use their eyes and from time to time transfer their heads. This Project is employed under neath the attitude of Brain-Computer Interface (BCI) our model supports them to type the letters consuming virtual keyboard, which is exhibited in the monitor, considered using python programming. This arrangement is having core arrangement as Raspberry Pi. Virtual keyboard encompasses alphabets, numbers and some punctuation. Mouse pointer gets inevitably shifted finished every key, characters can be selected by production an eye blink at specific position of mouse pointer at certain atmosphere.

Keywords: *Raspberry pi, Brain computer, Virtual keyboard*

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Metamaterial: Fundamental andEngineering Exploration

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Abstract

Fundamental of metamaterial, different types of Electromagnetic Metamaterials and their properties are discussed in this paper also this paper throws light on the design of electromagnetic Metamaterial unit cell. They are built using dielectric substrates. Periodic arrangement of this unit cell forms Metamaterial and hence they are like natural crystal. Instead of atoms it has small metallic resonators. Which is having an effect on external Electromagnetic waves. These metamaterial cells are loaded on substrate of patch antenna to increase the bandwidth of patch antenna. Circular patch antenna on a rectangular substrate loaded with metamaterial at the resonance frequency 10 GHz and simulated using FEKO software is discussed in this paper.

Keywords—*Metamaterials, Permeability, permittivity, Electromagnetics*

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ABOUT CONFERENCE

Online International Conference on "Smart Modernistic in Electronics and Communication" (ICSMEC-20) will be organized by St. Martin's Engineering College, Secunderabad, Telangana, India during 29th & 30th June, 2020. ICSMEC-20 will serve as a colloquy for sharing the proficiency among academicians, researchers, scientist and industrial personnel from all over the world in the areas of engineering and technology. All contributions should be of high quality, original but not published elsewhere or submitted for publication. All papers will be reviewed by eminent researchers and all accepted papers will be published in SCOPUS indexed and UGC CARE journals. All the abstracts will be published in conference proceedings with ISBN. Participants will present papers online.

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