A National conference on Microelectronics, Signal Processing& Antennas (MESPA-2021)

20-21 March 2021

Organized by

Department of Electronics & Communication Engineering

Koneru Lakshmaiah Education Foundation, AP -522502

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About the department

Established in the year1983, the Department of ECE enjoys the support of 248 distinguished faculty members, specialized in core areas of ECE. 87 out of them have PhD degrees and 121 they are pursuing PhD. The department houses faculty that has rich industry experience to cater to the industry and academic needs of the students. With the state of the Art laboratories, Centers of Excellence and Research Centers, the department of ECE is equipped with the sophistication of the highest order to meet the needs of our UG, PG and PhD students.

With a special emphasis on R&D activities, we have placed all the latest software tools available to the students to explore beyond the curriculum and experiment on innovative ideas. The Department has 136million (13.65 Crore) worth of Sponsored projects from DST, DLRL, ISRO, DEAL etc. Our faculty has published research in 3000+ International Journal, 600+ International Conference papers and 150+ National Conference.

With advanced certificate courses in each semester, the department's academic calendar thrives with the visiting foreign faculty, seminars, group discussions, and the student paper contests. Industry Alliance, Student Personality Development Programs, and student associations are added attractions of the department of ECE.

Er Koneru Satya Naraya
President, KLEF

President's Message
Warm and Happy greetings to all.

I am immensely happy that Department of ECE of our K L University is organizing a National Conference on Microelectronics, Signal Processing & Antennas (MESPA-2021)during20-21 March, 2021 and is going to discuss on a collection of technical papers in the proceedings. Department of ECE, K L University continues to march on the way of success with confidence. On this occasion, I wish all the very best.

I congratulate HOD, staff members, students of Department of ECE, Delegates and Participants from different parts of the country and nations for their efforts in participating in this conference and wish the conference all the success.

K. Sathyanarayana

Sri Koneru Raja Hareen
Vice-President

Message

I am glad to learn that Department of Biotechnology, K L University is organizing a National Conference on Microelectronics, Signal Processing& Antennas (MESPA-2021) during 20-21 March, 2021.It is heartening to know that the national Conference-MESPA-2021 is being organized with the objectives to strengthen the current national and international scenario of human machine interaction, scaling up from research to production and their usage.

I wish the conference all success.

K.   Raja Hareen

Dr.L.S.S.Reddy
Vice-Chancellor

Message

I am delighted to know that the Department of ECE of our K L University organizing a National Conference on Microelectronics, Signal Processing& Antennas (MESPA-2021) during 20-21 March, 2021. It gives me an immense pleasure that a souvenir is also being brought out. I am sure that it will provide a platform to discuss the research in ECE happening throughout the world. I hope that the participants from all over the country and abroad would interact on the subject for upgrading their knowledge and skills to enhance their utility to the Electronics and communication Engineering. My best wishes for the success of the conference.

L.S.S. Reddy

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Implementation Of Smart Home By Using Packet Tracer

Saleem Akram Pathan

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Abstract : The technology has been growing from day to day in human life. The necessity for the development of technology is to lead human life comfortably. The basic need of human to lead his/her life comfortably is a home. A home with updated latest technology which means a smart home. This paper gives the basic idea use cisco packet tracer to implement smart home. One is needed to create a smart home when electronic devices are switched on and off. Smart home development is achieved by simulation via testing system, network setup and wireless home gateway computer network equipment required by a smart home network cisco packet tracer using Internet Thing (IoT)/IoE command. The software chosen for the simulations is Cisco Packet Tracer, the tool's main strength is to offer a variety of network components that represent a real network, and then interconnect and configure devices to create a network. Cisco implemented (IoT) functionalities in the latest version of the platform, and now it is possible to add all the smart devices, sensors, actuators and also devices, which simulate microcontrollers like Arduino or Raspberry Pi to the network. All IoT devices can be run on generic programs or modified by Java, Python or Blocky programming them. This makes Cisco Packet Tracer a perfect method to construct functional simulations for IoT. Index Terms : Internet of Everything, Smart home, packer tracer tool, sensors.

Tuning Operating Frequency of Antenna by Using Metasurfaces

Saleem Akram Pathan

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Abstract— Metasurfaces can produce various outcomes when used in the antenna applications. Especially they can allow selected band of frequencies while neglecting others due to this property they are used as filters some time these structures are also used in designing the amplifiers as they can strengthen the signal if the design of metasurface is made with the same band as antenna. Based on this we will design a metasurface and place it as the ground plane and while varying the dimensions of the metasurfaces we will study how it will change the operating frequencies of the antenna. A microstrip patch antenna is considered for the analysis purpose which will generally operates at 3.39GHz. and also the metasurface structure will be designed with air filled and dielectric filled by varying its metallic patch size and the height of pin and the changes occurs in the antenna performance will be studied and illustrated. Keywords—Metasurfaces, patch antenna, dielectric substrate, tuning.

Face Recognition using Gabor Wavelet Transform under Varying Conditions

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Abstract: Face recognition is emerging as an active research area with numerous commercial and law enforcement applications. Automated face recognition is a rapidly growing field that uses computer algorithms to determine the similarity between two face images. Although existing methods performs well under certain conditions, the illumination changes, out of plane rotations and occlusions still remain as challenging problems. One of the major challenges in face recognitions to extract features from face images varying in facial expression, varying in lighting condition and varying in poses. The objective of this paper is to present the recognition of face images based on Gabor wavelets. The proposed algorithm deals with two of these problems, namely Pose and illumination changes. In our method, Gabor wavelet transform is used for facial feature vector construction due to its powerful representation of the behavior of receptive fields in human visual system (HVS). The method is based on selecting peaks (high-energized points) of the Gabor wavelet responses as feature points. Compared to predefined graph nodes of elastic graph matching, our approach has better representative capability for Gabor wavelets. The feature points are automatically extracted using the local characteristics of each individual face in order to decrease the effect of occluded features. Performance comparison of recognizing face images taken under varying , varying lighting condition and varying poses are presented. Experimental results of Gabor wavelets for face recognition under varying lighting and poses conditions are provided. For experiments face images from the Stereo pair are used and also, we have used Support Vector Machine (SVM) classifier for recognition of images. In our project, we compare various color models and choose a color model that can best represent faces.

Keywords: Automatic face recognition, Gabor wavelet transform, human face perception, Support Vector Machine.

IoT Based Global Navigation Satellite System (GNSS) Ground Monitoring System Using Cloud

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Abstract: These days, the Internet of Things is a quickly developing innovation that grants to include advanced gadgets into a system. Utilizing the Internet of things innovation to gather facts from an assortment of Internet associated GNSS beneficiaries gives an interesting chance to get continuous data about the uncommon and Fleeting movement of ionospheric attributes with excessive desires. The capacity to make a thick sensor arrangement is accomplished through the utilization of modest single-recurrence GNSS beneficiaries dependent on the Arduino innovation. This methodology can be actualized to acquire ongoing information on the all-out total electron content of the ionosphere. The assured information of the ionosphere deferral to radio signal of Global navigation for system satellite or Global positioning system satellite TV for PC and the estimation of the ionosphere TEC are accomplished straightforwardly within the Global navigation for system satellite beneficiary. The consequences are transmitted over a remote correspondence medium through Web to the cloud server, in which maps of the TEC to the ionosphere are developed. Now are proposed the new Architecture, by using this architecture we can directly store the data into the cloud. By using this architecture, we can provide remote monitoring.

Keywords: IoT-(Internet of Things), TEC-(Total Electron Content), GNSS (Global Navigation Satellite System), GPS- (Graphical Positioning System).

Design of MEMS Sensor to Measure the Stiffness of HT-29 Cells

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Now a day's measurement of physical parameters of cancer cells to estimate the severity of the disease is of predominant research for the design of the sensors. We have designed a model to measure the stiffness of cancer cell. In this work colon cancer cell has been considered for measuring the stiffness. The simulation results shows that the stiffness of the cancer cell is less when compared to normal cells. This work has been simulated in COMSOL 5.2. The pressure Vs the deformation of the cell is graphs has been drawn. As the pressure increases the deformation of the cell is observed to be more. The deformation model is mathematically solved.

Design of MEMS sensor to measure and compare the stiffness of CCD-18 and HT-29 cells

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In this article we compare the physical parameters of two different colon cancer cells. We have designed a model to measure the stiffness of the cells. A simulation result shows that the stiffness of HT-29 cell is less than the stiffness of the CCD-18 cell. This work has been simulated in COMSOL 5.2. The CCD-18 is a stiffer cell and the HT-29 cell is softer cell. The pressure Vs the deformation of the cell is graphs has been drawn. As the pressure increases the deformation of the different cells are observed. The deformation model is mathematically solved. The deformation of the HT-29 is observed to be more when compared to CCD-18 cell.

Design of Dual Band Notch Circular Monopole Antenna loaded with Parasitic Strip for Defected Ground Structure

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In this article, parasitic strip-stacked monopole receiving wires are intended to indent double and triple groups. The planned models are built on one side of the substrate material and on the opposite end abandoned ground structures are carried out. The fundamental receiving wire contains a tuning stub and a ground plane with a tightened shape space as DGS. Another model is developed with a roundabout monopole transmitting component on the front side and a comparable sort of ground structure utilized in the essential rectangular tuning stub receiving wire. To make indented groups with tuning nails, two balanced parasitic cuts are put inside the space of the ground plane. The essential model is of the rectangular stub indenting triple band and the round tuning stub receiving wire scoring double band. Double band-scored round tuning stub radio wire is prototyped on FR4 substrate and estimated results from vector network analyzer are contrasted and reenactment consequences of HFSS for approval.

DESIGN OF DOUBLE NOTCH Ultra Wide Band MONOPOLE ANTENNA WITH SLOTS OF U-SHAPE

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This article presents a roundabout ring-stacked multiband receiving wire with score band attributes for remote correspondence applications. The receiving wire is in a reduced construction with measurements of 22 x 27 x 1.7mm3 and planned on the 'FR4' substrate. Essentially, the radio wire gives the wideband attributes and showing different indents. To achieve the indent band attributes, the radio wire is stacked with two round ring strips and four upset C-formed parasitic components are inserted on one or the other side of the feed line. The receiving wire gives a greatest pinnacle gain of 4.02 dB with an effectiveness of over 77.9%. The proposed radio wire giving score band attributes and showing the bidirectional and Omni directional radiation designs in E and H-Planes.

Assimilated Indian regional Vertical TEC (AIRAVAT) maps are provided using Kaman filter data assimilation approach and ground and Space based GNSS TEC observations

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Abstract

Assimilated Indian regional Vertical TEC (AIRAVAT) maps are provided using data assimilation approach. This approach is based on Bayesian timeframe and model deviations are not highly sensitive to observations. Scope for including solar and geomagnetic storm indices in model covariance matrix is evident in data assimilation approach. TEC forecasts obtained from AIRAVAT maps are significant during quiet and disturbed storm conditions. Forecast verification through skill and score numbers are in acceptable level during geomagnetic storm conditions. The regional ionospheric model through data assimilation approach is highly recommended for Indian region. The proposed model needs improvements in inducing multiple data sources form top-side and bottom side sounders and altimeter mission is the future scope of this work. Also, including neutral winds, neutral composition into the BMEC matrix through MPCA also aids to understand thermosphere/ionosphere couplings during geomagnetic storm conditions. Here, we present the preliminary results to utilize the abundant ground based GNSS TEC observations obtained from GAGAN network into the TIEGCM model such that TEC nowcasts/forecast capability could be improved over Indian region. The assimilated TEC maps are good provision to understand ionospheric gradients, travelling ionospheric disturbances and formation of plasma bubbles that are thoroughly concerned for the trans-ionospheric propagation over low-latitude regions.

Keywords: GNSS, Kalman Filter and Data Assimillation, ionosphere, Total Electron Content.

Development of single frequency GNSS ionospheric correction models for Navigation Applications

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Abstract

NAVigation with Indian Constellation (NAVIC) is the operational name given to the Indian Regional Navigation Satellite System (IRNSS) developed by the Indian Space Research Organization (ISRO), India. The most influential factor is ionospheric gradients that can degrade the positional accuracy of Global Navigation Satellite System (GNSS) users especially in low-latitude regions. The main aim of this paper is to estimate the ionospheric gradient variations obtained from the NAVIC receiver located at Guntur, India (16.230 N, 80.440 E). Code and carrier phase measurements of S-band (2492.028 MHz) signals are used to derive ionospheric time delays and Total Electron Content (TEC) values. The ionosphere is perceived to be the major source of ranging error for Global Navigation Satellite System (GNSS) users. The traditional use of Klobuchar ionospheric model coefficients is not suitable for equator / low latitude regions. In this paper, a technique is proposed to facilitate regional single-frequency ionospheric delay corrections based on the Adjusted Spherical Harmonic Function model (ASHF) by introducing fewer coefficients into the algorithm. The ASHF ionospheric correction is drivenwith low-resolution harmonics with order ≤ 2 (≤9coefficients),and performance is compared with Spherical Harmonic Function and Klobuchar models. Preliminary results reveal that the low- resolution ASHF model enhanced the ionospheric time delay corrections by 12.98%.The results could be useful in the context of ionospheric time delay modeling for regional navigation satellite systems using a single frequency GPS receiver such as Navigation Indian Constellation (NAVIC).In this report, S-band signals of NAVIC are used for first time to investigate ionospheric gradients over low-latitude region. The Recursive Least Squares (RLS) algorithm is implemented as a single frequency ionospheric model for estimating the absolute TEC, longitudinal (E-W) and latitudinal (N-S) ionospheric gradients. Ionospheric gradient analysis has been carried for three consecutive days during September equinox, December solstice in the year 2016 and for a geomagnetic disturbed event observed during May 2017. The annual statistical analysis in the periodic structure of spatial ionospheric gradients from NAVIC S-band signals during June 2016 to May 2017 is also discussed. It is evident that RLS model can estimate ionospheric gradients for a single NAVIC station. In this paper, we report a NAVIC DCB estimation algorithm, which was implemented with a Modified planar fit-based local ionospheric model. TEC data were recorded at the same location by the NAVIC as well as the Global Positioning System (GPS) receiver (KL University, Guntur, India,16.470N, 80.610E). The DCBs of NAVIC satellites and receiver were determined. Results indicated large DCB values of-0.61 ns for NAVIC PRN3. The estimated DCB receiver bias was -0.30 ns. The outcome of this work would be immensely is useful for improving positional accuracy of GNSS and NAVIC systems.

Keywords: GNSS, NAVIC, ionosphere, Total Electron Content.

Design and Analysis of GaAs/InAlGaN/AlGaN MESFET in 10nm Technology with Uniform Doping Profile

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Abstract – A unique structure of InGaN metal semiconductor field effect transistor has been proposed and demonstrated in this work. The proposed InGaN MESFET (Metal Semiconductor Field Effect Transistor) utilized in Silvaco TCAD tool in 10nm technology. In this work lightly doped region on source side of the gate, will increase RF properties and drain side of the gate will increase the electrical properties about 50% compared to conventional devices. The InGaN MESFET structure has excellent potential for high voltage and high frequency applications over wideband materials in 10nm innovations. Using Silvaco TCAD tool in 10nm technology had calculated improved DC and RF characteristics such as on current (Ion), off current (Ioff), Ion/Ioff ratio, drain conductance(Gd) and on resistance(Ron).

Keywords: InGaN MESFET, DC characteristics, Drain Current, Electric field, Silvaco TCAD.

A Qualitative Analysis on Tunnel Field Effect Transistor- Operation, Advances and Applications

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Tunnel Field Effect Transistor (TFET) has become one of the promising devices to be part of Integrated circuits as the technology advances to nano scale. A TFET has many advantages over a conventional Metal Oxide Semiconductor Field Effect Transistor (MOSFET) which includes lower Sub-threshold Swing (SS<60mv/dec) , lower leakage current, Higher ON current to OFF current ratio. The device TFET is found to be more immune to temperature variations and has less effect on device performance due to its mechanism of working i.e. Band to Band Tunneling process. One of the distinct characteristic of TFET is its ambiolar behavior which makes the device work under positive and also negative polarity of gate bias. This makes TFET differ from all other semiconductor devices. Various architectures of TFET have found their applications in areas like biosensing, analog circuits like amplifier and digital circuits like flip-flops, MUX and memory elements.

Keywords: Integrated Circuit, TFET, Sub-threshold Swing, Band to Band Tunneling, Ambipolar

Active Object Tracking using Extended Kalman Filtering Algorithm

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Abstract:

Tracking an underwater object is a difficult job. Sonobuoys are outfitted with an acoustic sensor to determine the object's approximate course. The Extended Kalman Filter (EKF) technique is used to track objects in this research article. Sonobuoys are the most effective kind of airborne warfare available today. It detects objects with the aid of a floating sensor system. It has a float-bag assembly as the top element that supports the submerged devices. To establish the precise location of an object path, sonobuoys are linked to a global positioning system (GPS). The data collected by the sonobuoy is analyzed and sent to the aircraft through an ultra-high frequency connection for further processing. The EKF is used to track the object. Observing the bearing residual plot does not make it easy to observe the object manoeuvre. As a result, zero mean chi-square distributed random sequence residuals in sliding window are utilized to identify the object's manoeuvre. The normalised squared innovation method is used to determine whether or not an object is manoeuvring. A suitable amount of process noise is introduced to the covariance to get the best solution during object manoeuvre. When the manoeuvre is finished, the state noise is reduced.

Object Tracking in 3-D Environment using Unscented Kalman Filter Algorithm

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Abstract:

Unmanned aerial vehicle (UAV) is a cutting-edge technology that is mostly used to track objects. The unmanned aerial vehicle (UAV) is the world's safest airborne combat technology. UAVs are now outfitted with global positioning systems (GPS) to identify the location of objects. Data received from the UAV transmits the position of the object to the observer's personal communication system, allowing the observer to determine the location and movement of the object. Extended Kalman filter (EKF) and Modified Gain Extended Kalman filter (MGEKF) have quickly convergent and unbiased filter issues due to rapidly convergent and unbiased filter problems (MGEKF). As a result, the Unscented Kalman filter (UKF) method is utilised to compute object motion characteristics such as range, bearing, and elevation. UAV follows the predicted path of the object using these object motion parameters. The overall aim of this study is to monitor an item in a 3-D environment. Object characteristics such as range, bearing, and elevation data are utilised to follow the object's predicted journey. The unscented Kalman filter can determine the non-linear estimate of the object path. The UKF is modelled in MATLAB software in this study.

Study of Standby Mode Leakage Power Reduction Using VLSI Circuits

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Abstract: In Low Power VLSI era, the Leakage Power is drawing a lot of attention of the VLSI IC designers in nanometer technology, due to its profound wastage of power. It is necessary to rectify the power wastage. There are Exact and Heuristic algorithms which are used to reduce the leakage power. In this paper, a low leakage arithmetic logic unit is designed by constructing test circuits using single input NAND gate. Gravitational Search Algorithm is a stochastic Heuristic model, which locates the Minimum Leakage Vector (MLV). Then, by using the Input Vector Control (IVC) method, leakage power is minimized. As a result, the wastage of power with IVC based GSA is controlled to only 1%. The comparative study is carried out with 3-input NAND gates of different models. Test circuits of ALU are designed by PSPICE software and by using the IVC based GSA model, the leakage power is minimized. Xilinx 14.2 software tool with Verilog programming language is used to obtain the results.

Keywords: PSPICE, MLV, IVC, GSA, ALU.

Implementation of High Performance and Low-Power 6T-SRAM Cell

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Abstract- Now a days each and every device equipped with large capacity memories in order to full fill all the needs of customers. And there are some other parameters which plays an important role in the determination of performance of the device. In many widgets, memory is an integral part and its size also scales down as the device size is reduced. For this reason, every computerized device has low power and high speed is a prime concern. Current day scenario suggests that 6T SRAM is commonly used for the SRAM based memory designs as they are advantageous compared to other cells. They are power consumption and delay. Low power is the major concern of today's electronics industries where, Static as well as Dynamic power dissipation are the two key parameters that should be taken into consideration. To meet consumer needs high bandwidth and low power and high speed consuming storages are also required. This paper mainly focuses on reducing delay of Static Random Access Memory (SRAM). Power reduction and Delay reductions are the major challenge of digital Industry. The techniques we have for delay reduction are aspect ratio or cell ratio and Supply Voltage (VDD). A simple and advantageous configuration of a SRAM cell is by connecting two CMOS inverters back to back. This configuration has good noise immunity.

Keywords: SRAM, CMOS, MTCMOS, Gatted VDD.

Fractional Fourier Transform Based Bearing Fault Detection System

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Abstract

To predict failures of a rolling bearings in the gearbox system, accelerometer based sensing is employed to detect fault-relatedevents in the bearing signals. It is a challenge task to analyze and identify faulty signals due to their non-stationary nature. Inthis work, the time-frequency analysis of the faulty signals has been studied using the Fractional Fourier transform technique.Fractional Fourier transform hasproven to be superior in obtaining improved time-frequency spectrum in noisy conditions, whichcan be supported by theoretical analysis and experimental results. Results reveal that the fault related frequency components aredetected from the time-frequency spectrum of bearing signal obtained at different speeds. On comparing with the Fourier transform(FT), the Short Time Fourier Transform (STFT) and the Wigner–Ville distribution (WVD), the Fractional Fourier transform hasshown better performance in in clean and noisy environments such as the additive white Gaussian noise (AGWN), impulsivenoise, and vehicular noise.

Index Terms

Bearing fault, Time-frequency resolution, Fractal Fourier transform, Additive white Gaussian noise.

The Detection of RADAR Signals in Wide-band Channelized Digital Radio Frequency Memory Using Multi-Taper method

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Abstract

In this paper, we propose a novel method for RADAR signal estimation and classification in a wide-band channelized DigitalRadio Frequecy Memory (DRFM) structure. The Multi-Taper method (MTM) of frequency analysis has been used for spectralestimation to in geophysical signal processing applications, that include atmospheric and oceanic data analysis. In this work, Wehave used the Multi-Taper method for detecting linear frequency modulated, constant carrier frequency and phase coded pulseradar signals in presence of noise. In addition, smoothed pseudo Wigner distribution has been employed for the classification ofdifferent RADAR signals. These techniques have been implemented on Xilinx make Virtex-6 SX475T System on Chip (SoC).Theperformance of the proposed system found to be better than the current state-of-the-art methods.

Index Terms:RADAR, Signal Estimation, Digital Radio Frequency Memory, Multi-Taper method, Additive white Gaussian noise.

Implementation of feature extraction based ensemble classifier for Interference Mitigation in radar signals

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Abstract

In automotive systems, radar is a main component of autonomous driving. By using transmit and reflected radar signal by a target, we can track the target range and velocity. When interference signals exist, noise increases and it affects the detectability of target objects. For these reasons, previous studies have been proposed to cancel interference or reconstruct original signals. However, the conventional signal processing methods for canceling the interference or reconstructing the transmit signals are difficult tasks, and also have many restrictions. In this work, we propose a novel approach to mitigate interference using deep learning. The proposed method provides high performance in various interference conditions and has low processing time. Moreover, we show that our proposed method achieves better performance compared to existing signal processing methods.

Keywords: autonomous driving, automotive, radar, interference, mitigation, deep learning

Jamming Signal and Interference Signal Prediction for Radar Signals Using Machine Learning Methods

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Abstract

Jamming is a form of electronic warfare where jammers radiate interfering signals toward enemy radar, disrupting the receiver. The conventional method for determining an effective jamming technique corresponding to a threat signal is based on the library which stores the appropriate jamming method for signal types. However, there is a limit to the use of a library when a threat signal of a new type or a threat signal that has been altered differently from existing types is received. In this paper, we study two methods of predicting the appropriate jamming technique for a received threat signal using deep learning: using a deep neural network on feature values extracted manually from the PDW list and using long short-term memory (LSTM) which takes the PDW list as input. Using training data consisting of pairs of threat signals and corresponding jamming techniques, a deep learning model is trained which outputs jamming techniques for threat signal inputs. Training data are constructed based on the information in the library, but the trained deep learning model is used to predict jamming techniques for received threat signals without using the library. The prediction performance and time complexity of two proposed methods are compared. In particular, the ability to predict jamming techniques for unknown types of radar signals which are not used in the stage of training the model is analyzed.

Keywords: Jamming signal, LSTM, radar, interference, mitigation, deep learning

Application of Advanced Statistical Signal Processing Algorithms as Diagnostic Tool for Prognostic Studies of Earthquakes using Ultra Low Frequency (ULF) Geomagnetic Signals

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Abstract: Earthquake precursors have no definite prognostic values till now. Owing to a lack of statistical reliability analysis of precursors and their validity of their assessment against natural

time variability and background variations, the problem of decisive detection and precise prediction of earthquake remain unsolved. Ultra Low Frequency (ULF) being a promising candidate for earthquake precursors because of its larger skin depth. The inherent stochastic nature of ULF and its measurements show significant spatial and temporal variations during an earthquake event. The proposed project is envisaged, to investigate the reliability of earthquake precursors in ULF geomagnetic anomalies using advanced statistical signal processing algorithms. The observed ULF data from different stations is initially subjected to pre-processing through removal of outliers, filling the missing data and conversion of non Gaussian noise into Gaussian noise using Unscented Kalman Filter or Particle (Monte Carlo) Filter. Further, Sliding time window process is carried out by Normalized Squared Innovation Process (NSIP) for detection of abnormalities in ULF data. As this process is recursive, a decision will be made using Chi-squared distribution. Ultimately, the above procedure is useful in designing and deployment of early warning systems to detect earthquake precursors in ULF geomagnetic anomalies for precise forecasting of earthquakes. To Investigate the existence of Ultra Low frequency (ULF) signals around 0.01 Hz in geomagnetic anomalies associated with Earthquakes. To implement the advanced statistical signal processing algorithms on ULF geomagnetic signals for isolation of earthquake precursors.To identify possible precursors for prognostic study of earthquake facilitating to develop early warning systems.

Keywords: Earthquake Precursors, Ultra Low Frequency, Statistical Signal Processing Algorithms

Study of Physical Phenomenon of Seismo-Ionospheric Perturbations for Identification of Earthquake Precursors using GPSTEC – An Incisive Perspective

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Abstract: Earthquakes are one of the natural disasters and are inevitably having adverse effects on human life and his assets. Their detection and prediction mainly depend on understanding the underlying phenomenon, validity of the data acquired at the time of their occurrence through different techniques and development of mathematical models with sophisticated algorithms embedded for signal processing. Efforts are made in this direction to apply

sophisticated algorithms such as non-parametric, parametric frequency estimation methods and complex wavelets to discriminate earthquake signatures in GPS TEC from other space weather disturbances.

Keywords: Earthquake, GPSTEC, Sophisticated algorithms

A Non-Stationary Thermal Wave Imaging methods for characterisation of fibre-reinforced plastic materials

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ABSTRACT

The active thermal nondestructive testing and evaluation method is a rapidly growing testing procedure for a quick and remote inspection procedure for fibre-reinforced plastics. Conventional modulated lock-in thermography significantly contributed to this field by allowing usage of low peak power controlled stimulations followed by phase based detail extraction procedures. But demand of repetitive experimentation required for depth scanning of the test object limits its applicability for realistic critical applications and demands multi-frequency low power stimulations for better resolution and sensitivity for sub-surface defect detection. Qudaratic Frequency modulated thermal wave imaging and coded excitation thermal wave imaging methods permitting multi-frequency stimulations cater for these needs and facilitate depth scanning of the test object in a single experimentation cycle. Recently introduced Chirp Z tranform is an alternative to phase based analysis for these stimulations by providing enhanced defect detection even in noisy environmental and experimental conditions. Defect detection capability and sizing by these non-stationary thermal wave imaging methods are highlighted using the Chirp Z tranform approach. The present experimental study has been carried out on a carbon fibre reinforced plastic specimen with flat bottom holes.

Keywords: Chirp Z tranform, defect detection, Carbon fiber reinforced polymer, , lock-in thermography,Quadratic frequency modulated thermal wave imaging.

A Data processing approach for Quardtic frequency modulated thermal wave imaging for inspection of CFR material

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ABSTRACT

Non-destructive testing & evaluation (NDT&E) plays a vital role in industrial quality control. Among various NDT&E modalities, active thermal NDT&E gained its importance due to its inherent merits such as remote, whole-field, fast and quantitative inspection capabilities. Of various thermal NDT&E schemes, recently proposed pulse compression favorable Quaradic frequency modulated thermal wave imaging (QFMTWI) became popular due to its enhanced defect detection sensitivity along with improved test resolution. This paper presents noise rejection capabilities of QFMTWI with principal component analysis (PCA) based post-processing schemes. PCA based post-processing helps in efficient interpretation of the thermographic data by removing artefacts and producing few significant images depicting sub-surface defects in the test specimen. The results obtained by PCA can be made more interpretable by using PCA. In this paper, PCA based thermographic data processing technique is proposed in which PCA has been considered in two different ways. Firstly it has been implemented to empirical orthogonal functions (EOFs) which improves spatial contrast over the defective regions. Secondly, it has been used to modify principal components (PCs) (time series components) to obtain resultant images by projecting thermographic data on modified PCs which manages to enhance the signal to noise ratio (SNR). The sub-surface defect detection capabilities of the proposed methods are studied by a matched filter based pre-processing scheme which reduces the computational cost and memory usage also. The performance of the proposed methods has been evaluated on the experimental investigation of the CFR specimen having flat bottom holes as defects.

Keywords: empirical orthogonal functions , signal to noise ratio (SNR), Carbon fiber reinforced polymer, principal component analysis, Isolation forest,Quadratic frequency modulated thermal wave imaging.

Convolutional Neural Network-Isolation Forest for Defect Detection using Non-stationary Thermal Wave Imaging

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ABSTRACT

Composite structures have been used in aerospace and automobile industries due to their excellent mechanical strength and low weight. However, the defect generated during manufacturing or functional phases limits the usability of these components and requires a non-invasive inspection technique to identify and characterize the defects. Quadratic frequency modulated thermal wave imaging is an active infrared non-destructive testing (IRNDT)

technique gaining interest in the recent past for subsurface anomaly inspection due to its enhanced defect detection and depth scanning capabilities. Deep learning-based processing techniques have been gaining interest in IRNDT for automatic defect detection in the recent past. However, the transient thermal data inspected from the test sample is highly class imbalanced due to the presence of a smaller or less number of defects which limit the application of supervised classification approaches. The present article uses a convolutional neural network-isolation forest (CNN-IF) ensemble network to identify the defects being trained with only the non-defective region thermal profiles. Experimentation is carried out and thermal data is prepared using a set of fiber-reinforced polymer specimens with artificially drilled back hole and Teflon inclusion defects. The defect detection performance of the proposed methodology has been characterized by machine learning and thermography-based metrics.

Keywords: Automatic defect detection, Carbon fiber reinforced polymer, Convolutional neural network, Isolation forest, Quadratic frequency modulated thermal wave imaging.

Density based Anomaly Detection and Characterization in Composites Inspected by Quadratic Frequency Modulated Thermal Wave Imaging

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ABSTRACT

Density-based machine learning algorithms have been used to solve various problems in a variety of applications. Active infrared thermography (AT) is non-destructive testing that is widely used to identify and characterize defects in various industrial components such as metal and composite structures. In addition to the signal and image processing techniques that

enhance defect signature in the observed thermal history, the recent past witnessed machine learning based processing techniques that provide automatic defect detection. The present article uses density-driven K-nearest neighbor (KNN) to detect and characterize the artificially drilled back hole defects in a carbon fiber reinforced polymer specimen inspected by quadratic frequency modulated thermal wave imaging. Initially, the defect detection is carried out using local outlier factor supported by KNN as an unsupervised anomaly detection approach considering the highly class imbalanced nature of thermal data. Later, the depth of the classified defect was estimated using the KNN regression approach. Further, the thermographic and machine learning quality metrics are used to assess the reliability of the proposed methodology.

Keywords: Anomaly, Automatic defect detection, Carbon fiber reinforced polymer, Density, Defect characterization, Quadratic frequency modulated thermal wave imagi

Effect of micro-cantilever shape on the performance of bio-sensor for swine flu detection

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 Abstract:

Micro electro mechanical Systems (MEMS) is the innovation of the small device, they are partitioned and unmistakable from the speculative vision of sub-atomic nanotechnology and hardware. MEMS are microscopic device normally fabricated on silicon wafers. MEMS are comprised of segments near 1 and 100 micrometers in estimate (i.e., 0.001 to 0.1 mm), and MEMS gadgets for the most part run in measure from 20 micrometers to a millimeter. They as a rule comprise of a focal unit that procedures information (the microchip) and a few segments that cooperate with the surroundings, for example, micro sensors. The stretch is transduced towards the site at which particles of the functionalized layer are associated with the cantilever surface. Micro sensors converts the deliberate mechanical energy in to an electrical energy. Generally, the materials such as Silicon, Polymers, are used in MEMS manufacturing process. These materials are used to get the required shape of devices and sensors used for fabrication.

This paper presents the Effect of micro-cantilever shape on the performance of bio-sensor for swine flu detection application.

ALU DESIGN AND ANALYSIS USING REVERSIBLE GATES

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Abstract:

In the modern world, there is a need for fast processing and low cost digital circuits in electronic devices. The ALU (Arithmetic and Logic Unit) is a combinational digital circuit which is used to perform all kinds of arithmetic and logical operations in a device. It is used in many devices which we use them in daily life such as mobiles, calculators, computers etc. The ALU is designed using conventional logic gates such as NOT gate, AND gate etc. In this project we are going to construct an ALU using the reversible gates. By utilizing reversible gates we will reduce the amount of heat dissipated in the electronic devices and we improve the performance of the device and width of the device gets reduced. We can also reduce the garbage values. We are going to use the Feynman gate, Peres gate, Fredkin gate, Toffoli gate and DKFG gates to design the ALU and simulate it in DSCH tool and analysis their performances.

Electrothermal MEMS Tweezer for Biomedical Applications

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Abstract: This paper presents design, simulation and results analysis for a novel micro tweezer. The principal element in the proposed device is a double U-beam electrothermal actuator. Using FEM tool, Poly-Silicon material is applied to the device structure and analysed for both in-plane and out of plane displacement for respective range of actuation potential. The micro tweezer holder mouth provided a maximum in-plane displacement of ~50µm at 5V actuation voltage. Comparatively negligible out of plane displacement exhibited by the device during simulation. The proposed micro tweezer is designed for the micromanipulation of biological cells in a better way. The micromanipulation actions can be like pick and place the micro objects such as cellular tissues, micro-organisms under the laboratory conditions during clinical as well as scientific operations. The device is simulated and analysed the mechanical displacement with respect to the applied actuation potential. The electrothermal stress, temperature, current and voltage distribution over the device were monitored with the support of FEM tool. The out of plane motion of the device is negligible compared to the corresponding in-plane displacement. The device can be fabricated using PolyMUMPs process flow and tested using Micro system analyser for its mechanical characterization. The proposed device has a promising biomedical application scope in near future.

Micro Gas Sensors for Detection of Acetone for Non-Invasive Diabetes Monitoring

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Abstract: The Metal Oxide Semiconductor sensor has the ability to detect volatile organic compound gases in human exhaled breath as a result of metabolic processes and to calculate diabetes levels in a non-invasive manner. In comparison to non-diabetic people, diabetic people have peak acetone levels in their exhaled air. One can measure the degree of diabetes by calculating the concentration of acetone in a volatile organic compound. Using COMSOL Multiphysics software, we were able to model and simulate an acetone-based SnO_2 gas sensor by solving Poisson's equations under related boundary conditions of mass, heat, and electrical transitions. An exposure model adopted to show the necessary acetone, a heat transfer model used to determine the reaction temperature, and an electric model implemented to complete the simulation. As SnO_2 is n-type sensing layer, it is sensitive to reduction gas and it requires some amount of temperature. The heater is developed in meander shape to produce required temperature of 3500°C - 3800°C to sensing element. when the senor is exposed to oxygen(air)O_2 in chamber at 3800°C approximately. The sensor is immersed in acetone, or in the same state. On a lower consecration of acetone (10 mole/m3), the voltage was found to be applied to the electrodes. The voltage around the electrodes goes up as the acetone content rises.

Skeletal based human action rection using deep learning algorithms.

E. Kiran Kumar

Associate Professor,Department of E.C.E.,K L E F (deemed to be University), Vaddeswaram, Guntur, A.P.

From the last decade action recognition is most active research topic in the computer vision or activity detection field which helps us to train the machine to do the work in any field instead of human which reduces the time being and human effort and cost efficient. The most used technique's in the activity recognition are deep learning, optical flow in the advancement in technology several tools are developed by respectable firms for more enhancement of the perception of human behavior, several of them Kinect, 3d data visualizer which data gathering from such systems and data analysis vary from one another, in this report we use Kinect dependent 3 data streams which has 3d view and gathers data in 3 forms of skeletal, RGB and Depth.

Automatic water meeting system

E. Kiran Kumar

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Water is the most important role in day-to-day life. Water shortage is becoming a reality as water use and pollution continue to grow concern round the universe while s o m e reckless individuals waste water on a regular basis by overusing it, a large population remains without access to clean drinking water. This problem is caused by the irregular distribution of water. To deal with this, we need a solution that gives data about water flow rate as well as water use of an industrial area or home to the government to enable proper water distribution. This paper aims to build a Smart Water Metering System (SWMS) for real-time water monitoring. The relatively recent Smart Water Metering (SWM) Technology offers high resolution and frequent watering consumption data which may be wont to improve water protection and management by providing suggestions to customers. Water is one among the vital resources for the existence of human life then the Smart water management system features a key role in smart city. Through using moderate Internet of thing equipment including mobile applications, a smart metering solution suggested varies with standard production techniques. This device requires all Meter Readers to use standard devices as single local suppliers to do smart meter and upgrade the database of the network. An online tracking system is to provide these data on web dB in realtime. The routing protocol increases the reliability of water supply and lowers the use of electricity, potential failures and, as aresult, loss of water supplies, and the alternative methods needed for smart water metering have been reviewed. And a design for aSmart water meter is proposed and an implementation detail of Smart water metering system is discussed.

Medical Imaging by Compressed Sensing

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Abstract— Recent developments in medical treatment put challenging demands in imaging systems. Confined to traditional sampling methods, the inevitable result is a significant growth in the amount of raw data that needs to be transmitted from the system front end, and then processed by the processing unit, effecting machinery size and power consumption.Compressed or Compressive Sensing (CS) has emerged as a new framework for signal acquisition and sensor design. CS enables a potentially large reduction in the sampling and computation costs for sensing signals that have a sparse or compressible representation. This article gives a brief background on the origins of this idea, reviews the basic mathematical foundation of the theory and then goes on to highlight different areas of its application with a major emphasis on Medical imaging domain. Finally, the survey concludes by identifying new areas of research where CS could be beneficial.

Index Terms—Compressed Sensing , sparse, sampling, resolution.

Design of 2D ultrasound Scanner Using Compressed Sensing and Synthetic Aperture (CS-SA) technique

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ABSTRACT– Recent developments in medical treatment put challenging demands on ultrasound imaging systems. These demands typically imply increasing the number of transducer elements involved in each imaging cycle. Confined to traditional sampling methods, the inevitable result is a significant growth in the amount of raw data that needs to be transmitted from the system front end, and then processed by the processing unit, effecting machinery size and power consumption. One of the major downside of these systems is that the cost of system is high. The main focus of project is to make the ultrasound system more affordable. The cost of system is proportional to the number of sensor used in the system. Reducing the number of sensors and applying the existing algorithm will reduce the resolution of ultrasound images obtained from the system.

Compressed Sensing (CS) has emerged as a new framework for signal acquisition and sensor design. CS enables a potentially large reduction in the sampling and computation costs for sensing signals that have a sparse or compressible representation. In synthetic transmit aperture medical ultrasound imaging field, a compressed sensing ultrasound imaging method based on the sparsity in frequency domain is presented in order to reduce huge amount of data and large numbers of receiving channels. First, the sparsity in frequency domain is verified. Then the echo signal is compressively sampled in time-spatial domain based on compressed sensing and the echo signal is reconstructed by solving an optimization problem. Finally the image is made by using the synthetic transmit aperture approach. The amount of data and the complexity of system are reduced greatly by the proposed method based on compressed sensing. In this paper

we compare the Phased array imaging and Synthetic Transmit Aperture(STA) imaging without applying a compressed sensing. As compare from the results above acquisition time for STA is reduced to 1/3 of phase array imaging.

Optimization of semiconductor Optical Amplifier for ultra high speed applications

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Abstract—In this paper Experimental characterization of Semiconductor optical amplifier functionalities and optimization are presented for high speed SOA based application. SOA possesses nonlinear characteristics which are termed as cross gain modulation, cross phase modulation and Four wave mixing. In this paper these nonlinear characteristics are optimized to achieve better performance. Simulation of SOA in optiwave optisystem platform was performed and its performance has been evaluated in terms of carrier recovery, bit error rate and data rate. The simulation results confirm previously proposed results on SOA design and modeling.

Design of all Optical Encryption Decryption System Based on All Optical XOR logic

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In this research paper Optical encryption and decryption system has been successfully demonstrated by using cross-gain modulation (XGM) in semiconductor optical amplifiers (SOAs). In this paper it is also demonstrated that it is impossible for eavesdropper to decrypt the signal without having information about keys used in the encryption side. XOR logic designed using SOA has been simulated at data rate of 80 Gb/s. The overall quality factor of optical encryption and decryption signal is 12 and 11 and eye-opening factor is obtained as .92 for encryption signal and .89 for decryption signal. Our design is mainly based on SOA-Mach-Zehender interferometer structure, optical couplers, CW light & EDFA.

Adaptive Exon Prediction for Disease Identification using Higher Order Algorithms

Nagesh Mantravadi; Md. Zıa Ur Rahman; Srinivasareddy Putluri; Sala Surekha; K. Murali Krishna

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Abstract

Imperative part in bio-informatics is to identify protein-coding sections in deoxyribonucleic acid (DNA) sequence using smart systems based on adaptive methods. Exon area analysis remains important for disease detection plus to develop drugs. In exon areas, three base periodicities (TBP) are noted. Adaptive techniques present unique ability to modify genome sequence in dependent coefficients of weight. A critical task in bio-informatics, which helps in disease diagnosis and accurately locating exon segments in DNA. All exon segments in DNA exhibits the property of three base periodicity (TBP) that helps in locating them precisely. From these, we introduce a novel adaptive exon predictor (AEP) with a Normalized Least Mean Fourth (NLMF) also its signed variants NSRLMF, NSLMF, NSSLMF to lower computational complexity when compared to LMS. It is shown that AEP based on SRNLMF is better depending on performance metrics like precision 0.6789, sensitivity 0.7129, also specificity 0.7343 at threshold value of 0.8. From National Center for Biotechnology Information (NCBI) gene repository, genomic sequence of homosapiens is taken by using AEPs that are able to predict exon location.

Keywords

Adaptive learning, Exon location, Genomics, Higher order filters, Sign regressor, Drugs, Sequences, Sensitivity, DNA, Genomics, Prediction algorithms, Medical diagnosis

Design of Area Efficient Low Power Ever Mixed Logic Line Decoders and Comparator

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Abstract

Mixed logic designs take a prioritized place in logic design approaches which will give a simplified mechanism for the analysis of digital circuits. The right utilization of mixed logic notation produces logic expressions and logic relations that are analogs of each other. Also, a mixed logic implementation gives clear idea with regards to the activity of a circuit. Here in this article, we introduced mixed logic designs like pass transistors (DVL), transmission gate (TGL), static CMOS. By using CMOS technology, it requires 20 transistors to design 2:4-line decoder but by using this mixed logic we can design the same 2:4-line decoder with the use of 14 transistors (14T) only. Furthermore, 4:16 line decoders are designed with this novel mixed logic topologies. Introducing mixed logic approach a 2-bit comparator was designed by using 4:16 line decoder mixed logic. All proposed circuits have a smaller number of transistors and designed by using novel topologies, these logics proves in reducing the transistors count, power, and delay in a satisfying level. Finally, a variety of simulations are carried using DSCH and MICROWIND tools at 7nm range to examine all notable changes in parameters.

Keywords:

Logic gates, 2:4 CMOS line decoder, 4:16 CMOS line decoder, mixed logic design, 2-bit comparator

Development of Medical Assistance system for Cloud Computing Networks by Covid-19 Datasets

Polaiah bojja
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Abstract:

When coming to the Accessibility; Cloud computing facilitates the access of applications and data from any location worldwide and from any device with an internet connection. So, for medical assistance we have choosen cloud computing networks rather than IoT and Distributed parallel networks. In view of present senario Corona Virus that causes Covid'19 is mainly transmitted through droplets generated when an infected person coughs, sneezes, or exhales. These droplets are too heavy to hang in the air, and quickly fall on floors or surfaces. We are using Google's cloud platform which provides a reliable and highly scalable cloud computing services to its users. These services help clients compute and store data, and help developers build, test, and deploy apps. So, we are collecting covid-19 datasets from online data source and we are going to use deep learning models to predict and analyze covid'19 cases around the world.

Index terms: Cloud computing, IoT, distributed parallel networks, Google's cloud platform.

Smart Garbage Bin for Operation and Maintenance of Waste management Systems

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Abstract:

The waste lying in cities which makes it hard for cleaning staff to know which area requires attention and urgent garbage. If the cleaning is not done at the particular area it will leads to the some of the problems, such as Pollution, Traffic congestion and Floods. Paper aim, to make a smart waste management system which involves stuff like smart location system, smart monitoring system, smart physical operations etc., In regards to the above problems in our society, in this connection our idea to develop and implement the garbage monitoring system which helps us keep track of our garbage levels in and around our leaving locations. The proposed one is that when a large no of dustbins are scattered over an area, real time monitoring and control of the waste levels helps in reducing the load on the workers and helps them take actions whenever it is necessary. Moreover, level monitoring system where the amount of garbage which indicates the levels through a online and virtual pictures in online local at selected location results obtained.

Index terms: waste lying, , distributed parallel networks, level monitoring system, Pollution control.

Enhanced Speech Emotional Recognition Technique using CNN and LSTM

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Abstract

For efficient personal communication, speech signals emotion identification is a must-have feature. The use of spectrograms as inputs to the hybrid deep convolutional LSTM for voice emotion identification inspired this paper. In this study, we used four convolutional layers to train our developed framework for extracting high-level features from input features extracted.

Finally, there are two dense layered and an LSTM layer for building long-term connections. Experiments on the saved database have yielded encouraging results. Our proposed method is fairly strong, as evidenced by its 94.26 percent accuracy.

Keywords: CNN, LSTM, RNN, SER, Spectrograms.

GAN and LSTM Based Deep Learning Techniques for Speech Emotion Recognition

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Assistant Professor, ECE, KLEF, AP, India

Abstract: The on-demand need for accurate and near real-time Speech Emotion Recognition (SER) in human–computer interactions necessitate a comparison of known methodologies and datasets in SER to arrive at plausible solutions and a better understanding of this open-ended subject. Deep learning approaches for SER using available datasets are reviewed in this work, followed by traditional machine learning techniques for speech emotion detection. Finally, a multi-aspect evaluation of practical neural network techniques to voice emotion recognition is

presented. This research aims to provide an overview of the topic of continuous emotion detection.

Keywords: CNN, Deep learning; Emotional speech database, GA, LSTM.

PERFORMANCE ANALYSIS OF PRESSURE SENSORS USING PIEZO RESISTIVESENSING MECHANISM

Nalluri Siddaiah,
Assistant Professor, ECE, KLEF, AP, India

Pressure sensor plays a major role in reducing the sensing area using MEMS technology. In this proposed work, the Piezo resistive pressure sensor was designed, and performance was analyzed the using MEMS modelling FEM tool. The designed structure is well appropriate to diminish the cost and upgrade the affectability of the pressure sensor with piezo resistive sensing mechanism. In this paper the piezo resistors with polysilicon the diaphragm is of Silicon Nitride. In the proposed structure, the selectivity and sensitivity are enhanced by

improving linearity between the resistance change and in plane stresses along the proposed structure.

Keywords-MEMS, Pressure sensor, Piezo resistivity, Diaphragm.

DESIGN AND ANALYSIS OF THERMOELECTRIC GENERATORS FORHANDHELD ELECTRONIC GADGETS

Nalluri siddaiah,

Assistant Professor, ECE, KLEF, AP, India

Thermoelectric generators are appealing for their capacity to specifically change over warmth vitality into electrical vitality, with no moving parts. This technology has been used to develop thermoelectric generators for specialized applications viz, space, military, etc. These thermoelectric generators produce electric power from the environmental and human-made effects such as heat from exhaust, body heat, etc. In this work, we are going to design and simulate a thermoelectric generator module in MEMS modelling Tool and analyzed the electrical, thermal, and mechanical characteristics of the proposed mo2del. The outcome of this

study is to analyze the exhibit optimum power output with the various temperature ranges for electronic gadgets.

Keywords— Thermoelectric Generators (TEG), Bismuth Telluride, Antimony Telluride.

Dual Band Resonator Antennas for wireless communications

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Abstract: This article study the material properties of suitable substrate for resonator antennas, the antennas respond in 2.4 and 5.2GHz wireless applications. The resonant properties of all materials are to study for suitable material property for achieving the response. The S Parameters values are deeply observe for analytical purpose.

Analysis and Synthesis of Conformal Array Antennas for Beam Forming Techniques

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Abstract: This paper, the circular ring array going to introduced and the nature of stable beam forming from circular array will respond steering beam forming with the help of butler matrices. To reduce the side lobe level of circular array antennas, we are approaching Taylor and Bayliss series polynomials.

An Efficient Procedure for identifying the similarity between French and English languages with sequence matcher technique

S.Nagendram

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Abstract

Through this research article we have compared multi lingual document which are used in plagiarism detection, bi lingual lexicon extraction and NLP application. The comparison of multi lingual text is done using a parallel corpus which is a collection of aligned sentences and sentences which are translation of each other. Here we have used sequence matcher in order to retrieve the similarity of sentences, lexicons and words in a multi lingual content. The technique sequence matcher is found to perform better over the other existing techniques.

Key Words: Multi lingual, Parallel Corpus, Similarity, Lexicons.

Design and Implementation of low cost Smart Home system with Sensor Multiplexing

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Abstract— In general smart home system is an add-on to home automation and automation of systems guarantee human comforts like lighting, heating, ventilation, and security. In this proposed work, we have designed and implemented a low-cost smart home system using sensor multiplexing which is extendable, cheap and multi-faceted and supported Node MCU ESP8266. Major development of home automation system is to comprehend most home appliances that use Wi-Fi for the remote observance. Technological progress has increased the implementation of home systems leading to improved standards of living. Industrial smart home systems are still unaffordable to an enormous of the center and social class families. However, the emergence of low-cost microcontroller development boards, just like the Node MCU ESP8266, has enabled the implementation of cheap and efficient home systems.

Key words: Smart home system, Node MCU ESP8266, microcontrollers, multiplexing.

An Approximate Multiplier for Efficient Multiplication using Xilinx

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Abstract: In this paper, four double quality 4:2 blowers are proposed. Double quality blowers imply it has a capacity of exchanging between two modes to be specific correct and rough working modes. Double Quality blowers have capacity to give the higher speeds and will bring down the precision. To plan this model ordinary dada multiplier is taken as reference. Multiplier involves huge region yet it performs rapid tasks. To decrease the downsides in the framework we have actualized surmised double quality 4:2 blowers utilizing dada multiplier. In this paper, we presented a dadda multiplier with new inexact blowers. Using this estimated blower, we can diminish the region and power utilization likewise in the dadda multiplier. Mainly for rapid duplications we utilize this convolution. By utilising these estimated blowers, we can lessen the intricacy in the circuit also. Compared to ordinary dadda multiplier and this advanced dadda multiplier atleast 20% of the defer will be decreased. However, the look up tables and number of gates are likewise diminished.

Keywords: 4:2 compressor,delay, speed, dada multiplier.

Detection of Counterfeit Currency using Discrete Wavelet Transform in MATLAB

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Abstract :--Counterfeit notes are one of the major issue in money transactions. In a growing country like India, it is becoming big problem for the economy. As the advances in printing and scanning technologies are developing, it is very easy for any person to print counterfeit notes with use of latest hardware machines. Identifying counterfeit notes in manual way takes a lot of time and manpower. Hence there is requirement of automation technique using which the counterfeit currency recognition process can be done effectively. Many methods have been proposed and implemented with MATLAB. By using Discrete cosine transform (DCT) algorithm blocks of the image are represented by coefficients of DCT. So, due to the presence of blocking articrafts in DCT, it is a drawback for this method. Hence, We have implemented a counterfeit note detection unit with a different algorithm which uses discrete wavelet transform (DWT) in MATLAB. This paper is another attempt on the same project to give a better solution for counterfeit currency problem.

Keywords : Counterfeit notes, Algorithm, MATLAB, Problem, DCT, DWT.

A Review on Brain Tumor Segmentation Using Matlab

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Abstract: Early identification of a brain tumor may expand life future. Magnetic resonance imaging (MRI) joined by a few division calculations is liked as a solid strategy for appraisal. This composition introduced the exhibition examination of grouped based and combination based division strategies expected to identify the tumor from human mind MRI pictures in a proficient way. Four essential advances are associated with this work like pre-handling, grouping, division, and combination procedures. The principle bunching strategies, for example, K-implies and fluffy c-implies (FCM) were first applied to the pre-handled MRI pictures, and afterward, the grouped pictures were sectioned straightforwardly utilizing the dynamic shape division procedures, for example, chan-vese (C-V) and level set strategy (LSM). At that point in the following stage, the bunched pictures were melded by utilizing the non-sub tested shape change (NSCT) and convolution neural organization (CNN) combination strategies, and afterward, the intertwined pictures were portioned by utilizing the C-V and LSM division techniques once more. The consequences of both bunched based and combination based division regarding primary likeness record measure (SSIM), dice coefficient (DC), computational time, affectability, exactness, and division precision uncovered that CNN combination based C-V division performs better compared to without combination (grouped based or direct division) to recognize the tumors from the MRI pictures. The outcomes show that C-V performs better with CNN as contrasted and the LSM. At long last, the combination based division is an effective way to deal with distinguish the tumor from the MRI pictures with insignificant data misfortune and high division precision over the grouped based division.

Keywords: Brain tumor, fluffy c-implies, K-implies, chan-vese, level set, CNN, NSCT

AN IoT BASED VEHICLE AUTOMATION APPROACH FOR REMOTE MONITORING AND CONTROL

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1,2,3Koneru Lakshmaiah Education Foundation (KLEF), Vaddeswaram, A.P

Abstract: This project aims to monitor and diagnose different parameters of a vehicle with the help of On-board Diagnostics (OBD-II) technology and Internet of Things (IoT). In this project we measure crucial parameters of a vehicle such as speed, RPM, engine load and coolant temperature. All these parameters will be made available to the driver as well as to the owner/maintainer of the vehicle from anywhere around the world using the concept of Internet of Things. The data is collected from the car and is transmitted to the microcontroller for decoding and computation. The processed data is then transmitted to the cloud from which it can be displayed inside of an application in the form of Graphical User Interface (GUI). In this way the owner/maintainer of the vehicle can keep track of the important parameters of the vehicle in real time even if they are in a remote location. These results are also used to diagnose faults in the car and can be used to report the problems before they become worse or require expensive repairs.

Keywords – On-board Diagnostics (OBD-II), Internet of Things (IoT), speed, RPM, engine load, coolant temperature

Uninterruptible Power Supply parameter monitoring and controlling using IOT

A.V Prabhu

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ABSTRACT

The paper mainly focus on presenting an economical and elementary approach to design an intelligent Uninterruptible Power Supply monitoring and controlling system , adopting the concept of mobile to machine and machine to mobile communication(M2M) is one of the most effective wireless communication (GSM) is one of the part must effective wireless communication that can be utilized easily. GSM based UPS monitoring and controlling system helps to increase production efficiency of industrial ups in a remotely controlling the network. In addition to monitoring a system using IoT and GSM. It provides additional facilities which include report generation, maintaining the log in data base. Proposed system is divided in two Modules such as manager & agent. Manager is networked operating system application that runs on a server & agent is operating system service which runs on each UPS. The proposed system can monitor the UPS from anywhere in the world using IoT Concepts so that without effecting the production the industry can run smoothly.

Keywords: Uninterruptible Power Supply, IoT, GSM and M2M

Grey Wolf Optimized and A Novel Fuzzy Clustering Algorithm for minimizing energy consumption in WSN Application

A.V Prabhu

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ABSTRACT

In a modern world, Wireless Sensor Networks (WSNs) have become extensively used in an enormous amount of applications due to their infrastructure-less, distributed and dynamic in nature. In those WSNs, hierarchical methods increase the performance of the network and increase its lifetime. Clustering is a well knowing technique to prolong the network life cycle and increase network performance. Here, a new clustering protocol proposed using fuzzy centrality clustering and Grey Wolf Optimized (GWO) cluster head selection. This Grey Wolf Optimizer (GWO) is motivated by the character of grey wolves for hunting process .More precisely, firstly, centrality clustering is applied to grouping sensor nodes according to fuzzy Closeness Centrality and Eccentricity. MATLAB simulation used to verify the effectiveness of proposed selection method. The proposed methods outperforms the existing techniques in terms of minimum energy consumption in WSN application.

Keywords: Wireless Sensor Networks, Grey Wolf Optimizer (GWO), Clustering and Energy consumption

Estimation of Shadow Confidence Maps in Fetal Ultrasound Imaging with Weakly Supervised Machine learning

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Abstract:

Many clinical and engineering applications require the detection of acoustic shadows in ultrasound images. Real-time feedback of acoustic shadows can direct sonographers to a standardised diagnostic viewing plane with minimal artefacts and provide additional data for other automatic image analysis algorithms. However, automatically detecting shadow regions using learning-based algorithms is difficult due to the subjective nature of pixel-wise ground truth annotation of acoustic shadows. We present a weakly supervised approach for automatically estimating the confidence of acoustic shadow areas in this study. A dense shadow-focused confidence map may be generated using our technique. Based on global image-level annotations as well as a modest number of coarse pixel-wise shadow annotations, a shadow-seg module is constructed in our technique to learn generic shadow features for shadow segmentation. The resultant binary shadow segmentation is extended to a reference confidence map using a transfer function. In addition, to learn the mapping between input images and reference confidence maps, a confidence estimation network is proposed. During inference, this network can predict shadow confidence maps directly from input pictures. To test the success of our technique, we utilise evaluation measures like as DICE, inter-class correlation, and so on. Our technique is more consistent than human annotation and exceeds the state-of-the-art in shadow segmentation and confidence estimate of shadow areas statistically and qualitatively. We also show how our technique may be used in tasks like ultrasound image classification, multi-view picture fusion, and automated biometric assessments by including shadow confidence maps into them.

Index terms: Ultrasound imaging, deep learning, weakly supervised, shadow detection, confidence estimation.

Arbitrary oriented 2-D images, 3-D reconstruction in Canonical Co-Ordinate Space

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Abstract:

The necessity for high-quality initialization for optimization-based 2-D/3-D picture registration techniques, as well as the limited capture range, can dramatically decrease the performance of 3-D image reconstruction and motion compensation pipelines. The 3-D image and volume reconstruction process is complicated by challenging clinical imaging scenarios that include significant subject motion, such as foetal in-utero imaging. We offer a learning-based image registration technique that can anticipate 3D stiff transformations of arbitrarily oriented 2-D image slices in relation to a learnt canonical atlas co-ordinate system in this work. Registration and canonical alignment are performed using only image slice intensity information; no spatial transform initialization is required. We use a convolutional neural network architecture to develop a regression function capable of translating 2-D picture slices to a 3-D canonical atlas space in order to identify image transformations. We statistically assess the efficacy of our method on simulated magnetic resonance imaging (MRI), foetal brain images with synthetic motion, and qualitatively on actual foetal MRI data where our method is incorporated into a comprehensive reconstruction and motion compensation pipeline. On simulated data, our learning-based registration achieves an average spatial prediction error of 7 mm, resulting in qualitatively better reconstructions for heavily moving foetuses with gestational ages of about 20 weeks. Our approach is appropriate for real-time applications and gives a generic and computationally efficient solution to the 2-D/3-D registration initialization problem.

Index terms:

Biomedical imaging, magnetic resonance imaging, machine learning, motion compensation, image reconstruction, image registration.

FEDERAL KALMAN FILTER BASED GPS SIGNAL TRACKING

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In current GPS receivers, the Kalman filter is commonly utilised. Because a typical Kalman filter (KF) receiver tracks the GPS signals from each satellite separately, its tracking

performance may be lower in difficult scenarios. The vector delay frequency-locked loop (VDFLL) improves tracking performance by combining all tracking channels into a single Kalman filter. VDFLL, on the other hand, has two major flaws: a high computational cost and a lack of robustness. The federal tracking loop is presented as a solution to this problem. The typical federal loop's single Kalman filter is split into a least-squares block and a master filter in order to reduce computational complexity at the cost of a little performance loss. The GPS signal from each satellite is tracked separately in the subfilters in this tracking loop. The master filter functions as a navigation processor, estimating the receiver's acceleration and feeding it back to the subfilters. The federal tracking loop's thermal jitter and dynamic stress error are theoretically investigated and demonstrated using simulation data. The classic KF loop, the suggested federal tracking loop, and the VDFLL are compared in terms of dynamic performance, resilience, and computing complexity. The federal loop's dynamic tracking performance is substantially better than the KF loop's and almost equal to the VDFLL's, according to analysis and simulation data. As a result, in the future, the federal tracking loop could be used as a novel way in the practical development of high-performance applications.

EXTENDED KALMAN FILER BASED PRECISE SYSTEM IN GPS OUTAGES

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Vehicle navigation and positioning have become a research area due to the fast growth of transportation systems. The most frequently used technology for vehicle navigation and tracking is the GPS system. It is a satellite-based system that gives us with altitude, velocity, and position at any place on the globe.GPS is commonly used in conjunction with INS (Inertial

Navigation System).The combination of the two navigation systems (SINS/GPS) improves the navigation system's overall accuracy and dependability, as well as its overall performance. The integrated system works properly, however performance suffers when GPS signals are absent. Additionally, there are several circumstances when GPS signal loss is noticed, such as when the car drives through a tunnel. When the GPS signal is missing, a system is built to process the data. The Kalman filter is used to smooth noisy data and offer estimates of important parameters. A system is created that employs an Extended Kalman Filter to locate GPS signals during GPS/INS outages in order to acquire accurate, dependable, and continuous signals when the GPS signal is lost. The Kalman filter guarantees a high level of precision. After the model has been implemented, it has been noticed that it performs well.

Evaluating the usability and users acceptance of a assistant robot in hospitals environment

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The COVID-19 pandemic created the weak points in the global supply chain for goods. The Activity Helper Robot is a Autonomous robot where it is a special kind of service robot that is specifically designed for personal use at hospitals. Robots companions are expected to communicate with non experts things in a natural and intuitive way. Robots companions in the

hospitals should ideally be able to perform a wide array of tasks including Hospital security , Dairy Duties , food and Message delivery services etc.currently,there are robots which can perform the tasks efficiently, accurately and robustly and it can interact with even human using AI, ML, etc.. All of the roles which are already, traditionally with robots were selected as well as patient assistant security guard etc. These are all roles which are considered within the human domain and which only a human is able to perform. Some individuals however, in other study for doctors to take care of patients in hospitals robots are relate to people's perceptions that robots do not posses human like personality or character traits. In this covid situation this robots are going to help nurses or doctors for serving food and medicines to covid patients to their bed and also this robot is going to place the food on their table by the robot.

An Effective Image Transmission using symlet wavelet over fading channel

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The world is completely evolving around communication in wireless medium, as this wireless mode of communication plays a vital role, this work achieves to transmit and receive images with reduced bit error rate and higher peak signal to noise ratio. In this work, binary phase shift keying scheme is used which works in two phases to reduce the bit error rate. Along with binary phase shift keying, wavelet type of transform, Symlet wavelet transform is used which affords to analyze the image in both domains (time and frequency). The most advantageous part is this image with less noise can be improvised as a series of images or to video transmission

hence can really take the transmission of information to next level. The superiority of the proposed work is shown in comparison with the existing works. The proposed work utilizes MATLAB wavelet tool box for efficient computation.

Implementation of RF MEMS Switch with fixed-fixed type capacitive using CST Tool

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ABSTRACT

This work presents the fixed-fixed type capacitive RF MEMS switch. The device additionally includes nonuniform meanders which can reduce the actuation voltage of the device. The switch accomplishes 0.5-1.5μN of applied force for actuation voltages of 6.9-7.9 V. The simulated and calculated spring steady is 1.49N/m to evaluate the actuation voltage the concept of stoppers is

introduced in this work. Incorporating stoppers and meanders to the proposed device is to improve the RF performance. The proposed switch produces perfect electromagnetic behaviour low insertion and high isolation with the addition of stoppers in the device. The switch undergoes two conditions here with the addition and without the stoppers. The RF Performance of the device with the stoppers, are lower insertion, return losses and higher isolation are -0.07dB, -76 dB, -82dB at the 8GHz frequency. The device without the addition of stoppers the RF Analysis can be observed as insertion loss of -0.1dB, return loss of -67dB and the isolation -77 dB at 8GHz frequency. The S-parameter analysis like isolation, return loss and insertion loss are carried using CST which gives good performance. The proposed device is a good candidate for the electromechanical and electromagnetic response. The device will be insensitive to the stress effects and temperature due to implementation of stoppers to the RF MEMS switch.

Keywords: Stopper, MEMS Switch, Reliability, S- parameters, CST, FEM Tool.

Design of Narrow X-shaped Slots on Radiating Patch Antenna for Wireless Communications

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ABSTRACT

A compact patch antenna has been designed to work at wireless applications is presented in this article. A simple rectangular microstrip antenna with small and narrow X-shaped slots on radiating patch has proposed. The proposed antenna model is operated below -10dB return loss with single resonating frequency at 9.9GHz. The return loss is observed wide bandwidth of -35.48dB with 2.80GHz (8.49-11.30GHz) impedance bandwidth of 28.25% is obtained. The current distribution and radiation patterns of proposed model has presented in the results.

Keywords— rectangular patch antenna, X-shaped slot, wireless communication

DESIGN OF LOW POWER RELIABLE MULTIPLIER USING BYPASSING TECHNIQUE

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The most important arithmetic functional units are digital multipliers. The multiplier's throughput determines the overall appearance of these systems. If some of the leading crucial bytes are all zeros or ones, a multiplication that typically takes k cycles can be completed sooner. For 32-bit by 32-bit multiplications, this study presents a simple strategy to interchange the two operands energetically to reduce the number of cycles. Some sample data reveals a 60 percent reduction in the delay product. As a result, designing dependable high-performance multipliers is critical. The multiplier was created utilizing the Column Bypassing method. The Aging Aware multiplier with Adaptive Hold Logic also uses the adjusted multiplier (AHL).

Capacitive actuated MEMS based Mems Energy Harvester

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This research proposes a unique capacitive-based energy harvester that is both accurate and sensitive. The capacitance varied according to the amount of light energy that could fall on the proposed structure's top layer's surface. When the light intensity is changed, the cantilever's displacement changes, which changes the voltage between the plates, which changes the overall capacitance of the proposed system. For applied voltages of 0.25v to 3v, the minimum and maximum capacitance values are 15f to 600f. The structure is modeled using the COMSOL MultiPhysics FEM tool, and capacitive sensitivity is determined as a function of voltage.

A healthcare solution based on IoT environment for COVID 19 situations

K. Praghash

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The need for unattended patient monitoring is the current objective of smart healthcare. This device integrates the latest up-to-date and cutting-the-edge trending IoT technologies. Consecutive and selective sampling of the patient and home environment Health tracking is feasible through the usage of ECG and blood pressure monitors. Important shifts in the patient's pulse and ECG can be observed using multiple sensors. This project is used to measure the heart rhythm using Arduino and O2. It's just about maintaining track of many kinds of biological metrics, including heart rate, oxygen level, and temperature, which can be constantly monitored electronically and available, with no doctor present face-to-to-face touch, where the doctor can view the patient's data and relevant details whenever. The observed data here is published or stored in an open source cloud database, from which it can be accessed and analyzed in tabular or graphical representation. Such periodic visualization of patients observations and symptoms are monitored using ThingSpeak.

Keywords: Smart health, Arduino Uno, Thingspeak, Real-time monitoring

An NGROK framework: Tunnel based Intra Network Controller for Smart Cities

K. Praghash
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IOT is the in trend cutting edge technology now widely being used in every possible field, but the technological innovations which are required for a normal man are not in their affordable range. However, the usage of open-source technology changed this to a little extent, but the hardware gap could not be reduced. In this paper we are trying to remotely control the doors of a locomotive body (like a car). We are going to push the control of the door to a website/web server and control it through any internet enabled device. The main operation is to control the devices by turning them on or off or alter the voltage of the devices through internet, using reverse tunnelling principle. We used NGROK framework to do this task and ESP 8266 to connect appliance to the internet. NGROK is the platforms that we use to tunnel a network and processing data it is an open source. ESP8266 is the hardware used which is low cost, Integrated support for Wi-Fi network, Reduced size of the board, Low energy consumption

Keywords: NGROK, tunnel, framework, Smart cities, Internet of Things.

Reversible implementation of SRAM cell

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Reversible logic shows a great potential in the design of Low-power circuits. Remarkable work has been done in design of basic arithmetic circuits. Present day progress in sequential circuit design of reversible logic circuits has shown new ways inperformance of Static random access memory (SRAM) and Dynamic random access memory (DRAM). As the memory size is increasing exponentially, the power absorbed by memory cells is also growing rapidly. In recent years reversible logic has achieved great interest because of its low power performances. This paper proposes a new SRAMcell which us e s Feynman gates. The proposed SRAM cell shows reduction of 66% in terms of quantum cost, 66% reduction in quantum delay, 60% reduction in number of gates count and 50% reduction in number of transistors count.

Keywords: Arithmetic circuits, static random access memory, reversible logic, feynman gate.

Reversible Full/Half adder implementation for low power applications

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Abstract: The widely using CMOS technology implementing with irreversible logic will hit a scaling limit beyond 2020 and the major limiting factor is increased power dissipation. The irreversible logic is replaced by reversible logic to decrease the power dissipation. The devices implemented with reversible logic gates will have demand for the upcoming future computing technologies as they consumes less power. Reversible logic has applications in Low Power VLSI, Quantum Computing, Nanotechnology and Optical computing. This paper proposes the design of a optimal fault tolerant Full adder / Full subtractor. For this logic circuit input parity and output parity is same hence it is called parity preserving circuit. The proposed method require less complexity, less hardware, minimum number of gates, minimum number of garbage inputs and minimum number of constant inputs than existing methods.
Keywords: CMOS, Irreversible logic, power dissipation, fault tolerant.

Design and Analysis of Solar Photovoltaic Panel Health Monitoring Smart System

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Abstract

Renewable and green energy sources are need of the hour and are gaining much consideration then other conventional sources for generation of electrical energy. Amongst these renewables, electricity generation through solar energy plays a pivotal role. Solar photovoltaic energy is the emerging and enticing clean technologies with zero carbon emission in today's world. Power efficiency delivered from a PV panel individually or as larger system. To harness the solar power generation is indeed necessary to pay serious attention to its maintenance as well as application. The IoT based solar energy monitoring system is proposed to collect and analyzes the solar energy parameters to predict the performance for ensuring stable power generation. The solution is designed as a laboratory prototype that could be extended to monitor large scale photovoltaic stations using simple devices, this solution made it possible to measure the current, voltage, power, and visualize remote energy yields and its performance either on the computer or through smart phones. The prime target of PV monitoring system is to offer a cost-effective solution also provides an alert to a remote user, when there is a deviation of solar power generation quality parameters from the predefined set of standard values. The solar panel performance monitoring system purpose is collecting data automatically in a range of time. The result can be analyzed to measure the solar power supply performance in the sensor node. Solar panel performance monitoring system consists of 3 main blocks which are client, server, and communication. The client consists of sensors, RTC, local display, microcontroller, and backup data logger. The server consists of PC, and communication block (Xbee transmitter and receiver).

Index Terms—Power Efficiency, Shading, PV Solar, Irradiance, Solar Farm.

DESIGN AND ANALYSIS OF AN IOT BASED STREET LIGHTENIN

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Abstract

In the world of connectivity and wireless technology, the Internet was the start of a revolution. The main idea is to wireless technology connect it all. All can be linked using various sensor types designed to various purposes via the Internet of things. The paper focuses most on a system for automating streetlight and transferring data from streetlight over the internet. Depending on the environmental situation, this intelligent streetlight system can automatically switch the light on and off. The Streetlight System automatically activates and disables when the light intensity in the environment is reduced or increases over a specified temperature. This project gives solution for electrical power wastage. Also, the manual operation of the lighting system is eliminated. The proposed system provides a solution for energy saving. This is achieved by sensing and approaching a vehicle using an IR transmitter and IR Receiver couple. Upon sensing the movement, the sensor transmits the data to the microcontroller which furthermore the Light to switch ON. Similarly, as soon as the vehicle or an obstacle goes away the Light gets switched OFF as the sensor sense any object at the same time the status (ON/OFF) of the streetlight can be accessed from anywhere and anytime through internet. This project is implemented with smart embedded system which controls the streetlights based on detection of vehicles or any other obstacles on the street. Whenever the obstacle is detected on the street within the specified time the light will get automatically ON/OFF according to the obstacle detection and the same information can be accessed through internet. The real time information of the streetlight (ON/OFF Status) can be accessed from anytime, anywhere through internet.

Keywords: Internet of Things; Streetlights; NodeMCU ESP8266; Thingspeak.

Performance Enhancement Using High-k Dielectric for Advanced MOSFET in Lower Technology Nodes

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ABSTRACT

Recent advancement in semiconductor industries are taking portable device manufacturing to a different level. According to the need of the consumers, these portable devices are further scaled down so that they can be more user-friendly and convenient to use. As MOSFET is the building chunk for all these semiconductor devices, its miniaturization is the most vital task to be performed. Transistor count no longer increases according to Moore's law rather it is following more than Moore's concept. In order to scale down the devices into the next technology node, device dimension scaling is not the ultimate solution. Different material engineering techniques should be followed to take the miniaturization to a different level. Dramatic changes in the semiconductor industry in the past few decades to improve device performance have been accompanied by the shrinking of the size of logic and memory devices. This scaling requires drastic reduction in the size of dielectric to achieve higher capacitive densities. Introducing high-k dielectric in place of normal dielectric provides the opportunity to scale down the device to next level. The dielectric with low-k cannot scale down below 1 nm (fundamental limit), as it will not behave as dielectric anymore, so high-k is the ultimate solution for these types of device dimensions. However, the need to lay the high-k material over silicon body creates some fabrication issues, which can be resolved by introducing a thin interfacial layer in between.

Keywords: Nano, High-K, Moore's, Interfacial Layer, MOSFET

Silicon Nanowire GAA-MOSFET: a Workhorse in Nanotechnology for Future Semiconductor Devices

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ABSTRACT

Today's word is stimulated by some extra ordinary and state of the art devices that keeps Moore's law alive and mitigates the hurdles in the path of miniaturization of semiconductor devices. In this respect, silicon nanowire MOSFET is the state of the art device that is leading the semiconductor

industry from the front to take it into next level. Out of different multi gate MOSFET devices, nanowire MOSFET is considered as the the strong and gifted structure for future generation nano-scaled devices and integrated circuits (ICs). Mostly, the term nanotechnology is the crucial livewire of semiconductor device engineering and technology to produce and operate the materials at nano-meter scale ($10-9$ m or 1 nm) either by top-down approach where the bulk materials are transformed to a group of nano particles (atoms) or by bottom-up approach where the single groups of nano particles (atoms) are transformed to the bulk materials. Nanowire GAA MOSFET is considered as work horse in semiconductor industry due to excessive electrostatic controllability over the channel and tight coupling. This review article explores the different structural designs of GAA devices (Nanowire) using nanotechnology approaches for future device applications.

Keywords: GAA MOSFET, Nanotechnology, Nanowire, Semiconductor CMOS

Energy Detection in Medical Telemetry Networks using Adaptive Learning Algorithms

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Abstract. In wireless communications, cognitive radios are using to avoid spectrum scarcity problems. To avoid interference with primary users, secondary users sense the spectrum before usage. Cognitive radios continuously detect the spectrum to know primary user presence. For detecting the spectrum, spectrum sensing is widely used in cognitive radios. Propagation effects like shadowing and fading will affect spectrum sensing because primary user signal is weak in particular areas. To avoid these interference or noise with primary user, in this paper an adaptive algorithm is considered i.e., variable step sized based adaptive algorithm. By using this algorithm in cognitive radios avoided interference occurred with primary user and secondary users, this cognitive radio concept is used in medical telemetry networks to avoid interferences with medical wireless devices. Results shows that proposed algorithm performs well for detection probability, false alarm probability for various SNR values, further considered convergence curve for proposed spectrum sensing based adaptive algorithm, it converged earlier when compared to conventional adaptive algorithm.

Keywords: Adaptive algorithm, cognitive radio, spectrum sensing, step size, threshold value

Noise Removal in Impedance Cardiogram signals using Diffusion Least Power Algorithms

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Abstract. By using thoracic electrical bioimpedance (TEB) analysis stroke volume calculated for sudden cardiac arrests. In this paper proposed robust normalized diffusion least power algorithm (RNDLPA) is proposed to get high resolution components. In clinical scenarios, TEB components are contaminated with various artifact components, which interrupts the identification of several features in stroke intensity. The number of multiplications is also one of the key elements for monitoring in health care applications. Hence by proposed RNDLPA algorithm it reduces computational complexity, stability is improved and also steady state error rate is reduced. To eliminate noise components various adaptive cancelers are presented and they are compared with proposed algorithm. Further to show performance improvement signal to noise ratio (SNR) improvement is taken into consideration it gets better values 14.3594 dB and 12.3551 dB for respiratory noise and muscle noise respectively when compared to existed techniques.

Keywords: Health care monitoring, least power algorithm, noise canceler, stroke volume, SNRI

PSO based JPEG 2000.JP2 Image Transmission over OFDM-Based CR Networks

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Abstract
Cognitive Radio is a capable technique for range use since clients with high data rate applications, for instance, media can acquire permission to approved repeat resources innovatively and resolve their bandwidth limitations. Among all intuitive media positions,

JPEG 2000.JP2 is a proper opportunity for scholarly radio frameworks as a result of its exceptional features. In standard resource circulations for Cognitive Radio systems, all data pieces are acknowledged comparably basic. Regardless, remarkable pieces of the JPEG 2000.JP2, piece stream have responsibilities to the idea of the got picture. Thusly, in this endeavour, an inconsistent force task strategy is used to permit the open ability to the coded bits considering their importance in the image quality. Re-enacted Particle swarm improvement is used to deal with the inconsistent force assignment issue. Also, bits with higher significance are moreover guaranteed by using sub-channels with better channel quality. Thusly, the likelihood of basic pieces being gotten adequately is extended. The ideal plan is gained by restricting the image twisting without dismissing the impedance basic to the fundamental customers.

Key Words: Particle swarm optimization (PSO), JPEG 2000.JP2, cognitive radio

Enhanced Image Denoising scheme using Dual Tree Complex Wavelet Transform

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Abstract:

Image denoising strategies are utilized to eliminate the commotion parts without influencing the significant picture highlights also, content. Wavelet changes addresses picture energy in minimized structure and this portrayal assists with discovering limit between loud element and significant picture highlights. In this work we proposed a context-oriented data-based

thresholding strategy utilizing Dual tree complex wavelet change. We contrasted our strategy and other four denoising strategies. For correlation reason we utilized two benchmark pictures Barbara and couple utilizing distinctive Gaussian commotion fluctuation.

Keywords: AntShrink, Dual Tree Complex Wavelet Transform, Thresholding

Deep learning algorithms for predicting ionospheric total electron content over Low latitudes

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ABSTRACT

Ionospheric perturbation during the under extreme space weather conditions.severely affects the satellite communication and navigation signals, degrading the accuracy in ground and space-based measurements. Hence, it is essential to predict the ionospheric disturbances in advance for avoiding errors in sensitive and dynamic measurement systems like aviation and navigation,

oil exploration etc. In this paper, implementation of a deep learning-based algorithms is done for making accurate predictions about the ionospheric conditions under disturbed space weather conditions. The deep learning algorithms involves LSTM (Long Short-Term Memory) and Seq2Seq (Sequence to Sequence) method is adopted to predict the ionospheric total electron content (TEC) during upcoming storms depending on the training done on the previous data. The program is successfully implemented in MATLAB environment for predicting the behavior of the TEC. The results show good performance of deep learning method for predicting ionospheric condition.

Index Terms – deep learning, space weather, ionosphere, navigation

GPS based ionospheric TEC and Scintillations characteristics at a low latitude station

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ABSTRACT:

The ionospheric total electron content and scintillations are the two major parameters in the space weather whose variations are very crucial for the Global Navigation Satellite System (GNSS) users in the applications areas like navigation, timing, and communication applications. The performance of the radio waves depends on is affected during ionospheric scintillations which can be described in terms of amplitude and phase scintillations. The GNSS is a tool to monitor the ionospheric conditions remotely from the attenuations in the GNSS signals. In this paper, the GNSS amplitude scintillation (S4) and total electron content (TEC) data at Bangalore

is investigated during the year 2015. The variability of the ionospheric parameters changes from place to place. In order to assess and further improving the present global ionospheric models, several techniques and studies have been conducted. In this work, the hourly data has been computed for every month throughout the year. The results from this work would be useful for developing new methodologies to forecast TEC and scintillation parameters over any region.

Index Terms – Ionosphere, TEC, Scintillation, Modeling, Forecasting.

Identification Leaf detection by using convolution network

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Abstract:A variety of cereals and grains are grown in various parts of the world. Crops are frequently altered by shifting climate conditions, and as a result, agriculture yield is drastically reduced. In the most extreme of circumstances, harvests may become defenceless against diseases caused by parasite, bacterial, infectious, and other disease-causing specialists. New technology, on the other hand, using a neural network for corn leaf, this study presents the best strategy for detecting healthy and affected leaf regions. The cautious type of leaf disease of the entire crop is quite difficult to detect with the naked eye. We employ deep learning techniques to detect and categorise corn disease since we require a fast automatic approach. The use of n in this model is proposed to detect diseases.

Prevention of fire Alert system in running trains by using Arduino Technology

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Abstract: Nowadays, fire mishaps in public transportation systems are relatively common, resulting in the loss of many valued human lives as well as government property. It is now common for fires to occur in public transportation systems, resulting in the loss of many precious human lives and government property There are numerous strategies for avoiding fire accidents and reducing the severity of loss in the event of a fire in a public transportation system. It can also be done in climatic settings. As a result, it can reduce the loss caused by train fires even more if it can notify the appropriate establishments immediately after the occurrence and instantly open the emergency door. This is planned and designed to solve the problem of a sudden fire being evacuated and reaching the roof top, where smoke and temperature sensors are installed. And, using a GSM module and GPS, relays the position and details of the problem to higher authorities and fire fighters. When the temperature reaches its maximum, the automated fire extinguisher and ceiling water sprinklers are triggered and

execute their functions. In some circumstances, if the water in the sprinkler tank is not detected by the ultrasonic sensor, the water from the rinsing tank is used instead.

Key words: GSM module, GPS, Temperature, Communication smoke

A Study of Mammographic Image Segmentation with its Morphological Operation

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,

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Abstract

The Malign cell extraction and segmentation differentiation from normal cells is widelyresearched topic. The process of segmentation with single strategy might miss the featuresleading to increased mortality rate. This work characterizes the different segmentation methodsand two simulation tools for mammogram images. The non-feature pixel values are representedby the nearest feature pixel in distance by watershed segmentation. Simulations are performedwith ImageJ using Morphological library where binary mammogram images are analysed withconnected components and distance-based watershed transform. Finally, the mammogramimage in DICOM format is analysed for segmenting spanning lower and upper threshold withclustering.The process variations in malignant cells spanning across varying size is observed in medicalimages to provide appropriate diagnosis. Digital mammogram has been the widely imagingmodality uses fifty-two percentages whereas the other modules occupy the remaining fortyeight percentages. The step-by-step process from imaging module with early detection tosubsequent segmentation, classification is vital to reduce call back and mortality

rates. ImageJtool is used with morphological library work with electronic samples of the binary image.In this work malign images with annotation have been used thus threshold and clustering ofimages is performed with ITK SNAP using Segment 3D.

Keywords: Breast cancer, Image segmentation and Morphological operations.

CLASSIFICATION OF STANDARD ORAL CANCER USING TEXTURAL ANALYSIS AND HYBRID HOPFIELD NEURAL NETWORKS

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,
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Abstract

Oral cancer is a chief health issues in the United States and worldwide. The oral cancer celldetection and segmentation stages are greatly influenced by the intensity distribution, contrast,and clarity of the input phase contrast micrographs. The classification stage in turn is dependent

on the segmentation output. In this research, we used histopathology PAIP 2020 dataset forexperimentation. Initially the given dataset taken into pre-processing to remove the noise fromthe image and enhance the image. Then the pre-processed image is given to the segmentationprocess, in these processes we used Patch-based Fuzzy Local Similarity C-Means (PFLSCM)scheme. And also, we applied feature extraction methods for extract the feature from the image.

Total 30 features are extracted, which consists of a combination of size, shape, and first-orderand second-order statistical texture measures, were computed. Finally, the extracted featuresimages are correctly classified by using Hybrid Hopfield Neural Network with Ant ColonyOptimization (ACO) algorithm. The performance of the model is analysed by using

differentparametric metrics, which are followed in result section. Finally, the proposed model achieved
the accuracy of 98.98% of accuracy.

Keywords: Ant Colony Optimization, segmentation, Oral cancer, Hopfield Neural Network, and Satisfiability

Harvesting Energy Using Various Piezoeletric Materials

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ABSTRACT

The increase in demand of power supply and the diminishing non-renewable sources of power generation, the need for new sources of energy has been rising. One such is using piezo-electric sensor which have capability of converting the mechanical stress applied into electric potential by applying pressure on these sensors and can generate useful electrical energy. Hence, all these factors should be taken into consideration while developing the system. The system is made in advanced simulator with dimensions and shape. The model opted in this system is unimorph and the force is applied on the surface is to generate the potential. The pressure applied should be dynamic (i.e., constantly changing) for the harvester to give output electric potential. The

rectified voltage can be stored in capacitors or can be used to charge batteries or run electronic devices.

Key Words: Energy Harvester, Cantilever Beam, Unimorph, Rectification, Bridge rectifier.

Soldier Health & Position Tracking System using Internet of Things

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ABSTRACT

Today's world, the security of their countries is depending upon the army. In this aspect the health and tracking of their respective solider is more crucial to defend themselves. In this paper, with the help of Internet of Things (IoT) and GPS, the health condition and tracking of the soldiers can be monitor using live track applications. The proposed device, which uses GPS to monitor the soldier's health and current position, can be placed on the soldier's body. Based on the live track program, this data will be sent to the control room. And the proposed system is made up of small physiological devices, sensors, and transmitting modules that can be worn on the body. So by using these sensors, we expect to have a low-cost, high-reliability simple lifeguard for soldiers.

Electronic Devices Monitoring in Wireless Gateway Network using Cisco Packet Tracer Simulator

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ABSTRACT:

In the period of mechanical development nowadays, the innovation has become the requirement for the existence of the existing society. One is anticipated to make a keen domestic in turning on and rancid electronic devices by way of mobile cellphone. so far in killing and turning the home electronic device is completed via squeezing the transfer or far off trap, so answerable for electronic gadget manipulate less feasible. the home sensible shape is completed by means of reenactment idea by testing framework, prepare association, and far off domestic passage pc arrange tools required by way of a keen domestic gadget on cisco package tracer utilizing Internet Thing (IoT) control. In trying out the IoT home system faraway gadget entryway framework, diverse electronic devices may be controlled and checked via cell phone dependent on predefined arrangement conditions. With the clever home can conceivably construct vitality productiveness, decline energy usage costs, control hardware and trade the job of population..

Key words: Wireless, Gateway, Packet, Switch, Server.

MODELLING OPTICAL LINKS FOR PERFORMANCE IMPROVISATION IN FSO NETWORKS

K. Sony

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ABSTRACT :

Free space optics(FSO) is a wireless means of communication that send data via anoptical source. The medium among transmitter and receiveris a free space that has a clear line of sight for sending thesignal. Air, vacuum and outer space can act as free space. Installation of this system is cost effective compared to other systems and can be established with in less time. The advantage of this system is it can send large amounts of data due to high bandwidth. Some of the factors which affect the transmission of FSO are rain, fog, haze and physical obstructions. Two FSO links are designed in this paperone with anarray of laser and one withasingle laser, we are going to analysis the Max.Q value for the two systems at different attenuations. We are taking the link distance at 10 km.

KeywordsBit error rate (BER), Link distance, Attenuation, Wave length division multiplexing (WDM), Free space optic (FSO)

Comparison of Various Algorithms used for Clustering Sensors at Device Level in an IoT Network

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Abstract. Today's modern world is being driven towards automation and as well gathering any type of information from every nook and corner of the world which is possible through one of the technology named Internet of Things (IoT). IoT is not just a single technology but it is a combination of various technologies like embedded systems, wireless sensor networks, cloud computing etc. Basic IoT network consists of various layers; one among them is the device layer which is the base layer responsible for gathering the data from physical world through the sensors. Various sensors can be deployed into an area depending upon the type of application it is used for. Various homogenous sensors can be made into clusters due to which it would be beneficiary in terms of bandwidth and power consumption, number of internet connections required, fault tolerance, longevity of devices etc. This paper presents a comparison between various algorithms used to cluster the sensors at device level.

Keywords. IoT, Sensors, Device layer, Clustering, Clustering algorithms

An Extensive Survey on IoT Protocols and Applications

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Abstract: The most buzzed word in the modern era is internet of things which connects almost all devices and humans in the world in the coming future. IOT has made lives of humans comfortable by reducing the man efforts where the work to be by done humans will be done by machines. This paper presents an extensive survey on the communication protocols that are used in internet of things (IOT). The protocols used in IOT are different in a way that they are light in weight compared to the protocols used by the conventional networking devices.

Keywords: IOT, Communication protocols, MQTT, CoAP, HTTP, AMQP, DDS.

Generation of Automatic Music Using Advanced Machine Learning

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Abstract

Now-a-days, music plays a very important role in human life. It has become a part of entertainment. Automatic music composition has been a widely researched method for producing new music. In this article, we proposed an approach to generate random music automatically by using deep learning techniques like recurrent neural networks (RNN's) in python using keras library and used the concept of LSTM (Long Short-Term Memory). Recurrent Neural Networks takes a sequence of inputs and produce another sequence as output. Neural Networks provides us with the recommendation for the items. This model is designed to execute this algorithm where the input data is represented in the form of MIDI (Musical Instrument Digital Interface) files and output will be the generated musical sequence. The model we use should have the potential to recall the past information of the musical sequences. We require a system which can be able to remember the past sequences and predict the next sequence, so we use RNN along with the LSTM to remember the musical sequences.

Keywords: Recurrent Neural Networks, Music, Long Short-Term Memory, MIDI, Piano.

Effective Green Synthesis of Silver Nanoparticles from Adenanthera Pavonina Seed Extract for Antimicrobial Activity

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Abstract

Green synthesis of silver nanoparticles (AgNPs) from aqueous Adenanthera Pavonina seed extract, as the reducing agent has been reported in the present work. An absorption peak at 428 nm with the characteristic feature of Surface Plasmon Resonance for AgNPs observed. AgNPs characterized with SEM and the average size was found in between 80-85 nm. FTIR revealed the presence of phenolic groups that were responsible for reduction and stabilization. Crystalline structure was revealed from XRD. Antibacterial activities showed effective inhibitory against E.coli, Salmonella typhi, Spingomonas and Bacillus. The antioxidant property was determined using DPPH (1,1-diphenyl-2-picrylhydrazyl) assay and found to be better.

Keywords: Bio-reduction, Adenanthera Pavonina, Silver Nanoparticles (AgNPs), Anti-oxidant and Antibacterial activity.

Convolutional Neural Network for estimating the channel in Orthogonal Frequency Division Multiplexing systems

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Abstract

The most essential criteria of wireless communication system are accurate signal identification. The channel assessment and adjustment are the two most critical mechanisms for signal identification. Since orthogonal frequency division multiplexing (OFDM) is being used to decrease bit error rates in current wireless communication systems and to optimize spectral efficiency and Compared to a single carrier network, easy channel compensation method. Nevertheless, the system's quality output is degraded depending on the channel state due to the incorrect channel approximation and noise amplification by means of the channel compensation procedure. In this paper, a 1D Convolutional Neural Network (CNN) deep learning model to estimate the channel is provided and the equalized data is also recovered. The Deep Neural Network (DNN) can not only use the channel variation features from previous estimates with correctly chosen outputs, it can also derive additional features from the pilots and receiving signals. To prove the ability of this model the Bit Error Rate (BER) for the recovered data is compared with the conventional models like Minimum Mean Square Error (MMSE) and Least Square (LS) and compared with the Feed Forward Neural Network (FFNN) model in different digital modulation techniques.

Keywords OFDM, Channel estimation, Deep learning, 1D CNN, ANN, LS, MMSE

Implementation of low-cost Transceiver module for SDR system

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Abstract

Software Defined Radio (SDR) provides a comprehensive radio communication platform, based on which new technology can be used through software update. This leads to a large-scale reduction in expansion costs and enables the product to maintain technology development. The SDR platform can be set up with an open, standard, and programmable hardware platform, based on which the functions of the radio can be perceived by adding appropriate software modules. In this platform, the transformation and expansion of the radio functions are done in a software version without the need for a modification of the equipment. Such software radio station can easily com-municate with the current or upcoming radio stations. In this article, we analyze SDR evolution and various platforms and implement various modulation techniques with the aim of successfully transferring a message wirelessly over-the-air using ADALM-PLUTO SDR platform by Analog Devices.

Detection of Diabetes melittus, kidney disease with ML

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ABSTRACT

Diabetes is a disease which is caused with the rise in glucose levels. A huge number of difficulties come up if this is not identified and treated at the right stage. The most common complications are eye damage, kidney diseases and heart problems. The treatment for these complications will be visual impairment for eye damage, chemical analysis for kidney diseases and may even end up to loss of life for heart problems. Identifying this disease is a monotonous task starts at diabetes testing center and ends up at doctor for further treatment. Issues related to kidneys is also a most common disease which affects the kidneys and weakens the body's potential. Symptoms of CKD include nerve injury, hyperglycemia, osteoporosis, and anemia. Treatment must be started at a prior stage to maintain proper chronic uropathy levels. The cost for predication of CKD is high. The main objective of this paper is to develop a new method to detect diabetes, kidney issues with Random Forest classifier. Prediction outcome of various methods state that these algorithms predict very efficiently and instantly.

KEYWORDS- Diabetes, CKD, Diseases, Random Forest

Hospital Management System Using Flask

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ABSTRACT- Majority of the hospitals in the country have innumerable count of patients visiting. Managing data using a filebased approach to track patient data at different hospitals consumes a lot of time and effort. Doctors also need a past medical history of the patient to perform major operations. Medical records play a major role in deciding if one can win the medicolegal battle. To suppress these problems, a proposal of a unified Hospital Management System is developed. This system acts through which all the patient's data is recorded onto a central server by all the hospitals, which can be accessed throughout the country. Hospital Management System is a system for managing the data of the patients remotely from any hospital in the country. This project has a greater advantage in removing duplicate test procedures and save a lot of money. It acts very effectively in cases of accidents where the victim is not able to respond, and the doctors can proceed to further steps as all details of the victim can be obtained from this module.

Keywords: Hospitals, Medical records, FLASK, Patient's data

A reconfigurable modified Filtenna for Cognitive Radio Application

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Abstract. This communication discusses a small UWB planner antenna with a bandwidth of 7.6-15.2 GHz and a gain of 5.9 dBi that may be used as a Cognitive Radio sensing antenna. Then, at

the feed line of the monopole antenna, a filter structure is constructed using programmable switches to make the antenna reconfigurable. The UWB antenna may now operate at multiple frequencies such as 8.7 GHz, 9.1 GHz, and 11.4 GHz with narrowband capability by turning the switches on or off. This situation aids CR in communicating in the targeted band.

A Reconfigurable Wearable Antenna for Mid Band 5G Applications

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Abstract. Everything, including wearable devices, will be connected by 5G wireless in the near future. In consumer electronics, wearable antennas are becoming more prevalent. Wearable devices must offer a significantly wider band width and a higher data throughput with improved consistency in order to reach 5G. A reconfigurable wearable antenna is constructed on a cloth substrate in this work. The suggested antenna may be suitable for frequency reconfiguration to function in the 5G MID band (3–5.5GHz). The suggested antenna may be used in Wi-Fi, WLAN, Satellite, 5G mobile, and cognitive radio communication and can be worn as part of a military uniform or any other clothing. The antenna's shape was achieved by combining all of the above-mentioned reconfiguration features into a single antenna and doing a parametric analysis to get an optimum prototype that might achieve good results using a polyester substrate

Image Cryptology Implementation In FPGA using Reversible Logic Gates

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Abstract

Reversible calculations have lot of applications in different fields like in Nanotechnology, Low power CMOS, Digital Image Processing, Optical computing, etc. Reversible calculations are the simplest systematic ways to demonstrate cooling than the other standard methods. The key requirement for reversibility is for every input and output vector to possess a one-to-one relation and it's very necessary as there's no information loss within the reversible calculation which reduces the facility dispersion. Ideally, zero energy is dissipated by reversible circuits. Cryptology is engaged to supply security and privacy to genuine users. During this paper a picture Cryptology (IC) is proposed with secret key generated using Runtime Linear Feedback register Logic (RLFSRL) to encrypt and decrypt data using Reversible Logic Gates (RLG) on Field Programmable Gate Array (FPGA). ICRLG designed in verilog hardware description language (HDL) which is synthesized, simulated and implemented on Vivado and targeted on Artix-7 XC7A35T-1-CPG236 architecture.

Keywords: CMOS, Cryptography, Logic Gates, FPGA, VIVADO

Asymmetric Lightweight Cryptosystem For Cyber Security Application:
Image Cryptology Implementation In FPGA using Reversible Logic Gates

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Abstract

The incredible growth in wireless technologies and adapting nature of electronic devices, integrating together gains more popularity in utilization. Day-to-Day most of these devices communicate in an every minute. Protected channel establishment between cloud and remotely connecting IOT devices for communication is essential to avoid Cyber Crimes. Cryptography plays an important role in cyber theft. Lightweight cryptography gains more significance due to its energy requirements, memory, low cost and high security. Asymmetric lightweight cryptosystem (ALWCS) is meant which reduces the area, power and improves the safety . AHLWCS is designed on Artix-7 XC7A35T-1-CPG236 reconfigurable architecture using verilog hardware description language (HDL) which is synthesized, simulated and implemented on VIVADO.

Keywords: IOT, Cryptography, Memory, HDL, VIVADO

Triplet loss embedding for Multi View sign language recognition from video sequences

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Abstract: Multiview video processing for recognition is a hard problem if the subject is in continuous motion. Especially the problem becomes even tougher when the subject in question is a human being and the actions to be recognized from the video data are a complex set of actions called sign language. Although many deep learning models have been successfully applied for sign language recognition (SLR), very few models have considered multiple views in their training set. In this work, we propose to apply meta metric learning for video-based sign language recognition. Contrasting to traditional metric learning where the triplet loss is constructed on the sample-based distances, the meta metric learns on the set-based distances. Consequently, we construct meta cells on the entire multi view dataset and perform a task-based learning approach with respect to support cells and query sets. Additionally, we propose a maximum view pooled distance on sub tasks for binding intra class views. Experiments conducted on multi view sign language dataset and four action datasets show that the proposed multiview meta metric learning model (MVDMML) achieves higher accuracies than the baselines.

RGB Human Action Recognition with gated fusion network with deep learning

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Abstract: In this work, we propose to learn the fusion process between the dominant skeletal features and the RGB features. This is in contrast to the previous fusion methods that simply fused these multi modal features, without learning the fusion process to exploit the semantic relationship between them. Here, we propose a gated feature fusion (GFF) of multi modal feature data which provides attention into the appearance stream of RGB data using the temporal skeletal data. Initially, the features from RGB and skeletal frames are extracted using CNN models. Subsequently, the gated fusion network fuses the features in temporal domain from multiple sources and combines them in a latent subspace. Finally, the latent subspace features are classified using a fully connected layers with the combined loss embeddings. The proposed architecture has performed better than the state – of – the – art models on RGB - D action datasets.

Barrier Succeeding Miniature Autonomous Robot

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Abstract—All the researches and producing business square measure focusing and showing towards rising the responsible of the merchandise or circuits with low price. This paper presents

affective mobile automaton that has lush options. This proposed work is Wall Following Robot in WEBOTS. This paper presents the design of an autonomous robot as a basic development of an intelligent E-puck mobile robot for air duct or corridor cleaning and surveillance. This mobile robot is used indoors as well as industries for the above purposes. E-puck consists of position sensor; infra-red sensors(proximity); light measurements; camera for surveillance; Bluetooth communication and front LED lights. The purpose of selecting this robot because it has elegant design, flexible, user friendly and easily affordable. Latest E-puck is released named as e-puck2 which has more reliability has many incorporated features like a powerful micro-controller and a Wi-Fi chip built in it which is used for different purposes.

Smart Evacution Alerting System for the Cement Industry

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Abstract—Reliability, low cost, Accuracy and efficiency are the words which are revolving in and around the people's mind. To the meets the needs of the people industries and researches are looking in a discrete way and thus the industry 4.0 has evolved. In this paper we are going to implement and showcase the technologies that should be developed where the customer should satisfy with the product. Now-a-days survillence and patrolling robots are rapidly required by the industry and market which are emerging day by day. The customer's mindset is a type in which he wants a single device to control all the appliances but therefore the cost will be relatively higher as we should inculcate all and embedded in one requires more complexity to counteract this we should use the high-speed processors. The proposed method incorporates many features and increases the speed of operation by doing parallel operation with different processors. Every sensor has its own respective function and the flow of work will be equally divided among themselves. So that the system can operate for the applications such as gas or smoke, fire, temperature. Because of the parallel operation the speed of operation is also improved and if any one processor fails the robot can work with the limited features whereas in single processor once the processor fails that collapse the robot. The work is completed and tested successfully for cement plant.

Keywords—Evacuation, Reliability, Gas sensor, Surveillance

QoS Provisioning based routing protocol using Optimization Algorithm in IoT based Wireless Sensor Network

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Abstract — The IoT allows modern developments in smart sensors, and IoT implementations have seen a massive spike in recent years. Sensor nodes are viewed as smart devices in IOT, and these sensor nodes in the IOT network can continuously produce data, impacting the network's longevity. However, there are numerous challenges in IOT, including security, privacy, storage, and energy optimization, to name a few. We consider energy consumption to be the most critical parameter to optimize out of these. Since there are numerous variables that affect the energy of sensor nodes, such as temperature, cluster head load (CH), residual energy, cost function, and the number of alive nodes. As a result, in this work, we propose a mixture Whale Optimization Algorithm for choose the finest cluster head (CH), which optimizes the previously listed factors. Because of its unique and efficient features, MATLAB is used to evaluate this algorithm. The proposed work's findings are compared to current algorithms in terms of energy-specific variables.

Keywords—Whale Optimization Algorithm, MATLAB, IoT.

Spinal cord injury detection using MRI images

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Detection of spinal cord injury (SCI) is one of the significant problems in MRI images to detect the affected portion of spinal cord regions using feature sets. Automatic detection of spinal cord atrophy is complex due to change in structure, size, and white matter. Delineating grey matter and white matter are the essential factors that influence the detection of spinal cord atrophy and its severity. Automatic segmentation and classification are accurate methods for detecting the severity of the SCI. However, hierarchical segmentation, partitioning segmentation, graph, and watershed segmentation methods are used to find the SCI segments in static, fixed positions. Also, these segmentation models result in a high false-positive rate due to over-segmentation features and noise in the segmented regions.

Furthermore, these classification methods fail to segment and detect the severity level in the affected region due to over-segmentation. to overcome these issues, a novel segment-based classification model is required to find the severity of the injury and to predict the disease patterns in the over segmented regions and features. In the present model, a hybrid image threshold technique segments the spinal cord regions for a non-linear SVM classification approach. Among the traditional feature segmentation-based classification models, the proposed threshold-based non-linear SVM has better accuracy for SCI detection. The results proved that the present model is more efficient than the earlier approaches regarding true positive rate (TP=0.9783) and accuracy (0.9683).

Modified Gaussian Mutated Cat Swarm Optimization (MGMCSO)

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Abstract

Effective antenna array design is necessary for good communication. To meet requirements such as long-distance coverage, it is essential to design the antenna array with high directivity, low sidelobe levels and narrow beamwidth while enhancing its ability to null regulate. In antennas, excessive sidelobes radiation wastes energy. To increase the efficiency of antenna arrays Low sidelobe levels and placing asymmetrical nulls in specified directions should be achieved. several Nature-inspired algorithms like the Cat swarm optimization (CSO), particle swarm optimization (PSO) algorithms can be applied for the synthesis of antenna arrays. Here we have proposed a Gaussian mutation based CSO for antenna array synthesis. To validate our proposed method we have implemented on several multimodal standard benchmark test functions. Numerical results suggested that the proposed method outperforms all other evolutionary algorithms in terms of solution accuracy and convergence rate. The proposed Modified Gaussian Mutated Cat Swarm Optimization (MGMCSO) algorithm is applied to linear antenna array synthesis to optimize the location of the antenna elements to suppress the degree of peak sidelobe levels (PSLL) and to achieve nulls in desired directions. The flexibility and ease of implementing the MGMCSO algorithm in handling the constraints are evident, showing the utility in electromagnetic optimization problems.

Optimized GDI Technique (OGDI) for the design of sequential logic

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Abstract

In the recent times, power economizing is becoming most essential factor of a circuit due to the technology scaling beyond sub-100nm. Besides the combinational logic, sequential logic blocks also play a major role in the design of power efficient complex computational systems. This paper introduces the Optimized GDI Technique (OGDI) for the design of sequential logic blocks. A Sequence detector is designed using OGDI technique and the performance is compared with the conventional CMOS technique. The results obtained using OGDI logic has shown significant improvement and achieved more than 28% power savings in comparison with the CMOS logic. The simulation and analysis are carried out in Cadence Virtuoso using 45nm technology.

A Hybrid Model LSTM Combined with Convolution Neural Network (CNN) To Forecast The Ionospheric Delays For GPS Signals

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Abstract:

Prominent advances in the field of artificial intelligence during the past decade and the breakthrough of deep learning would be useful for investigating ionospheric weather using ground and space-based ionospheric sensors data. The significance of deep learning algorithms needs to be assessed in forecasting the low latitude ionospheric disturbances (delays) for the global positioning system (GPS) signals. Total electron content (TEC) data sets prepared by taking advantage of GPS satellite radio frequency (RF) signals. This paper provides the application of deep learning models, long short-term memory (LSTM), gated recurrent unit (GRU), and a hybrid model that consists of LSTM combined with convolution neural network (CNN) to forecast the ionospheric delays for GPS signals. The deep learning models implemented using the vertical TEC

(VTEC) time-series data estimated from GPS measurements over Bengaluru, Guntur, and Lucknow GPS stations. The LSTM-CNN model performs well when compared to other ionospheric deep learning forecasting algorithms with minimum root-mean-square error (RMSE) of 1.5 TEC units (TECUs) and a high degree of R2 = 0.99.

Index Terms—Deep learning, forecast, gated recurrent unit (GRU), global positioning system (GPS), hybrid deep learning model [long short-term memory (LSTM)-convolution neural network (CNN)], ionospheric delays, LSTM.

Principal Component Analysis and Artificial Neural Networks (PCA–NN) methods to forecast the ionospheric TEC values

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Abstract:

Forecasting the ionospheric space weather is crucial for improving the accuracy of the global navigation satellite systems (GNSS). Nonetheless, comprehending the nonhomogeneous ionospheric variability under space earth environmental conditions is a major challenge, and so is developing an accurate ionospheric forecasting model. The complex spatial and temporal variations in the ionospheric region are the results of the solar and interplanetary activities, in addition to the magnetosphere, mesosphere, thermosphere, stratosphere, troposphere, and lithosphere processes. Thus, this calls for an urgent need to develop a suitable ionospheric forecasting algorithm to capture the ionospheric perturbations. Total electron content (TEC) is the key parameter derived from GNSS receivers to represent the status of the ionosphere. This paper introduces

a novel ionospheric forecasting algorithm based on the fusion of principal component analysis and artificial neural networks (PCA–NN) methods to forecast the ionospheric TEC values. Solar index (F10.7), geomagnetic index (Ap index), and 20-year TEC data (1997–2016) over a Japan Grid Point (34.95 °N and 134.05 °E) were used to apply artificial intelligence methodologies. The experimental results underscore the reliability of the proposed algorithm in forecasting the ionospheric time delay effects.

Index terms:

Global navigation satellite systems (GNSS), ionosphere, neural networks (NNs), principal component analysis (PCA), space weather, TEC.

An Implementation of K-Means Clustering for Efficient Image Segmentation of Natural Background Images

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Abstract— The process of pixel correlation and the process of pixel group formation is based on the similarities of the pixel available in the input image data is well known as image

segmentation. The K-Means is a technique which is used to form a cluster of the pixels in a particular image. The input image will be feature extracted by converting it into gray scale image. Based on the process, the processing of K-Means begins for pixel differentiation and grouping of the same based on the algorithm defined and developed. At first, it finds the center pixel and the grouping can be performed with respect to the center pixel. This same process will be repeated until the expected object discriminations is achieved. The pixel correlation plays major role to achieve the exact object discrimination. For the betterment of visualization, the image is processed for reshaping. The K-Means algorithm helps to achieve the good results in a simple way when it is compared with the other segmentation algorithms.

Keywords— Image Reshaping, Label Function, Cluster Centers, K-Means Clustering, Image Segmentation, Image Processing

Volcano Monitoring System using Drone-Bot and IoT

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Abstract— Volcanoes can hit the sky and reach the ground surface at any time in some areas and it is very difficult to monitor time to time. Human beings cannot check the live status of volcano in those areas because of the huge temperature. Instead of sending human beings to that place, Drone-Bot is used to measure the live lava temperature and it alerts the ground station to protect people near the surroundings. The thermocouple is used as a temperature sensor which

can measure the wide range of higher temperature and it can be interfaced with the TTGo T-Call development board to process and send the temperature data to the ground station through GSM as Short Message Service (SMS), also the ESP-32 CAM is interfaced with that development board to capture the snapshot of the mountain if the temperature is high and the same snap is shared to the ground station through Wi-Fi. The GPS module is also interfaced with the development board to know the location of the volcano happening mountain. In that reserved area, the GSM signal and Wi-Fi signal is not available. So, the development board stores those data in the EPROM and the same data is communicated when the Drone-Bot reaches the signal communication zone. The Drone-Bot charging station is also available in that same zone. All the data are stored and monitored in the cloud database.

Analysis of Encryption and Compression Techniques for Hiding Secured Data Transmission

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Abstract:

Galois finite field arithmetic multipliers are supported multiplying two elements of the finite body and reducing the result by an irreducible polynomial p(x) of degree m. Galois field (GF)

multipliers have a variety of uses in communications, signal processing, and other fields. Formal verification procedures of GF circuits are uncommon and confined to circuits of critical information sources and yields with realized piece locations. They also require data from the final polynomial P(x), which affects the execution of the final equipment. This paper introduces a PC variable-based math method that easily verifies and figures out GF (2m) multipliers from the use of the entryway level and compares with Vedic multiplier and Wallace tree multiplier. The technique relies on the parallel elimination of extraordinary final polynomial and proceeds in three phases: 1) The bit situation of the yield bits is decided; 2) The bit situation of the info bits is decided; and 3) The unchangeable polynomial used in the structure is segregated. We demonstrate that GF (2m) multipliers in m strings can be worked out by this strategy. Analyses carried out on synthesized multipliers with different P(x) polynomials, demonstrate the proposed strategy's high efficiency.

Key Words: Galois finite field, Cryptography, Vedic multiplier, Wallace tree multiplier, Polynomial.

Automatic Recognition of Vehicle Number Plate Using Image Processing Algorithms

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Abstract

Automatic Number Plate Recognition (ANPR) is that the strategy of extricating the information from a picture or an arrangement of pictures of vehicle's number Plate. Because of the most recent improvement of parkway and the expanded use of vehicles, critical interest has been paid on the freshest, viable, and exact astute transportation framework. The technique for distinguishing specific articles in a picture assumes a significant part in the fields of PC vision

or advanced picture preparing. Vehicle number plate acknowledgment measure is troublesome because of the varieties in perspective, shape, shading, various arrangements and non-uniform enlightenment conditions while gaining pictures. This software uses many different algorithms viz., detection, segmentation, localization, normalization, support vector classifier and finally 4-fold cross validation technique. The subsequent information can be utilized to contrast and the records which are available in the data set. Test results uncover that the framework effectively distinguishes and perceives the vehicle number plate on caught pictures.

Keywords: OTSU Thresholding method, Connected Component Analysis), Supervised Learning, Support Vector Machine, 4-fold cross validation.

Implementation of Random Forest Algorithm for Crop Monitoring

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ABSTRACT

Most agricultural crops have been badly affected by the effect of global climate change in India. In terms of their output over the past 20 years. It will allow policy makers and farmers to take effective marketing and storage steps to predict crop yields earlier in their harvest. This project will allow farmers to capture the yield of their crops before cultivation in the field of agriculture and thus help them make the necessary decisions. Implementation of such a method with a web-based graphic software that is simple to use and the machine learning algorithm can then be distributed. The results obtained are granted access to the farmer. And yet there are various methods or protocols for such very data analytics in crop yield prediction, and we are able to predict agricultural productivity with guidance of all those algorithms. It utilizes a Random Forest Algorithm. By researching such problems and issues such as weather, temperature, humidity, rainfall, humidity, there are no adequate solutions and inventions to resolve the

situation we face. In countries like India, even in the agricultural sector, as there are many types of increasing economic growth. In addition, the processing is useful for forecasting the production of crop yields.

Keywords: Agriculture, Machine Learning, crop-prediction, Random Forest Algorithm, Crop yield.

Monitoring of Physical Parameters using NODEMCU and LoRa

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ABSTRACT

In this day and age, the IoT is picking up incredible fame. Installed gadgets have become huge part of our lives. Individuals can screen, track, and do significantly more from Distance from a good ways. Various correspondence innovations have been accessible for collaboration between IoT gadgets over the most recent few years. The most mainstream are the Bluetooth Module and Wi-Fi Technology. Be that as it may, they have not many limitations, for example, restricted reach, restricted passages, and high force utilization. So, Semtech is actualizing LoRa innovation to take care of every one of these issues. The gadget runs for longer than a year utilizing a solitary battery. Utilizing Lora Module SX1278 and ESP32 Wi-Fi Module, we can make a Lora Transmitter and Receiver. The strategy for correspondence is highlight point and information is sent from one end (transmitter) to another end remotely.(receiver).

Keywords: IOT, LoRa, Bluetooth Module, Wi-fi Technology, Esp32 Wi-Fi Module, Transmitter, Receiver.

Decision based unsymmetrical trimmed mode filter for the removal of salt and pepper noise in images

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ABSTRACT:

A Decision based restoration algorithm using Unsymmetrical Trimmed Mode filter for gray scale images that are corrupted by salt and pepper noise is proposed. The processed pixel is examined for 0 or 255; if checked pixel is equal to 0 or 255, then it is considered as noisy pixel else not noisy. If the pixel is noisy and all the four neighbors are noisy then replace the noisy pixel with mean of 4 neighbors. If any of the 4 neighbors is not noisy then replace the corrupted pixel with unsymmetrical trimmed mode. If there are multiple modes then replace the corrupted pixel with smallest of the mode. The uncorrupted pixel is left unchanged. Conventional mode filter does not remove salt and pepper noise even at very low noise densities. The proposed

algorithm shows excellent noise suppression capability with good edge preservation in low and medium noisy conditions.

Index Terms – Pixel, Edge Preservation

A Study on Challenges Associated in Coverage Problem in WSN

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ABSTRACT:

To optimize the QoS in a sensor network, it is required to optimize it under various coverage problems. A network is defined under three main coverage aspects called target coverage, area coverage and barrier coverage. If the network is optimized under all these coverage's, the scalability, reliability and efficiency will be achieved. This kind of optimization can be achieved statistically during deployment or dynamically with optimization algorithm. In this paper, a study on the challenges associated with different kind of coverage problems is defined.

Index Terms – QoS, WSN

Design of Compact planar antennas for millimeter communication suitable for highspeed point-to-point communication links

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Abstract:

In this work, we proposed planar antenna apertures that are operated at millimeter-wave frequency band. This work will help to link theoretical to practical approach for high gain, narrow beam width, low intrinsic losses. Substrate Integrated Waveguide (SIW) concept is incorporated in the antenna design. Firstly, realized Elliptically Tapered Slot Antenna(ETSA) with a gain of 8 dB. Subsequently, a novel SIW planar horn antenna without dielectric loading and with dielectric loading succeeded with a gain of 12 dB and 18dB. Mathematical approach is discussed to calculate the dimensions of the antenna.

Design of Smart Notes Maker Using Advanced OCR Techniques on Machine Learning

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Abstract:

Now- a days due to the present situation of covid 19 all the students and parents are showing interest in online studies and self-studies , as we know that tracing an important points and making a short notes is not that easy for younger and lower grade students , Our paper is to use machine learning and image processing techniques to recognize and summarize the notes which is easy to study and in an understandable format Many picture designs are local to one explicit illustrations application and are not offered as a fare alternative in other programming, because of exclusive contemplations. ... Most picture altering programming is fit for bringing in and trading in an assortment of arrangements however, and various committed picture converters .

This article presents perceiving the manually written digits (0 to 9) from the popular MNIST dataset, looking at classifiers like KNN, PSVM, NN and convolution neural organization on premise of execution, precision, time, affectability, positive profitability, and explicitness with utilizing various boundaries with the classifiers.

Keywords: Machine learning, text summarizer , note maker , ocr convertor

Comparator Design using Adiabatic Logic for ECRL Application

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ABSTRACT: Efficiency of energy has become a major design to involve in high performance and mobile computer systems in this paper, a 2-bit comparator circuit is proposed by using with ECRL (Efficient Charge Recovery Logic). The term adiabatic is thermodynamics process that which recovery of energy and no exchange of energy occurs between system and environment. This design has improvement in power delay product from 65.76% to 83.02% at 1V to 2V when it is compared with the conventional design. The power dissipation will be reduced in adiabatic logic comparing with conventional CMOS logic. Recreation results uncover that the 2-bit ECRL (Efficient Charge Recovery Logic) comparator is 14.4% increasingly effective in power utilization when contrasted with the CMOS comparator, though a 2-bit PFAL comparator is 56.4% more effective in power utilization than the CMOS comparator. This result carried on Mentor Graphics. In adiabatic circuit the charge put away in load capacitor is recouped while in ordinary CMOS it is moved to ground which causes wastage of vitality. Adiabatic logic offers an approach to reuse the vitality put away in the load capacitors instead of the conventional method for releasing the capacitors to the ground and squandering this vitality. Results show a noteworthy improvement as far as PDP for proposed configuration as looked at to existing traditional plans.

Design of Universal Gates Based on Full Adder Circuits

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ABSTRACT: This paper has a XOR / XNOR gate circuits produces separate and establishes a simultaneous XOR - XNOR function. Due to stub by yield capacity and short-circuit energy dissipation, the power utilization and latency of these circuits is increasing A new one-bit adder hybrid circuit is chosen built on the effective gates of xor, xnor or xor / xnor. Each circuit is preferable because of its own advantages as it is known for its high speed, low current drain, short delay product (PDP), galvanic ability, etc. Simulations of the planned models were carried out using Mentor Graphics to see the quality of these projects. The simulation results are based on the 130-nm CMOS engineering design. A recent technique of transistor sizing is implemented to improve the circuits ' PDP. Today, predominant electronic systems are treated separately in every part of life and the usage of portable devices has been increased tremendously. These devices require to have less power utilization and high speed. While designing a system, power utilization is a parameter which is to be rectified for better system performance. The efficiency that depends on the execution of divider, comparator, multiplier, and adder which comes under arithmetic circuit which in turn shows the impact on numerous digital applications.

Index Terms: Transistor sizing method, PSO, XOR–XNOR, Output driving capability, DPL

Design of Universal Gates Based on Full Adder Circuits

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ABSTRACT: This paper has a XOR / XNOR gate circuits produces separate and establishes a simultaneous XOR - XNOR function. Due to stub by yield capacity and short-circuit energy dissipation, the power utilization and latency of these circuits is increasing A new one-bit adder hybrid circuit is chosen built on the effective gates of xor, xnor or xor / xnor. Each circuit is preferable because of its own advantages as it is known for its high speed, low current drain, short delay product (PDP), galvanic ability, etc. Simulations of the planned models were carried out using Mentor Graphics to see the quality of these projects. The simulation results are based on the 130-nm CMOS engineering design. A recent technique of transistor sizing is implemented to improve the circuits ' PDP. Today, predominant electronic systems are treated separately in every part of life and the usage of portable devices has been increased tremendously. These devices require to have less power utilization and high speed. While designing a system, power utilization is a parameter which is to be rectified for better system performance. The efficiency that depends on the execution of divider, comparator, multiplier, and adder which comes under arithmetic circuit which in turn shows the impact on numerous digital applications.

Index Terms: Transistor sizing method, PSO, XOR–XNOR, Output driving capability, DPL

Detection of Liveness by fusing ECG and Fingerprint

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ABSTRACT

Biometric scans using fingerprint is widely used for security purposes.Fingerprint scans are not very reliable method of authentication, because they can be faked by obtaininga sample of the fingerprint of the person. In order to reduce incidence of spoofing of the biometric system,there are a few spoof detection techniques available that are based on binary classification technique, wherein, two samples of fingerprint images, namely real and fake images used to train the classifier intodetecting occurrence of any fake fingerprint. However, this method of training is unreliable because thebiometric system fails to detect fake fingerprints made using new techniques of spoofing. This can beavoided by including another method for efficient liveness detection using fusion of ECG signals capturedfrom the fingertips and the fingerprint data. The ECG signal will ensure the detection of real fingerprintsamples from the fake ones. In this paper, the proposed method is to combine the ECG signal with thefingerprint so as to reduce spoofing and increase system security and to achieve this, a liveness detectionalgorithm for fingerprint has been developed. Moreover, fingerprint recognition rate is also improvedusing this technique.

A Comprehensive survey on IoT Development Modules and its Applications

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Abstract

Nowadays Smart world can be deployed along with the era of Internet ofThings (IoT) technology based embedded system implementations for industrial automation and smarthomes. The cost effective, flexible and reliable components of dedicated IoT systems are supportingsmart, interactive and easy means of communication in a network. Hence comparative analysis via testingand evaluation of such embedded hardware modules is necessary in multifaceted automation andsecurity areas. Among them the Raspberry Pi is customized small standalone computer board. A detaileddiscussion on prerequisite vital advanced microcontroller development boards, Sensors, Characteristicsand performance issues is made among different typical existing IoT platform prototypes. From thesediscussions Raspberry Pi is concluded as a cost effective computer with its interoperability in wide varietyof cross domain applications in IoT vision.

QCA Design and Performance Analysis of Binary to Excess Code Converter

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Abstract — An efficient QCA Excess-3 code converter has been proposed for QCA. The proposed circuits can be efficiently used for data communication systems for reliable information communication at nanoscale. In CMOS devices, many complications arise such as quantum effects, short channel effects and power dissipation, when scaling down to submicron level. To overcome the limitations of CMOS devices, Quantum-Cellular Automata(QCA) technology is implemented to design the code converters. A well-optimized conversion technique like N-bit (typically 4-bit, 8-bit, 16-bit, 32-bit and 64-bit) Binary-to-Gray and a 4-bit Excess-3 code converter is explored for implementation using QCA. Attempt has been made to enhance the performance of conventional 4-bit Binary-to-Gray code converter. The proposed 4-bit Binary-to-Gray code converter has been compared with conventional designs and achieves better circuit performance in terms of area, circuit complexity and clock delays as depicted. A novel N-bit Binary-to-Gray code converter (for N=8, 16, 32 and 64) has also been proposed in this paper. The proposed design enjoys the features of lesser area and reduced circuit complexity. Moreover, the proposed N-bit Binary-to-Gray code converter consumes very less clock delays as depicted in this paper. Efficient methods of interconnections for pipeline architecture structures have been considered. The design and simulation results of present work have verified using QCA Designer tool. The work conducted in this paper thus opens a wider path for digital circuit design with smaller circuit dimensions.

Keywords: Quantum-Cellular Automata, Binary to Gray, Code Converter, CMOS Devices, optimization.

Validation of Rain Attenuation Time Series Synthesizers to Predict the Artificial Rain Attenuation for Propagation Impairments in Satellite Communications

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Abstract — Whenever the signal attenuation due to rain is discussed, various forms of proposals have been brought forward. There are several models of attenuation that can be seen in the literature in the past, many of them are updated and there are still others to go; several of them are ITU rain model, DAH, Lognormal, Assis, Flavin, Crane, SAM, Moupfouma, Yamada, Lin, and so forth. The communication field of ITU radio (ITU-R) is one of the three branches of the International Telecommunications Union (ITU), which is responsible for radio transmission and regulates regional radio spectrum and satellite orbit resources, as well as improving radio communication network quality with the goal of ensuring the efficient usage of spectrum. Depending on data obtained from the United States, the ITU-R offers an estimation of the total distribution of rainfall in the planet by splitting it into five regions. To find out the rain attenuation at any particular region, some predefined calculations are necessary. i.e. from which height rain is falling, the nature of rainfall, etc. All these calculations are provided by the International Telecommunication Union. Hence, we prefer to use the ITU-R model. To develop and test real time Fade Mitigation Techniques control algorithms, propagation time series are needed. An alternative to using real data collected from propagation experiments is to generate typical fading time series making use of climatological characteristics as well as geometrical and radio-electrical parameters of the link. The aim of the study presented in this paper is to validate time-series synthesizers relying on an enhanced ITU-R model.

Keywords: Time Series, Rain Attenuation, Prediction Models, Propagation Impairments, Satellite Communications, Fade Mitigation Techniques

Camera based temperature monitoring

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Abstract :

In the post lockdown an intense monitoring is needed to prevent the second outbreak of COVID-19. The major likely places for a second outbreak would be public areas like bus station, train station, universities, colleges and at cinema halls etc. At the public places a low-cost intense monitoring solution is in need for tracking temperature of large groups of people entering into a confined area. The objective is to develop a hand free preliminary monitoring system using IR Thermal Imaging Camera. The proposed design and device would be able to measure a person temperature with high degree of accuracy within 1 to 2 meters away from the module.

IOT based temperature monitoring

Aravinda Kilaru

KLEF, AP, India

Abstract:

In this 21 century, Internet of Things (IoT) is advancing rapidly, and every st 9 industry is adapting this technology for better results. Internet of Things can be used in manufacturing units, home applications, car applications, shopping malls, airports, educational institutes and in hospitals. With the help of IoT, we can monitor the patient in 10 the hospital with ease. Covid 19 pandemic made the monitoring of patients very difficult in the hospitals. This paper deals with the use of pulse rate sensor, LM 35 and DHT 11 to 11 monitor the patient and patient room temperature and humidity readings, respectively. If 12 the pulse rate readings and temperature readings of the patient are abnormal, concerned person will get the notification through blynk app about the patient readings and immediate action will be taken by the doctors.

Metal Insulator Metal based Stepped Impedance Square Ring Resonator Dual-Band Band Pass Filter

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Abstract:

In this paper, a Metal Insulator Metal (MIM) based Plasmonic Stepped Impedance Square Ring Resonator (SI-SRR) Band Pass Filter (BPF) is designed and analysed for dual band applications. The MIM based SI-SRR is investigated using commercially available CST studio suite. The proposed SI SRR is compact and low power requirements suitable for Photonic Integrated Circuits (PICs). The SI-SRR is operated in the wavelength's of 1317 nm (227.6 THz) and 1640 nm (182.8 THz) with appropriate reflection and transmission parameters. The stepped impedance stubs are used in the ring resonator for tun able operating bands. The proposed SI-SRR has wide applications in PICs.

Keywords: MIM, SI-SRR, BPF and PICs.

Design of Concurrent Dual-Band Band Pass Filter using Hybrid Metal Insulator for Nanoscale Applications

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Abstract:

In this paper, investigation on Hybrid Metal Insulator Metal (HMIM) plasmonic waveguide (PWG) filters for dual-band applications. The filters are designed using circular ring resonator (CRR) and CRR with single as well as dual slits. The filters are connected using coupled line feed. The dual-band Band Pass Filter (BPF) characteristics can be realized by varying radius (r) and gap (g) between the feed and ring resonator. The proposed CRRs are operated at THz frequencies. The filters are designed and simulated using commercially available CST studio suite software under Perfect Matched Layer (PML) boundary conditions by keeping 5 nm x 5 nm mesh size. The transmission and reflection characteristics of the filters are explained by the resonance conditions, which agrees with theoretical calculations. The proposed work is best suitable for the plasmonic integrated optical circuits for nanoscale applications.

Keywords: HMIM Waveguide, CRR, Single Slit and Dual Slit.

Design a Low Power CMOS Bio-amplifier with high sensitivity.

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Abstract: In this paper propose an efficient Instrumentation amplifier design can be fabricated using CMOS technology that can be used for the amplification of bio-medical signals. Instrumentation Biological amplifiers play a crucial role in biomedical devices like ECG, EEG, Pacemaker, hearing aids, EMG etc CMOS amplifier with differential input and output was designed for very high common-mode rejection ratio (CMRR) and low offset. The design is simulated using Cadence Specter tool. The Instrumentation amplifier final layout is designed in Cadence Layout editor with $0.18\mu m$ CMOS technology. With three stages of amplification and by balanced self-bias, a voltage gain of $80\,dB$ with a CMRR of $115\,dB$ was achieved. The related input offset was as low as $1.0\,\mu V$. In addition, the bias circuits were designed to be less sensitive to the power supply. These simulation results are promising to exhibit an amplifier with high performances for biomedical applications.

Keywords: CMOS, Input-Offset ,CMRR, Low Offset

Healthcare monitoring system using integrated Triaxial Accelerometer, Spo2 and Body temperature sensors

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Abstract: The advantage of miniature biosensors and research advances in Data Analytic techniques for effective mangement of large, multiscale, heterogeneous, and multimodal data sets. This advancement has created new opportunities in customized healthcare services. The use of Internet of Medical Thing is supports the Bio-Wearable IoT devices. This paper presents a demonstration of platform based on Cloud Computing for management of mobile and wearable healthcare sensors like Pulse Oximeter, Temperature etc,.for health Monitoring

Key Word: Bio-Wearable IoT, IoMT, Temperature

Investigation of Growth Management and Field Optimization on IOT-based Technology for Chilli Cultivation: Hybrid Chilli (F1 Golden Parrot) in Pallavolu, Nellore

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Abstract: Andhra Pradesh is one of the leading chilli producing states in India and Asia. However, many farmers experience low yields due to various reasons such as pests and excess water during cultivation. In agriculture, the methods are now data-centric. It involves exploring poor performance and finding appropriate solutions. The rapidly growing applications of Internet-of-Things (IoT) based technology are attracting farmers to adopt smart farming, which is changing the system from qualitative approaches to quantitative approaches. This opens a door for our undertaking to include the abilities of different sensors for IoT in rural areas. Hybrid chilli (F1 Golden parrot) has been selected for cultivation in the Pallavolu area of Nellore. Therefore, weather conditions and provocation for this mission in this area will be deliberated. IoT tools and communication technologies related to sensors in agricultural applications are analyzed in detail. Moreover, an appropriate approach to monitoring crop health and field optimization will be studied in this project. High quality and improved production of hybrid chilli (F1 Golden Parrot) is expected in the Pallavolu area of Nellore.

Key words: IoT, smart farming, F1 golden parrot, field optimization

All-Optical Logic Gates and Combinational Logic Circuits based on Micro-Ring Resonator

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Abstract: Silicon Photonics exploits several advantages of optics to overcome the challenges faced by electronics. Silicon photonics is one of the challenging backgrounds for Photonic Integrated Circuits (PIC). Silicon-based Micro Ring Resonator provides ultra-fast and ultra-high bandwidth communication and computation. The Micro Ring Resonator plays an essential role in it after the tremendous success of Silicon photonics. It replaces the need for conventional CMOS circuits to provide the way for ultrafast optical computation. Optical computation is one of the most prominent research is because of the reduced power consumption and ultra-high-speed. The purpose of all-optical signal processing is still on the top because of the demand for high bandwidth and high speed. The critical unit for designing many all-optical systems available in optical signal processing is all-optical logic gates. However, optical signal processing using digital gates is complicated, and electro-optic conversion adds complexity. The design of all-optical systems is, therefore, necessary. This article uses a 2 x 2 Silicon Micro Ring Resonator Switch its work as a 2 x 2 optical switch to design All-Optical Logic gates and Combinational Logic circuits. The simulation results show the operation is the same as standard logic gates and combinational logic circuits. Ultrafast all-optical circuits in silicon are given in the proposed designs.

Keywords: Micro ring Resonator; Optical gates; Optical Logic circuits; Optical computing; Silicon switches.

QCA: Nano electronic computing approach

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Abstract

Quantum Dot Cellular automata (QCA) is an upcoming research area to achieve a computation at an easier level. This computation technique does not involve transistors and thus it demands less computational cost and power requirements. Huge device density with ultra-low power consumption at reasonable costs is turned the adiabatic switching property with QCA. The working principle of QCA is supported with principle of electron interactions with in the quantum-dots principal to materialization of quantum features and limiting the problem of potential integrated circuits with respect to size. The logic gates and circuits can be intended with the help of least amount of QCA cells and without crossovers. Hence, similar devises can be adopted to build complex circuits. This article presents a study in the works carried out in the QCA field in the last two decades. Moreover, the fundamentals of QCA are being discussed and comparison of various multiplexers designs presented in different papers is also done. The QCA Designer design tool is used for simulation of QCA designs.

Keywords: Quantum cellular automata · QCA-Designer tool · Quantum dot

Energy Efficient IoT Node Clustering Using Heuristic Approach

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Abstract

The Internet of things (IOT) allows for advanced advances in intelligent sensors, and IOT implementations have seen the biggest spike in recent years.Sensor nodes are seen as smart devices in IOT, and these sensor nodes in IOT can constantly generate data, which affects the longevity of the network. However, there is a lot of competition in IOT, including security, confidentiality, storage and energy optimization. From these we consider energy consumption as the most important parameter to improve. Since there are many variables that move the energy of the sensor nodes such as temperature, cluster head load (CH), residual energy, cost function and number of living nodes. Consequently, in this paper, we recommend a hybrid whale optimization algorithm to select the best cluster head (CH) to enhance the previously listed factors. Due to its unique and efficient features, MATLAB is used to evaluate this algorithm. The findings of the proposed work are compared with current methods in the conditions of livelihood-specific variables.

Keywords: Internet-of Things · Cluster head load · Hybrid whale optimization.

Design of RF MEMS Shunt switch for Wireless applications

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Abstract- This paper presents, the design, and simulations of RF MEMS shunt switch with low pull-in voltage and high isolation for wireless applications. The Electromechanical and Electromagnetic analysis such as pull-in voltage, capacitance analysis, and S-parameters are investigated. The materials are paly an important role in getting the good performance of the device. Here, we have taken gold as beam and Si3N4 as a dielectric for low pull-in voltage. The isolation can be improved by selecting the dielectric materials, among all the dielectric materials such as Al2O3, SiO2, the Si3N4 have high Isolation for the switch. The pull-in voltage of the proposed switch is 5.6 V and up and downstate capacitance is 7.6 Pf, 2.61 Ff. The S-parameters of return and insertion losses are -26.32 dB, -0.126 dB, the measured isolation is -36.42dB at 30 GHz. The performance of the switch has been analysed from the range of 26 to 45 GHz frequency, so the proposed switch is applicable for K band applications.

Keywords: RF-MEMS Shunt switch, displacement, Pull-in-voltage, S-parameters.

Design and simulations of Fixed Fixed type RF MEMS Shunt switch for X band applications

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Abstract-RF MEMS Switches are mostly used in communication systems. In this paper the RF MEMS switch is designed by using COMSOL Multiphysiscs and HFSS software. Here, we have designed a fixed-fixed type RF MEMS switch with different dimensions, materials like gold, platinum, and titanium. This paper mainly concentrating on the pull in voltage and switching time of the proposed switch. The pull in voltage of the switch with different beam materials (gold, aluminium, platinum) is 6.3 V, 8.36 V, 10.28 V. In this gold is one of the best materials to get low pull in voltage. The S-parameters return and insertion losses are -2627 dB, -0.789 dB. The isolation is measured as -32.61 dB at 6 GHz frequency. Finally the fixed-fixed type RF MEMS switch is suitable for the X-band applications.

Keywords: Fixed Fixed type switch, Pull-in-voltage, COMSOL

A Dual-Band Electro-Textile Wearable Antenna for WBAN Applications

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Abstract: The requirement of textile integrated antenna systems has been rapidly increasing for wireless body-centric communications. In this paper, an embroidered dual-band jean-based

antenna using copper taffeta fabric is investigated with dimensions of 50×30×1mm3. The Simulations have been done in Ansys HFSS environment and prototype testing using Agilent combinational analyzer. The designed fully textile prototype using a copper taffeta antenna operates in 3.03-3.76 GHz,5.48-6.24 GHz bands. The simulated and measured results show good agreement. The performance like good peak gain, flexibility and low profile makes the antenna suitable for wearable application in Wireless Body Area Networks (WBAN).

Keywords: Electro textile wearable antenna, dual-band, WBAN, flexible.

Design and Analysis of a Cylindrical Cloak to Reduce Scattering Using Near Zero Refractive Index Metasurface

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Abstract: In this work, an invisible cloak is designed based on the near-zero refractive index (NRZI) with a series of pi-shaped metamaterial structure. An electromagnetic cloak is structured with a metasurface and simulated using CST Microwave Studio. Metallic cylinder is hidden by wrapping the metasurface on the cylinder, thereby the electromagnetic signals are transferred to the other side of the cylinder with reduced scattering. Good experimental results

are obtained at C-band which is suitable for cloaking applications. The proposed structure is fabricated with polyimide substrate of two T-shaped slots with opposite directions. Polyimide is a flexible substrate with a dimension of 9x9x0.1mm3. The simulated results obtained are stating that the proposed structure is resonating at 6.8GHz frequency. At 6.8GHz frequency, the proposed structure is performing the cloaking operation. Simulated and measured results are in good agreement with each other at the resonating frequency.

Keywords: Near-zero Refractive Index, Metasurface, Flexible

Airborne Lidar Processing System (ALPS) analysis

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Abstract

The Airborne Lidar Processing System (ALPS) analyzes Experimental Advanced Airborne Research Lidar (EAARL) data—digitized laser-return waveforms, position, and attitude data—to derive point clouds of target surfaces. A full-waveform airborne lidar system, the EAARL seamlessly and simultaneously collects mixed environment data, including submerged, sub-aerial bare earth, and vegetation-covered topographies. ALPS uses three waveform target-detection algorithms to determine target positions within a given waveform: centroid analysis, leading edge detection, and bottom detection using water-column backscatter modeling. The centroid analysis algorithm detects opaque hard surfaces. The leading-edge algorithm detects topography beneath vegetation and shallow, submerged topography. The bottom detection

algorithm uses water-column backscatter modeling for deeper submerged topography in turbid ater

Linear and Quadratic Time frequency transforms on FPGA using Folding Technique

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Abstract

In this paper time frequency representations (TFRs) are implemented on FPGA. Linear TFRs such as Short Time Fourier Transform (STFT), Continuous Wavelet Transform (CWT), Stockwell Transform (S-Transform) and Quadratic TFRs like Wigner Ville Distribution (WVD), Pseudo Wigner Ville Distribution (PWVD), Choi William Distribution (CWD), and Rihaczek Distribution (RD) are designed in Verilog and performed over FPGA. In most of the FFT architectures many butterfly unit (BU) stages are remains idle during computation since

current stage computation depends on previous stage outputs. As a result these idle BU leads to additional register allocation and delay propagation. An optimized VLSI architecture is proposed in this paper for efficient clock utilization to compute FFT in all TFRs. Folding technique is implemented in all TFRs to minimize the register allocation. The design is carried out in Verilog code and CORDIC algorithm is used to compute core butterfly structure of FFT in all TFRs. Chirp signal is taken as input to evaluate real time performances of all TFRs. Real time factors utilized on FPGA hardware like Flip Flops, IOBs, LUTs utilization and power consumption are compared for all TFRs. Further proposed methodology is compared with previous existing methods for better time frequency applications.

Keywords: Transform techniques, Verilog, FPGA, CORDIC, Folding technique.

A NOVEL ARCHITECTURE TO REDUCE CROSS TERMS IN QUADRATIC TRANSFORMS AND IMPLEMENTATION ON FPGA

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Abstract

In this paper an efficient VLSI architecture is designed to reduce the cross terms effect in quadratic time frequency transforms. Quadratic transform namely Wigner Ville Distribution (WVD) produces efficient energy localization in time frequency representation (TFR) plane by performing auto correlation operation between input signal and shifted version of the signal itself. Due to nonlinear nature of WVD, suffers from cross term energy localization in TFR plane when the input signal contains more than one multi frequency components. A pair of multiplexer and complementary subtractor (MUX-CS) logic elements are introduced at the stage of Fast Fourier transform (FFT) to avoid cross terms in WVD. The proposed architecture

is implemented using 64 point FFT butterfly structure. The design is carried out in Verilog code and implemented on Spartan-6 FPGA. A comparative analysis of hardware utilization factors such as frequency, LUT, Flip Flops, and Slices for proposed method and existed methods are presented. The proposed MUX-CS-WVD architecture is tested with a standard chirp signal with maximum instantaneous frequency of 10Hz with 500 frames per second. The implemented method produces 2.36ms elapsed time, utilizes 12% of memory logical blocks. Further for better interpretation of proposed methodology, ECG data is taken and analyzed for accurate time frequency applications.

Keywords: Wigner Ville Distribution (WVD); Fast Fourier Transform (FFT); Cross terms; Chirp signal; ECG signal.

AI-based Load Management System using Raspberry Pi for Smart Power Grids

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Abstract: The conventional electrical grid is an interconnected network that connects the generation stations to the end-users via transmission and distribution systems, before there, where centralized power generation stations are to feed power into the grid to supply the consumer. In this system power flow, only one direction using transmission lines and distribution is distributed to the consumers without knowing the load requirement of the end-user. It is a simple network, but power losses are more, and power quality is significantly less. It is challenging to find out where the fault occurred in any power failure or faults, and fault restoration takes much time in the conventional distribution system. We propose the prototype model is AI (Artificial Intelligence) based fault finding and load management system using Raspberry Pi to avoid the drawbacks in the conventional distribution system. With the help of WSN (Wireless Sensor Networks) and Actuators to know the status of the transmission lines minute by minute. Any fault has occurred in the transmission line immediately after the WSN senses and activates or restore the transmission system. Suppose the Load management like

diverting the power in case of failure at the particular location all-managing decisions all taken by the AI without human efforts. This system is said to be self-decision making all the data gathered from the sensors networks. Based on the data, Raspberry Pi decides to fulfil the necessary action to restore the power.

Keywords: Artificial Intelligence (AI), Raspberry Pi, Smart Power Grid, WSN, IoT.

Fault Location on IoT Platform and Line Fault Analyzer using LoRa-WAN

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Abstract: Electricity has become an essential requirement in the life of today's generations. In the past, electricity is only available in cities. Nowadays, it is available to every part of our planet. This network has become more complex than no one can ever imagine. Transmission lines will carry this power everywhere. Transmission lines will expand in a vast network that makes fault occurrences frequent. All the power companies are greatly concerned about locating these faults as soon as they occur based on accuracy, cost, and delay. This project aims to design a system that will detect these faults as earliest and send information to the nearest electricity board to do the needful. We proposed a system to detect line faults and at the same time identify the exact location of the fault that occurred using LoRa Gateways. This system will detect the fault by an Optocoupler sensing network integrated with RP PICO (RP 2040) and transmit it through the LoRa node. A transmitted fault will be sent to the receiver side LoRa node integrated with ESP32. LoRa Gateway carries out this complete transmission. Fault identification results displayed on the IoT dashboard and a 20x4 LCD through The Things Network (TTN).

A HIGH GAIN METAMATERIAL INSPIRED VIVALDI ANTENNA FOR MOBILE APPLICATIONS

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Abstract:

A metamaterial inspired Vivaldi antenna which is having a layout of unit cells has been proposed in this article. A layout of having 1-2-4 metamaterial unit cell is incorporated at the Vivaldi antenna region at top and flip view of the antenna. The proposed antenna shows a maximum gain of 16db and covers ultra-wideband region with maximum return loss of -34dB and 99 percent of radiation efficiency. The proposed antenna is designed using commercially equipped tool ANSYS electromagnetic desktop. Comparative analysis to the proposed model has been carried out iteration wise. The proposed antenna works at ultrawide band applications. The increase of gain of almost 14% to the basic Vivaldi antenna has been observed in the proposed work.

COMPACT CIRCULAR SLOT WIDEBAND MONOPOLE ANTENNA FOR MOBILE APPLICATIONS

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Abstract: In this work, a novel compact co-planner waveguide fed circular slot monopole antenna is designed for wide band communication systems. The proposed antenna model occupying a dimension of 20×24×1.6mm on FRA substrate material with permittivity 4.4. The designed antenna model is providing a huge bandwidth of more than 13GHz with impedance band width of 70%. The proposed antenna is providing a peak realized gain of 3.2 dB in the operating band with peak directivity of 3.6dB. Antenna is providing almost omnidirectional radiation pattern in H-plane and monopole like radiation in the E-plane.

Keywords: Circular slot, Compact, Impedance bandwidth, Monopole, Wideband.

Synthesized Copper Nanoparticles incorporated in PEG/ PVA Nanocomposite for Biomedical Applications

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Abstract: Green Synthesis enables the nanoparticles for medical applications and Food package industry. Copper nanoparticles (CuNPs) are having antimicrobial and anti-viral properties green synthesis provides the cushion for biocompatibility of copper nanoparticles for drug delivery. Green Synthesis of copper nanoparticle from Capparis zeylanica plant and solution casting it nanocomposite with Polyethylene Glycol (PEG)/Polyvinyl Alcohol (PVA) that can be utilized for food packaging, drug delivery and cancer therapy, etc., The preparation of copper particles is through aqueous greener synthesis using Capparis zeylanica plant extract as reducing and as well as stabilizing agent. The obtained copper nanoparticles were blended with Polyethylene Glycol /Polyvinyl Alcohol biopolymer using solution casting method to obtained nanocomposite. The synthesized nanoparticles and nanocomposite were characterized using UV–visible absorption spectroscopy, X-ray diffraction (XRD), Fourier transform infrared spectroscopy (FTIR), Scanning electron microscopy (SEM), Differential Scanning Calorimentry (DSC), Moisture absorption and Anti-microbial analysis to understand the stability of the resultant product. Polyethylene Glycol/Polyvinyl Alcohol + Copper nanoparticles (PEG/PVA + CuNPs) nanocomposite shows an excellent characteristic in most aspect that able to fit for bio-medical, engineering and food packaging applications.

Keywords: Greener Synthesis, Copper Nanoparticles, Capparis zeylanica, PEG/ PVA, XRD, FTIR, SEM.

Design of High Speed Low Power GDI Based Full Adder for Efficient Arithmetic Operations

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Abstract: With the successful production of portable electronic equipment, there are many research intentions arising from the need for low energy dissipation, high speed and lightweight implementation. In VLSI systems, there are a variety of design techniques, but very few design techniques offer the extensibility needed. One of the types of technique mentioned above is GDI. In this work a GDI based full adder with full swing AND, OR and XOR gates is designed. Since the addition is an integral arithmetic operation and serves as a basis for all other operations. One of the main components when designing integrated circuits unique to the application is a high-performance adder. The designed low power GDI full adder minimizes the threshold voltage problem typical in conventional adders. The designed full adder is successfully realized using full swing gates with major performance improvements. The performance of the proposed designs is compared with the other full adder designs, namely CMOS, CPL, hybrid. The proposed design simulated using Tanner EDA tool at 45 nm technology. Simulation results reveal that proposed designs have lower energy consumption among all the conventional designs taken for comparison.

Key words: Arithmetic operation, Addition, GDI (Gate Diffusion Input), CPL (Complementary Pass-Transistor Logic).

Performance Analysis of CNN Deep Learning Approach for Glioma Brain Tumor Segmentation

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NO Affilations

This research proposes using Convolutional Neural Networks (CNN) classification approach to segment Glioma tumour locations in brain Magnetic Resonance Imaging (MRI) images. On the brain MRI picture, the adaptive histogram equalisation method is used to enhance the aberrant pixels in comparison to the surrounding pixels. The Gabor transform is used to convert this augmented brain image into a multidirectional scaling image. Then, using the CNN deep learning method, features are retrieved from this multidirectional scaling image and trained and classed to discriminate the Glioma from a normal brain MRI image. Finally, morphological techniques are used to segment the tumour areas. The suggested Glioma brain tumour segmentation method, which employs a CNN classification approach, achieves 96.9% sensitivity, 99.3% specificity, and 99.2% accuracy.

Keywords: Brain tumor, convolutional neural networks, Gabor transform, Glioma, MRI.

An Analysis of Brain Tumor Segmentation Using Modified U-Net Architecture

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NO Affilations

The interpretation of MRI images is the most significant duty in the process of identifying a brain tumour, hence it is critical to examine the images properly. Despite advances in medical science and study, there are just a few approaches that allow us to accurately segment brain tumours. Manual image segmentation becomes a time-consuming, arduous operation; also, the 3D form of the data creates various obstacles in automatic image segmentation. Our research focuses on a method for solving the issue of segmentation by using U-Net to train a network architecture. We generated better results with our projected system than other state-of-the-art architectures like native U-Net architecture on the 2018 dataset of the brain tumour segmentation competition (BraTS).

Keywords: Brain tumor, segmentation, U-Net, magnetic resonance imaging, and BraTs.

COMPARATIVE ANALYSIS OF C-ELEMENT AND D-ELEMENT DOUBLE EDGE TRIGGERED FLIP FLOP FOR POWER EFFICIENT VLSI APPLICATIONS

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ABSTRACT

In this paper the work has been carried out for attaining a very impressive achievement of low power digital circuits, without compromising in dual edge triggering phenomenon. In this work different strategies of static dual-edge triggered flip-flops (DET) which show exclusive circuit behaviour due to the usage of C-elements and D-element has been analysed. In D-element again, the two different categories like static and dynamic D-element were analysed in 130nm technology . One of the key element used in asynchronous control circuits is the C-element. The performance metrics were analysed and tabulated their characteristics, through mentor graphics in 130nm technology.

Keywords- dual-edge triggered flip-flops (DET), C-elements, D-element, asynchronous control circuits

DESIGN AND ANALYSIS OF LOW VOLTAGE DRIVEN RF MEMS SWITCH WITH PERFORATIONS

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Abstract:--

In this paper, a Micro Electro Mechanical Systems based RF switch have been designed with a low pull-in voltage of 7V in the frequency range of 1-10KHz. The proposed design is tested without perforations for pull-in voltage, and simulated pull-in voltage was 8V. The proposed design with perforations shows reduction of 10% pull-in voltage compared with the design without perforations. The parameters like Voltage Standing wave ratio (VSWR), S11, S12, S21, S22 are simulated using HFSS Simulation tool. On Comparison of Region of Convergence of HFSS and Proposed Structure the operating frequency of the proposed switch lies in Low frequency range of Operation. The RF MEMS switch is designed and simulated using FEM tool COMSOL Multiphysics.

Key words----RF MEMS, pull-in voltage, VSWR

End-to-End Image Compression using Compressive Sensing

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Abstract

We present an end-to-end image compression system based on compressive sensing. The presented system integrates the conventional scheme of compressive sampling (on the entire image) and reconstruction with quantization and entropy coding. The compression performance, in terms of decoded image quality versus data rate, is shown to be comparable with JPEG and significantly better at the low rate range. We study the parameters that influence the system performance, including the choice of sensing matrix, the trade-off between quantization and compression ratio, and the reconstruction algorithms.

We propose an effective method to select, among all possible combinations of quantization step and compression ratio, the ones that yield the near-best quality at any given bit rate. Furthermore, our proposed image compression system can be directly used in the compressive sensing camera, e.g., the single pixel camera, to construct a hardware compressive sampling system.

Sparsifying Dictionary Learning Matrix for Compressive Sensing

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Abstract

This paper considers the problem of simultaneously learning the Sensing Matrix and Sparsifying Dictionary (SMSD) on a large training dataset. To address the formulated joint learning problem, we propose an online algorithm that consists of a closed-form solution for optimizing the sensing matrix with a fixed sparsifying dictionary and a stochastic method for learning the sparsifying dictionary on a large dataset when the sensing matrix is given. Benefiting from training on a large dataset, the experiments on natural images demonstrate that the obtained compressive sensing (CS) system by the proposed algorithm yields a much better performance in terms of signal recovery accuracy than the available algorithms. The simulation results on natural images demonstrate the effectiveness of the suggested online algorithm compared with the existing methods.

Design and simulation of Bi-metallic RF MEMSswitch exhibiting the excellent electromechanical performance

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In this paper, design and analysis of a capacitive shunt type RF MEMSswitch using bi – metallic beam as a suspended beam includes a vertically deforming beam which includes perforations and meanders. The significant accomplishments in this work are the pull in voltage that is minimized to 4.5V and fast switching time. The up capacitance of the switch is 300fF, down state capacitance is 9.2pF the obtained capacitance ratio is 0.3. The product utilized for CPW line is Gold (Au). The dielectric product utilized in between the beam and the CPW transmission line is Silicon Nitride (Si3N4). We achieved electromechanical analysis through COMSOL software.

Design and optimization of MEMS Based Electrospray Thruster for High Output Thrust Velocity

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This paper represents the MEMS based Electrospray Thruster with better performance properties such as high throughput, low volume, andhigh output velocities. The optimized dimensions are proposed while done the different parameter analysis like propellant radiuscone heightcone, propellant height, and half angle. The maximum output thrust is uptrain at the at propellantheight > 350 µm and propellant radius is varied from 60 to 150 µm. The cone angle is 48°, and the operating voltage changed from 2.5 to 3.5 kV. The design and analysis of electrospray thruster is done by using the COMSOL Multiphysics FEM tool in laminar flow environment. The liquid inside the propellent is EMI-BF4. The output thrust velocity is observed by varying the input voltages 2–3.5 kV, by chancing the different parameters like propellant radius, propellant heigh, height of cone and half angle. The maximum output thrust velocity is at cone angle of 48° withheight of the is 150 µm and radius of the bottom cone is 125 µm along with propellant radius 145µm, propellant height of 150µm. The maximum output thrust isin the order of 106.

High performance SC sigma-delta modulator design and verification for biomedical applications

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Abstract — Analog communication technology has dominated the field of signal processing over a long period. However, nowadays, digital communication is playing a pivotal role in signal processing and manipulation, making the results more accurate, noise immune and overall a stronger technique. Analog to digital converters are widely used in the field of biomedical, communications, transportation. Sigma Delta modulator is a type of oversampling ADC that encodes the analog waveform into a digital and heavily relies upon quantization, oversampling and noise shaping. The oversampling family of ADC's to which Sigma-Delta Modulator belongs aims to convert high-bit, low-frequency digital signals into low-bit, high-frequency digital signals. This paper describes the theory and designing of Discrete-Time 3rd order cascaded (2-1) Sigma-Delta Modulator. This paper presents the $\sum\Delta$ modulator which is designed to be used for biomedical signals processing like ECG signals. The design of sigma delta modulator, verification done through SIMULINK based sigma delta simulator.

Keywords—analog and digital converter; oversampling; sigma-delta; modulator; biomedical signal; noise shaping;

A Rapid Approach For Performance Based Selection And Design Of Analog-To Digital Interfaces

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ABSTRACT

This paper presents an overview of analog to digital interfaces for low bandwidth sensor applications to wideband communications. Sigma-delta modulation technique explored in analog-to-digital conversion and implementation of $\sum\Delta$ analog-to- digital converters using different technology processes, architectural and circuit level methods. This survey on $\sum\Delta$ ADC's targeted by considering various applications that extends from sensors and instrumentation to ultra-low power biomedical applications and high bandwidth required broadband communications, for comparison, majority of the cases this study concentrates on $\sum\Delta$ ADC's for ultra-low power biomedical signal processing applications. The design of $\Sigma\Delta$ modulator practically dependent on specifications and/or targeted application. The in-depth study of implications and design challenges of existing $\sum\Delta$ ADC's in CMOS technology allows the designer in selecting $\sum\Delta$M architecture, technology process and circuit technique with optimum performance and leads to future generation $\sum\Delta$ ADC's for target applications. The existing design methods in deep are systematically presented and comparison of performance parameters described in detail.

Index terms: Low power, $\sum\Delta$ modulator, CMOS.

Design of Efficient Ring VCO using Nano Scale Double Gate MOSFET

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Abstract: In this paper a voltage-controlled oscillator (VCO) using MOSFET (Metal Oxide Semiconductor Field Effect Transistor) and Double Gate (DG) MOSFET are compared and analysed. The comparison has been done on the basis of different parameters: voltage swing, tuning range, power consumption, number of stages and phase noise. Two architectures namely current starved ring VCO and inverter-based oscillator are implemented using DG MOSFET. The results of simulation indicated that implementation using DG MOSFET, gives very high tuning range as compared to MOSFET based VCO. The Tuning range in current starved VCO using DG MOSFET is found out to be 16 GHz to 22 GHz compared to MOSFET which is only 3 GHz to 5 GHz. The phase noise performance of DG MOSFET based VCO is also better than MOSFET based VCO for low frequency domain. Keywords: CMOS Technology, Ring Oscillator, Current Starved Ring VCO, Voltage Controlled Oscillator, Phase Noise, Double Gate MOSFET

Design and Analysis of Nanoscale Double Gate MOSFET Based Current Mirrors

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Abstract: With the technology trend moving towards smaller geometries and improved circuit performances are expected to replace the traditional bulk devices. Accurate current mirroring is a critical analog design requirement in many applications. Current mirror is an essential component in analog design for biasing and constant current generation. This paper presents the nano scale double gate MOSFET based efficient current mirror and cascode current mirror designs implemented at 22 nm technology. They have wide bandwidth, wide tuning range and operate at 1V power supply. The proposed double gate based current mirrors are better than conventional MOSFET based current mirrors. It shows how the nanoscale double gate MOSFETs can pave way for efficient, tolerant and smaller circuits with tuneable characteristics.

Frequency Reconfigurable Notch Band Antenna for Wireless Communication Applications

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Design and analysis of a frequency reconfigurable antenna with dual notch and compact in size has been presented in this work. Proposed antenna is optimized for achieving operating bands for targeted 5G and Wi-Max applications. Frequency selective surface with an array of 4x4 patches added to the rectangular patch to improve the gain of the antenna above 7dB. FSS is mounted on the backside of the antenna which gives a stop band operation having more than -60dB return loss at frequency of 3.6GHz and having return loss of more than -30dB at frequency of 6GHz. To investigate the frequency reconfigurable property PIN diodes have been incorporated on proposed antenna. By the different combinations of PIN diodes narrow bands and multiple bands have been achieved. Proposed antenna is prototyped on FR-4 material having 0.8mm thickness of size 37 x 40 mm2. Antenna performance parameters like return loss, peak gain, surface current distribution, 2D radiation patterns and radiation efficiency are analyzed.

Keywords: Frequency reconfigurable, Wi-Max applications, Frequency selective surface, peak gain, surface current distribution, 2D radiation patterns

Reconfigurable Ultra-Wideband antenna using Defected Ground Structure for IoT applications

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A reconfigurable UWB antenna with defected ground structure is designed and analyzed in this present work. The designed antenna operates between ultra-wideband and narrow band. The proposed antenna has the size 37.5x35x1.6mm3 ,which is compact in size . Proposed antenna is having two slots in ohm shape coupled by a horizontal slot as a defected ground structure. The designed antenna is working in ultra-wideband from 3.1GHz to 10.6GHz and exceeds to 15 GHz. When switching elements are incorporated in the defected ground structure, to understand the switching behavior of the proposed antenna and compared with standard PIN diode switches. The switching conditions of the designed antenna are having frequency reconfigurable nature in the region that covers C-band, S-band, and UWB with 2.83dB, 5.12dB and 5.2dB of gain respectively which meets the requirements in IoT devices.

Keywords: Ultra-Wideband antenna, defected ground structure, PIN diode switches, C-band, S-band, IoT devices.

USING LORA TECHNOLOGY FORIoT MONITORING SYSTEM

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Abstract :Many aspects of our daily lives will be dominated by the Internet of Things (IoT). The increasing proliferation of embedded IoT devices has prompted the development of added value IoT applications by industries, businesses, and individual customers. People rescue is a critical service sector for overall growth and has a significant impact on living standards. One of the most pressing issues is providing an emergency response to illnesses and major accidents among vulnerable groups of people who may fall or get disoriented. This anxiety may cause individuals to panic, lose their sense of direction, or even feel unable to respond to their daily activities. In monitor scenarios, a proposed wearable gadget is being examined. Since the age of four, 49% of people with autism spectrum disorders have been reported to have vanished or been in danger due to a proclivity to escape. Furthermore, people with dementia have a 60% chance of being disoriented in open spaces. when infants and children are exposed to huge outside areas, they are more likely to become disoriented. They are also highly vulnerable to malicious attacks and frequently unable to defend themselves.

Sensors, Real-Time Monitoring, Wi-Fi, Lora, and Wearable Devices are some of the key terms used in this paper.

Air Quality Monitoring System Using Ubidots Web Server Application

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Abstract: Air has a critical limit and occupation in the presences of individuals and other living animals. Each living things needs clean air to help its life preferably. We need to monitor the levels of pollution that are highly hazardous to keep our environment safe. Air contamination levels can be estimated utilizing intelligent sensors. Internet of Things (IoT) innovation can be incorporated to recognize contamination with no human connection distantly. The information accumulated by such a framework is sent right away to Ubidots, an electronic application to continuously check continuous information and permit impending danger to the executives. The LPWAN LoRa is used for data transmission communication. This system uses Raspberry PI as a controller, a DHT11 sensor for temperature and air humidity, and MQ-7 sensor for CO gas, MQ135 sensor for CO_2 gas. This information is broken down and estimated against a foreordained edge. The gathered information is sent to the concerned authority association to advise them in any infringement to take vital measures.

Keywords: IoT (Internet of Things), Ubidots, Sensors, Ubidots IoT Platform, TTN, LPWAN, E32-EBYTE LoRa.

FACE IDENTIFICATION BY HOG ALGORITHM AND SUPPORT VECTOR MACHINE

Kasiprasad mannepalli , Akhil immadi , Vidiyala Jayasri, Vaibhav Reddy

Abstract:

Face recognition system plays an important role in numerous sorts of security systems for instance video police investigation , face detection and currently a days for thermal imaging of people publicly places . This paper can style and implement a guest recognition system victimization machine learning algorithms. Considering the actual fact that absolutely different|completely different} components of face have different information, we tend to square measure victimization HOG (Histogram of bound Gradients) algorithm to convert the given image into a gradient distributed image . we tend to are also close to solve the alignment of face with relevancy the camera victimization Regression trees.

keywords: -HOG(Histogram Oriented Gradient) algorithm, SVM classifier, face recognition,

MACHINE LEARNING BASED SPEECH TAMPERING DETECTION

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Abstract:

Audio recording technologies are developed for many years as a typical signal processing area, while the last decade has brought an enormous progress supported new machine learning paradigms. Copy–move forgery on very short speech segments, followed by post-processing operations to eliminate traces of the forgery, presents an excellent challenge to forensic detection. during this paper, we propose a strong method for detecting and locating a speech copy–move forgery. We found that pitch and formant are often used because the features representing a voiced speech segment, and these two features are very robust against commonly used post-processing operations. within the proposed algorithm, we first divide the speech recording into voiced speech segments and unvoiced speech segments. We then extract the pitch sequence and therefore the first two formant sequences because the feature set of every voiced speech segment. Dynamic time warping is applied to compute the similarities of every feature set. By comparing the similarities with a threshold, we will detect and locate copy–move forgeries in speech recording. The extensive experiments show that the proposed method is extremely effective in detecting and locating copy–move forgeries, even on a forged speech segment as short together voiced speech segment. The proposed method is additionally robust against several sorts of commonly used post-processing operations and ground noise , which highlights the promising potential of the proposed method as a speech copy–move forgery localization tool in practical forensics applications.

Keywords: speech forgery, pitch, formants, DTW

Energy Efficient Intrusion Detection Scheme with Clustering for Wireless Sensor Networks

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Abstract:

Wireless Sensor Networks (WSN) comprises of a little size sensor hubs relies on upon battery power. Uses of sensor systems are street lighting, home computerization, mechanical plant, ecological parameters, human services and military. Security is turning into a major idea in the configuration of remote sensor systems. Assaults on sensor systems incorporate assault on classification, respectability and accessibility. Absence of privacy implies that the mystery data is uncovered to attackers. Absence of uprightness implies that the assailant alters the substance (information) conveyed in the sensor system. Absence of accessibility means the assets in the system is not accessible to approved clients. So to evade these issues we need better efforts to establish safety. In this paper we are managing intrusion location. Interruption identification assumes an imperative part in the configuration of remote sensor systems. An intruder can perform different assaults like replay, capture, worm opening, sink gap assaults. So our point in this paper is to discover such interruptions as ahead of schedule as could be expected under the circumstances, when they happened and to improve the life time of the sensor system. This is on the grounds that sensors hubs depends just on battery power. Our interruption location depends on bunching of the sensor system. This makes routing process, medium control and intrusion detection simple.

Keywords— Cluster head, Intrusion, Residual energy, TDMA, WSN.

A Survey on Secure Efficient Neighbourhood Discovery in Wireless Networks

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Abstract:

In a wireless network, each node has direct radio link to only a small number of other nodes. These nodes are called its neighbor nodes. Before efficient routing or other network-level activities are possible, each node has to discover and identify their neighbors. This process is called as neighbor discovery. The problem is becoming increasingly more important in infrastructure networks like Mobile Ad hoc Networks (MANETS) due to development of heterogeneous cellular networks with unsupervised pico cells and femto cells. A node interested in its neighborhood is referred as the query node that listens to the wireless channel during the discovery period, and then decodes the network addresses of its neighbors. Neighbors transmit signals which contain node's identity information. Securing network discovery is however a hard problem. The very nature of the wireless environments and mobile computing applications makes it easy to abuse network discovery and thereby compromise systems for which discovery is a building block. Wireless networks, deployed in hazardous environment, are exposed to a variety of attacks like black hole attack, eavesdropping, message tampering, selective forwarding, wormhole and sybil attacks. This paper presents securing neighboring discovery process in wireless networks.

Keywords— Node discovery, Ranging, Security, Synchronization, Verification.

Monitoring and Authentication in multiple levels for security in IoT enabled Devices

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Spotting attackers is a key tension for associations and public administrations. Now-a-days the largely utilized provisions to avoid them are encroachment detection systems. Biometric knowledge is just the dimension and utilization of exclusive features of living

humans to differentiate them from each other which is a lot more helpful since examining passwords and tokens is a simple task which may be missing or even taken. Therefore, we certainly have selected the technique of biometric authentication. This paper reviews different identification technologies (fingerprint, speaker recognition and password and face recognition) which will be suitable to all the categories of peoples like normal, dumb and blind. The developed system discusses the mode of operation of each of the technologies embedded in a single system.

Keywords— IoT, Node discovery, Ranging, Security, Synchronization, Verification.

INDOOR PLANTATION SYSTEM USING IOT

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Despite the individual's discernment about horticultural interaction, information focuses, is accurate and intelligent in the present agricultural sector more than ever in recent memories. The swift development of innovations based on the Web of Things (IoT) upgraded almost all sectors, including intelligent agriculture, from factual to quantitative methodologies. Such advances in horticulture are shaken and new doors are opened in a variety of difficulties.

This article describes the ability of remote sensors and IoT in vegetation as well as the expected difficulties in the coordination of this innovation with customary crop rehearsals. Detailed IoT gadgets and correspondence procedures relating to remote sensors used in agricultural applications. How this innovation helps growers throughout the production phases, from planting through collection, pressing and transport. Furthermore, in this article, an improvement in yield is considered for the use of automated airborne vehicles for recognition and for other positive applications. In addition, every place is reasonable in IoT-based structures and phases used in farming. We ultimately recognise current and future farm IoT patterns and potential challenges of examination in view of this comprehensive survey.

Keywords— IoT, Node discovery, Ranging, Security, Synchronization, Verification.

A Design and Implementation of Black-hole Attacks in AODV Routing Protocol for Mobile Ad-hoc Networks

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Abstract:
A black hole attack is a severe attack that can be easily employed against routing in mobile ad-hoc networks. A black hole is a malicious node that falsely replies for any route requests

without having active route to specified destination and drops all the receiving packets. If these malicious nodes work together as a group then the damage will be very serious. This type of attack is called cooperative black hole attack. In this paper, we are implementing Black hole attack considering the routing protocol: Ad-hoc On Demand Vector Routing Protocol (AODV) evaluate the network performance metrics like throughput, First route failure lifetime, Packet-Delivery Ratio, Average end-end Delay, Drop rate. The Experiment show that (1) Implementation of AODV for MANET without Black hole attacks (2) AODV for MANET suffers from Co-Operative Black hole attack (3) Comparison of AODV without Black hole attacks and with Black hole attacks in terms of Network Performance Metrics.
Keywords: MANET, Black hole attack, Network Performance, Security, Throughput, Packet loss

An Evolution of Performance Metrics between Routing Protocols for MANETS

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Abstract:
In wireless communication networks Ad-hoc networks are plays dominant role, Mobile Ad-hoc network (MANET) is a collection of wireless mobile nodes that dynamically form a network temporarily without any central administration. The primary objective of this research work is

to study and investigate the performance of Dynamic source routing (DSR) protocol and Energy efficient routing protocols like MBCR and MMBCR. Energy efficient routing is one of the important design criterions for MANET since mobile nodes are battery powered with limited capacity and which cannot be recharged whenever needed. So the MANET routing is challenged by power and bandwidth constraints. We use CBR based Traffic models to analyses the performance of routing protocols based on parameters of Packet Delivery Ratio, Average end to end Delay, Energy Consumption, Node Analysis, Network Lifetime and through put. We have used NS-2 Simulator for simulation.

Keywords: Ad-hoc Network, Avg end to end delay, Energy efficiency, Network Lifetime, Packet Delivery Ratio.

Dragonfly Algorithm based Spectrum Assignment for Cognitive Radio Networks

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Abstract:

Cognitive Radio Networks (CRNs) have turn up as a feasible determination for spectrum scarcity problems due to constant spectrum allocation, which is an worthless usage of licensed spectrum. To solve this problem, CRNs exploit the vacant spectrum bands (which are not being used by primary radio nodes at an instant of intervals) and assign the spectrum bands firmly. In this work, Brownian motion based Dragonfly Algorithm (DA) is used for solving Spectrum Allocation (SA) problem. The output of the Dragonfly algorithm is correlated in terms of fitness cost with the Particle Swarm Optimization (PSO) and Genetic algorithms

(measured in terms of Max-Sum-Reward, Max-Min-Reward and Max-Proportional-Fair Reward), standard deviation and execution time. Results shown that the DA improved MMR fitness value by 18% and 76%, whereas the execution time is reduced by 236% and 40% and standard deviation is reduced by 123% and 136% compared to PSO and Genetic algorithm respectively.

Keywords: Cognitive Radio Networks, Spectrum Allocation, Dragonfly Algorithm, Particle swarm Optimization algorithm, Genetic algorithm.

Grasshopper Algorithm based Channel Assignment for Cognitive Radio Networks

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Abstract:
Cognitive Radio Networks (CRNs) have turn up as an efficient spectrum resource utilization as solution for fixed channel assignment schemes of existing radio networks. To take care of this issue, CRNs use the empty un-used channels (which are not being utilized by radio network at a

moment of spans) and to make efficient spectrum utilization. In this work, Grasshopper Algorithm (GA) is used for solving the Channel Assignment (CA) problem. The performance of the GA is compared with Particle Swarm Optimization (PSO) and Genetic algorithms (in terms of Max-Sum-Reward (MSR), Max- Min-Reward (MMR) and Max-Proportional-Fair (MPF) Reward), standard deviation and execution time. Results indicated that the GA improved MPF fitness value by 18.2% and 35.4%, while the execution time is reduced by 206% and 134% and standard deviation is decreased by 98% and 196% contrasted with PSO and Genetic algorithms respectively. As part of embedded application of cognitive radio, GA and reward functions are implemented in hardware using high level synthesis tool and synthesis results are presented in the paper.

Keywords: Cognitive Radio Networks, Spectrum Allocation, Grasshopper Algorithm, Particle swarm Optimization algorithm, Genetic algorithm.

DEVELOPMENT OF RASPBERRY PIBOT SURVEILLANCE SECURITY SYSTEM

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Abstract

There is a technique called detection due to high technology use and even other globalisation methods. The word detection indicates the sense of discovering the correct thing for our needed aspect and for our security. Detecting has been a popular technique present day. For this reason, we implemented a project for detecting the intruder. Surveillance cameras are currently available for the same purpose. This article thus facilitates the Raspberry Pi's attempts to develop a home security framework. When the intruder has been identified, intrusion detection system (ids) usually focuses on the image of the intruders. The device is designed to provide information and home surveillance with a prototype system. Mobile commands through telegram bot will support the unit. An alert email with a recognisable and visible image (face view) of the attacker will also be sent to the mobile owner/administrator after the intrusion is

identified. The live surveillance can also be watched by the proprietor through the camera on the smart device in the setting used to see the view of the house surroundings.

Keywords: Detection, Intrusion detection system, Mobile commands security, surveillance

Implementation of Artificial Intelligence based Sustainable Smart Voice Assistance

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Abstract

Artificial Intelligence (AI) technologies are being part in the human life. This article is related to the implementation of an artificial intelligence-based voice assistance system, which works by the user given commands as a request and give back the output as a response in the speech format. Core innovations are voice initiation, automated speech synthesis, speech-To-Speech, understanding common language. The proposed voice assistance system helps us to make a hand-free model, which acts as a personal assistance and mimics same as like human. Applicability and usability of the proposed model is to create an intelligent mechanism between human and computers as a natural language. Python plugins are used to train the system by using various libraries such as speech recognition, pyttsx, pyAudio. The customization of this project model makes it more flexible and freer to add new features and functionalities without disturbing the current system functionalities. It assists to eradicate the unnecessary kind of manual work required in the user life which will be performed in daily activities, not only does

it operate on human instructions, but it also refers to the user based on the question or terms demanded. This Intelligent assistance communicate with the user as a result it gives a desired output as a response to the user as a voice and displays its response on the screen of the user gadget.

Discovery and Recognition of Paddy Plant Leaf Diseases by applying Machine Learning Technique

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Abstract:
One of the most significant crops is Rice and the most staple nourishment for half of the total populace. Ranchers are frequently faces a few snags in paddy creation as a result of different paddy leaf infections. Thus, rice creation is broadly decreased. For finding the paddy plant leaf illnesses, there are numerous strategies are available in the PC vision-based region. Presently, it is the fundamental worry to quick and accurate affirmation of paddy, plant sicknesses in the fundamental stage. Therefore, we proposed a superior methodology for early paddy plant leaf illness recognition by utilizing straightforward picture preparing and AI systems. There are four kinds of paddy leaf sicknesses that are featured in this paper; which are Brown Spot, Sheath Blight, Blast Disease and Narrow Brown Spot. To do this, from the beginning the necessary typical and ailing paddy plant leaf pictures are caught straightforwardly from various paddy fields. The inconsequential establishment of the leaves pictures are disposed of by using veil in the pre-handling area. At that instance yield is taken care of into the division part where K-

implies bunching is utilized to isolate the typical bit and unhealthy bit of the leaf pictures. At last, the referenced infections are characterized utilizing Support Vector Machine (SVM) calculation. The exactness of the framework is 94%. This procedure can be likewise applied anyplace in the agribusiness business for plant leaf illnesses identification.

Keywords: Paddy Plant, Leaf Disease Detection, Image Processing, Machine Learning, Support Vector Machine (SVM), K-Means Clustering.

An analysis of Advancement in Various Image Processing Techniques

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Abstract:
Image processing is a technique of achieving worthy actions on a picture, for improving the image. Image processing is forever an attractive field as it provides enhanced illustrative data for human understanding and image processing statistics for storage, communication, and illustration for the discernment of machine. The image processing system improves the raw pictures taken in regular day to day life for different purposes. In recent days, image processing is improved and expanded to different domains of science and technology. It mostly pledges with image enhancement, image acquisition, image segmentation, image classification, feature extraction, and so on. Image processing is a type of signal processing, where input is a picture and the outcome might be a picture, attributes of that picture. It will be considered as two-dimensional signs and methods of sign preparation will be considered to that two-dimensional picture. It is one of the rising advances and in numerous ongoing applications picture handling is generally utilized. In the field of bio innovation, software engineering, in the clinical field, ecological zones, and so on. Picture handling is being utilized for humankind's compensation. Image processing faced a lot of challenges like unequal resolution, unequal illuminations,

format variations, noise, and distortions. Many methods have already been proposed up to today for improving the digital images

Keywords: Image processing, Analog & Digital image processing, Image segmentation, Image enhancement.

Student and Management Access System

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Abstract:

Student Management systems and understudy information systems are in utilize for an extended time during several schools over the World. Be that because it is going to, their utilize isn't as wide in universities in India. The foremost reasons are the require of high-speed Web openness, hesitance from colleges to aim leading edge program, and therefore the tall taken a toll of economic things (which are not in an unforeseen way assessed for the Indian publicize). Understudy Administration Framework realization tallying establishment and bolster of the database and front-end application enhancement. This paper depicts the system utilitarian and plan arrange, and emphasizes the system's convenience, database arrange and valuable modules, etc. Totally valuable, versatile and supportive application and welcoming interface donate a extraordinary guarantee for understudy information management. With the rise inside the number of all-inclusive understudies, the standard of administration of all-inclusive understudies must be advanced. in order that the organization system for round the world understudies was made. We utilize the knowledge development to maneuver forward organization endeavors. during this paper, the ask and arrange handle of the students' organization system are depicted. to start out with, the invite round the world understudies is analyzed, the ask securing is administered, the various valuable necessities of the understudy organization system is recognized, and therefore the work modules are arranged intimately by

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utilizing the classification chart and timing chart, at final System fulfills five capacities, checking the varsity organization, educator organization, day by day organization, communication, and system organization. Social media utilize has gotten to be outstandingly wide, and understudies and teaches are recognizable and cozy with variety of web-based applications. the target of this wander is to form a show for a low-cost web-based application that provides highlights of both learning organization systems and understudy information systems and is customized to needs of schools in India.

Keywords: Student Management System; Information management; database; information management

SURVEY: WASTE MANAGEMENT TECHNIQUES IN DIFFERENT SECTORS BASED ON IOT

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Abstract:
Waste management is one of the biggest challenges across the globe which affects the lives of human in terms of change in environmental conditions and other factors. To acknowledge this issue internet of things (iot) is the best platform as the scope of internet of things is widely spread in every sector. The production of waste material is increasing day by day due to the exponential growth in urbanization there by results in utilization of resources by mankind. The wastes are different forms according to their sources like municipal, industrial and hazardous waste. Managing different kind of wastes is very tedious task to resolve this issue we are going to use iot based solution in this different fields. This paper is all about the brief summary of various proposed methods and techniques used in waste management based on iot in different sectors. Based on this overview one can carry out their further work very easily. Waste management is a cyclic process which needs to be monitored and disposed regularly. Dumping of the waste materials is the main problem which comes across our day-to-day life. Waste are of different forms according to their source they are municipal waste, industrial waste and hazardous waste, segregation of these different kinds of waste is a difficult process and transportation, recycling these waste and finally disposing is a hectic task because these different waste material process of recycling mechanism may vary according to the type of waste material source.

Survey on cloud security Approaches

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Abstract:
Cloud computing plays significant role to perform effective data handling based on increase in the data usage in various real time applications. Data auditing is performed on certain files and check the authenticator with deduplication as it addresses the problem of key management to deduce the file content based on the malicious activities performed on the cloud. So, based on effective auditing of data and authenticator, the data integrity is checked properly and minimize the cloud storage overhead. In this work, the cloud audit and authenticator approach is propose based on certain file system, which makes the malicious user to get authenticate the data auditing verification as the existing algorithm has low security based on entropy. The propose a data auditing approach integrates with file management and authenticator of data deduplication. The propose approach performs the authenticator process and new form of file tag, which helps guarantee the effective security based on the random generation of message key. In the performance analysis, the propose approach achieves minimum computational overhead based on the authenticator and data block generation. then the security verification is performed on various attacks such as, brute force attack, man in middle attack, etc., to check whether the approach is safe or unsafe against the attacks.

Keywords: — Deduplication, Authenticator, File Auditing, Entropy, Data Block Generation.

Prediction Of Overall User Gratification In European Continent Tourism Domain

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Abstract:

The hotel sector business on its knees across the globe with the effect of COVID-19 in tourism could set the global tourism industry back 20 years. Online information is vital in the tourism hotel sector. This post-covid world is now even more essential for hotel management to increase digital interface and technology-centric businesses in a tie with E-Tourism platforms, which uses recommender systems to capture user views. A big hurdle for any hotel management in this peculiar pandemic is how to retain the business market by gaining users' faith bounce back. User opinions change pretty often now seek for hotels that offer comfortable stay and safety measures. This study tries to capture the user view upon the segments, which leads to high gratification levels earlier, valuable for E-Tourism travel platforms to recommend hotels in new dimensions.

Keywords: — Context-aware recommender systems, Hotel class, Item-Item collaborative filtering, Recommender systems, Travel platforms, Trip-Type.

Modeling of ionospheric characteristics based on canonical correlation analysis at Bangalore for the year 2017

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Abstract:

Ionospheric peak electron density (NmF2) and total electron content (TEC) are the essential measures of ionospheric variability for modeling their effects on navigation and communication system applications. The global and regional models have their limitations in predicting ionospheric variations at the low latitude Indian region, mainly due to the anomalous electron density gradients and equatorial ionization anomaly (EIA) effects. In this paper, ionospheric TEC characteristics are modelled based on canonical correlation analysis (CCA) with Global Positioning System (GPS)-TEC observations and NmF2 values at a northern low latitude station Bangalore (13.02° N and 77.57° E) during the 2017 period. The decomposed CCA modes consist of CCA patterns and their corresponding amplitudes. The short-term variations (diurnal) are reproduced by the CCA patterns, whereas the long-term variations (yearly) are reproduced by their corresponding amplitudes. The first three CCA modes represent the ionospheric features such as diurnal, sunrise and sunset enhancements, semiannual, annual, and solar-cycle variations. Further, the temporal structures of NmF2 are effectively replicated by the CCA model. NmF2 (CCA) showed relatively higher linearity (0.99) and lower RMSE (0.31 TECU), whereas NmF2 (IRI2016) showed lower linearity (0.92) and higher RMSE (1.45 TECU) with the measured-NmF2 values. Hence, the CCA approach could be an effective method for characterizing the NmF2 variations over the low latitude region.

An Effective Approach for Sub‑acute Ischemic Stroke Lesion Segmentation by Adopting Meta‑Heuristics Feature Selection Technique Along with Hybrid Naive Bayes and Sample‑Weighted Random Forest Classification

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In Earth, the most crucial illness for cause of death is ischemic stroke. Ischemic stroke arises as a result of an obstacle within a blood vessel supplying blood to the brain. In this paper, for sub-acute ischemic stroke lesion segmentation, we utilize an effective meta-heuristic feature selection technique along with hybrid Naive Bayes (NB) and sample weighted random forest (SWRF) classification approach. Initially, the features are extracted from the pre-processed image, after that, the feature selection is done by using the multi-objective enhanced firefly algorithm. To improve the classification performance, the dimensionality of the feature vectors and errors are reduced by eliminating such irrelevant and redundant features. After the feature selection process, an ensemble of NB and SWRF classifiers is used for segmenting the image. Here the NB classifier is trained and applied to estimate the weights of training samples. Then, the training samples with estimated weights are utilized to train SWRF. In our work stroke lesion segmentation is formulated as a binary classification problem where every local region is classified as either affected or non- affected area.

Keywords: Sample weighted random forest (SWRF), Naïve Bayes (NB), Classification, Feature Selection

Automatic segmentation of sub‑acute ischemic stroke lesion by using DTCWT and DBN with parameter fine tuning

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In image processing the ischemic stroke lesion segmentation is a major procedure used to extricate suspicious regions from the given MRI brain image. For classification and segmentation of MRI in this paper, we proposed a three-step framework. To remove noise the initial step utilizes a de-noising technique based on dual tree complex wavelet transform (DTCWT) test without affective the essential image features and content. In the second step, an un-supervised deep belief network (DBN) is intended for learning the unlabeled features. Here, the noise in MRI can cause a significant corruption of data that impedes the execution of DBNs. The DTCWT in the initial step enhances execution of DBNs. Additionally, we man-age the issue of DBNs parameters fine-tuning by means of a quick meta-heuristic approach named salp swarm algorithm. Based on the simulation behavior of salps this new meta-heuristic algorithm is planned to solve optimization issues. It is validated against different benchmark test functions and afterward contrasted with well known state-of-the-art optimization algorithms like genetic algorithm, particle swarm optimization, bat algorithm, artificial bee colony algorithm and cuckoo search algorithm for performance efficiency.

Keywords: Sample weighted random forest (SWRF), Naïve Bayes (NB), Classification, Feature Selection

Smart Emotional Detection Based on Analysis of Teaching Pedagogies Using Raspberry-Pi

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Abstract:

Due to high usage of technology and many other globalization processes there is a technique called detection. The word detection says out the meaning as finding out the required thing for our required aspect. Expression recognition has been a popular field of study in regime, as it plays a major role in human computer interaction. The detection applications include computer vision, biometric security, and social contact, emotional a social intelligence. The paper focuses on a brief overview of the different detection methods and their respective pros and cons in terms of analysis of teaching pedagogies. In this our main aspect is we are going to use all these detections techniques inured to find out the emotional appearance or emotional uttering of a person. Keywords: Detection, biometric security, social intelligence.

Keywords: Detection, biometric security, social intelligence.

A-FRAME OF APPROACHES IN SECURITIES AND CHALLENGES FOR INTERNET OF THINGS

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Abstract:

The Internet of Things (IoT) has become a pervasive need in today's lives. They are used in our homes, in hospitals, and outside to monitor and report environmental changes, avoid fires, and perform a variety of other useful functions. However, these advantages can come at the expense of significant privacy and security risks. Many research studies have been conducted to counteract these issues and find a better way to remove or at least minimize the threats to the user's privacy and security requirements in IoT devices. The survey is divided into three parts. All devices send information to private users without encryption. When developing and releasing IoT-based products, a greater emphasis on security is needed. Safety is often necessary to ensure that devices do not fall into the hands of malicious users. The description of IoT attacks at the device level is presented. Fixed solutions to those constraints can be given by an IoT OS. The internet of things is built on a system's communication between the network and sensor-based small devices. As a result, operating system variability is evident. Giant tech companies are combining various software and hardware with IoT operating systems. The program that ensures compatibility between IoT applications and embedded devices is known as an IoT operating system. Various challenges are discussed in all the sections

Keywords: Security, Encryption, Cryptography, Internet of Things (IoT), Privacy, Open Source, Operating System (OS)

Mood Based Movie Recommendation System for Cold Start Users

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Abstract:

 The development of the substance over-burden web makes a ton of new difficulties for clients and specialist organizations alike. To limit the showed measure of substance like films, music, or different items specialist co-ops like Netflix or Amazon are utilizing recommender frameworks which expect to direct the client box the accessible data. These frameworks gather information about the client and attempt to convey customized encounters. A large portion of the best in class recommender frameworks are utilizing a content centered approach however regularly neglect to get a handle on the idea of clients' cravings. Accordingly, a state of mind as-input model is created which consolidates the current exploration on human temperament distinguishing proof and the feeling arrangement of substance in the area of motion pictures. To coordinate with these two parts diverse AI models are assessed and a Random Forest is chosen as the fundamental coordinating with calculation. The after effects of this investigation demonstrate that the mind-set of a client can be utilized to make customized content suggestions and that it can perform better compared to an arbitrary framework.
Keywords: Recommendation System, Collaborative Filtering, Random Forest,

A biometrics based user authentication scheme for IoT Networks

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Abstract:

Client validation is getting significant in the speeding up Internet of Things (IoT) climate. With IoT a few applications and administrations have been arising in the spaces, for example, observation, medical care, security, and so forth. The administrations offered can be gotten to through savvy gadget applications by the client from anyplace, whenever and wherever. This makes security and protection basic to IoT. Besides, security is vital in IoT, to empower secure admittance to the administrations; multifaceted based verification can give high security. In this paper, a lightweight biometric based far off client verification and key understanding plan for secure admittance to IoT administrations has been proposed.
Keywords: Internet of Things , User Authentication ,Biometrics,

Improved Whale Optimization Algorithm and Convolutional neural network based Cooperative Spectrum Sensing in Cognitive Radio

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Abstract:
In this manuscript, we establish a Cognitive Radio Network (CRN) based on Cooperative Spectrum Sensors (CSS) with Improved Whale Optimization Algorithm (IWOA). In our work, the main users are provided for the support of multiple cooperating secondary users. To obtain, the computed particular exposure samples spatial and spectral correlation is utilized. To instruct the particular exposure samples of the secondary user, the convolutional neural network (CNN)-based Cooperative Spectrum Sensors (CSS) framework is used. An Improved Whale Optimization Algorithm (IWOA) is comprised to calculate the weight function of CNN optimally raises the accuracy. A weight of inertia for Whale Optimization Algorithm (WOA) used to perform the WOA (IWOA). Finally, the primary user of the CNN structure can accurately perceive. Assessment metrics are performed based on delay, delivery ratio, energy consumption, impartiality index, and performance parameters. According to the proposed method, accuracy is 95.36%
Keywords: Cognitive Radio Networks, Cooperative Spectrum Sensors, Convolutional Neural Network, Improved Whale Optimization algorithm.

Detection of malware on the internet of things and its applications depends on long short-term memory network

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Abstract:
Internet of Things (IoT) is distressing this global with its creating implementations in various pieces of growth, for instance, medicinal services, detecting, and far off checking, and so on. Cell phones and apps are executing effectively to recognize the vision of the IoT. Starting later, there is a quick increase in dangers that are added, virus assaults on cell phones. What's more, the wide abuse of the portable stage on the Internet of Things gadgets fabricates safety difficulties for instance of virus exercises. Thus, to safeguard the Internet of Things gadgets from these virus exercises, an effective Malware recognition procedure is introduced in this project. This proposed classifier is assessed with static, dynamic, and hybrid highlights. From the virus data file, these highlights are chosen to utilize the IG calculation. At that point, these chosen highlights are provided as RNN-LSTM input as the proposed classifier which groups the Malware and Benign information. Re-enactment outcome showed that RNN-LSTM gets good precision by assessing it with Hybrid highlights rather than the Static and Dynamic highlights.

Keywords: Long & Short-term memory network(LSTM), Internet of Things(IoT), Malware detection, Recurrent neural network(RNN).

Retrieve, Processing and Analysis of Global Positioning System Derived Ionospheric Total Electron Content Using IGS Products

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Abstract:

Analysis of ionospheric variability is imperative for developing the day to- day ionospheric modeling and prediction services of the global navigation satellite system (GNSS) applications. The highest-quality GNSS information is provided by the International GNSS Service (IGS) on open access to users. The GNSS information that accompanies them also covers services in support of positioning, navigation and timing information, which benefits science and society. In this paper, retrieve, processing and analysis of Global Positioning System (GPS) derived ionospheric total electron content (TEC) using the IGS Hyderabad GNSS station (17.41° N, 78.55° E; geographical). The presented work would be useful for download, process and analysis of the IGS GNSS data.

Keywords: Global navigation satellite system (GNSS) • Global Positioning System (GPS) • Total electron content (TEC) • International GNSS Service (IGS)

Deep Learning and Machine Learning Methods to Compute a Heart Disease Risk Score for Hospital Outpatient Wards

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Abstract:

Heart disease is a critical human disease that needs more attention. In this paper we propose a ranking system for management of the outpatient ward in a large hospital during peak times evaluated using machine learning and deep learning paradigms. The seed data sets for these algorithms were obtained from UCI ML data repository and cumulated together for volume. The output of this model is a score that can be used for triage and precedence purposes in the outpatient ward. The training set trained on a pipeline containing decision tree, ANN and deep learning each individually benchmarked for unbiased score. We used Keras a tensorflow framework to run deep learning models, and Scikit learn API for machine learning models. We proposed a prototype architecture to train the models for this use case. The main purpose of using Machine learning for this use case is to discover hidden patterns in the laboratory data and have a risk score, which is hard to compute in rule based systems. This risk score can be used as an additional metric to score the incoming patients and issue an appointment and waiting tokens in the outpatient wards in busy hospital settings.

Keywords: Artificial Neural Network, Application programming interface, Decision Tree Classifier, Keras, Tensor Flow

Blockchain Health Insurance Claim Processing System

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Abstract:

Clinical protection guarantee is handled by social insurance that suppliers and clearinghouses, according to the Health Insurance Portability and Accountability Act. Medical coverage capacity is defined as the number of sides or highlights it can provide. The administration offers to deal with the issues that arise in the circumstances of contract holders. Propose today a widely disseminated solution to replace clearinghouses during the medical coverage assurance process, therefore reducing the risk of information leaking in the social insurance sector. Through smart contracts for collaboration between the current exchange framework and square chain, a structure based on square chain innovation will provide a proficient and non-misleading solution for approving protection claims. The task entails verifying data from many sources and dealing with the interests of a variety of groups. Our solution is to increase patient security and assurance by establishing a HIPPA-compliant clinical data protection and assurance process that is decentralised. There's also a potential that an error or misstatement will occur at every step of the approval process. The focus then shifts to defining smart agreements for protection affirmation, as well as automating the medical coverage of guarantee process and the framework of handling health-care coverage-related trade.

Keywords: Blockchain, Hyperledger Fabric, EHR, Smart Contract

Reconfigured Ka Band Array Antenna for Fade Mitigation

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Fade is considered as most stringent parameter especially in Ku and Ka-band satellite communications, its mitigation very essential and therefore a 1X6 reconfigured linear array antenna is described in this work. The proposed linear array can reconfigure to two Ka band frequencies 20.2GHz and 30.5GHz. Reconfiguration in the array is achieved using varactor

diodes according to the received signal strength. Therefore, to maintain 99.9% link availability these types of hybrid structures are of good choice for present and future satellite communication applications.

Keywords: Array antenna, hybrid structures, linear array

An Extended E-Shaped Reconfigurable Antenna forKa-Band Applications

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An extended E-patch antenna is proposed whichoperates at multiple frequencies. The main approach of thisdesign is to make the antenna operate at 20.2GHz and 30.5GHzfrequencies of the GSAT-14 test beacons to serve link studies.To operate the proposed antenna at these two frequencies,reconfigurability technique is implemented which uses diodesto switch the operation of the antenna at different frequencies.The performance of the antenna is observed in terms of returnloss and gain parameters with different cases of study byvarying the capacitances of the diodes and voltages appliedacross the diodes.

Keywords: Array antenna, returnloss, linear array

Solar powered Monitoring and Control System for Active Plant Wall using IoT and Cloud

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*Abstract-*Plants play an important role in maintaining the climate of any place especially indoor areas. The state of art has shown that Active Plant Walls can effectively and efficiently reduce the levels of harmful gases present in the indoor environment and help balance it. Here we require a monitoring and control system to maintain the active plant walls. The available systems are costly in manner and affordability of the systems make them unavailable to low cost and friendly environment systems. So, in this paper a monitoring and control system is proposed which takes the advantage of solar and conventionally methods for domestic use. In this model, open-source platforms Adafruit, If This Then That (IFTTT) and google assistant for the user interface. This model makes use of IoT and commonly available sensors with sufficient accuracy suitable for a friendly environment system thereby reducing the cost of the system. The proposed model is low cost, self-sufficient, user friendly and environment friendly system.

PerformanceAnalysis of Co-existence between IEEE 802.11 and IEEE 802.16 Systems

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Abstract: After the advent of cellular standards for mobile wireless voice telephony and data transfer, IEEE 802.11 and IEEE 802.16 standards evolved for wireless broadband data transfer. The IEEE 802.11 replaced the wired LAN and IEEE 802.16 was to wireless point-to-point provide broadband data transfer. IEEE 802.11 operates in 2.4 GHz and 5 GHz band whereas IEEE 802.11 which was initially designed to operate on licensed band, later switched to 2-11 GHz band. However, both these standards used 5 GHz unlicensed band for transmission causing the possible overlap of channels. The designed protocols fairly allow the sharing on ad-hoc basis. IEEE 802.11 operated in distributed coordination mode using Distributed Coordination Function (DCF) and point coordinated mode using a dedicated coordinator node called as Point Coordination Function (PCF). However, DCF mode allows spectrum sharing for multiple users. Both standards were not designed for coexistence and thereby they may cause interference to each other, degrading their performance. Mechanisms can be designed at various layers such as MAC or PHY to enable the coexistence with desired QoS.

In this paper, performance analysis of the impact of possible interference between IEEE 802.11 and IEEE 802.16 devices is presented i.e multiple homogeneous systems and also heterogeneous systems. An NS2 based simulations are used to analyze the impact of interference on performance. The simulation results indicates that the performance of both the systems degrade drastically which results in degradation spectral efficiency.

A Discoid UWB antenna with dual on-demand band rejection characteristics

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Abstract:

A straightforward reconfigurable roundabout monopole recieving wire with controllable band stop qualities is planned and manufactured. In this proposed model to accomplish bond score attributes, two turned around U-formed openings one is carved on the fix and another is on feed line. Moreover, to control band stop attributes two p-I-n diodes are embedded across the spaces. The space length is constrained by ON/OFF condition of the diode, When the diode is in ON state space is partitioned as two sections, so there is no band score qualities. This recieving wire is built on 38X38X1.6 mm3 FR4 substrate with dielectric consistent 4.4 and misfortune digression 0.019. This proposed recieving wire dismisses the obstruction from Wi-MAX (3300-3700 MHz) and WLAN (5150-5900 MHz) at a return misfortune - 4.8dB and - 4.7dB individually. Recreated and test results accomplished for this recieving wire shows great radiation attributes inside the UWB range.

Key words: Ultra-wide Band, Band-notched, Reconfigurable, PIN diode.

A circular filtenna with on-demand band stop characteristics

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Abstract:

We propound the plan of a filtenna with band dismissal area for an Ultra-wide band (UWB). To carry out band score attributes, the filtenna is taken care of with 50ω microstrip feed line and U formed opening are bound together with the plan. To eliminate the electromagnetic obstruction by remote neighbourhood (WLAN), one band score is carried out within the framework. By changing the U shape space plan boundary, the band score is gotten. The filtenna planned is of 36mm x 39.3mm measurements. The filtenna is planned in High Frequency Structure Simulator (HFSS) to notice its presentation and results.

Key words: Ultra-wide Band, Filtenna, WLAN, Band-notched

Speech feature analysis for speaker diarization

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Abstract

Speech is that the most vital communication among humans.Processing of speech signal has many strategies including speech coding, speaker recognition, speaker verification, etc. Speaker diarization is that the pre-processing stage for several applications of speaker recognition systems. Speaker Diarization is that the mission of determining "who Spoke when" for any sound recording that carries an unknown quantity of records and an unknown sort of audio systems. Speaker diarization has come to be achief era for several tasks like navigation, retrieval, or higher-level interference on audio data. It mainly performs three operations feature extraction, voice activity detection, and classification. during this paper, we've reviewed the few speaker diarization Techniques. the fashionable speaker diarization structures finished nice outcomes. during this paper, few speaker diarization device performances are evaluated for Diarization mistakes, Tracking time, and warning.

Keywords: Speaker Diarization, MFCC, Multi-kernel MFCC, Tangent weighted MFCC, XLPS, HXLPS.

Speaker recognition using Spectral features

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Speaker Recognition is that the computing task of confirmatory a user‟ s claimed identity mistreatment characteristics extracted from their voices. this system is one among the foremost helpful and a mode biometric recognition techniques within the world particularly connected to areas therein security might be a serious concern. It are often used for authentication, police investigation , rhetorical speaker recognition and sort of connected activities. the tactic of Speaker recognition consists of two modules particularly feature extraction and have matching. Feature extraction is that the tactic during which we've a bent to extract a small low quantity of data from the voice signal which will later be wont to represent every speaker. Feature matching involves identification of the unknown speaker by scrutiny the extracted options from his/her voice input with those from a set of identified speakers. Our projected work consists of truncating a recorded voice signal, framing it, passing it through a window perform, conniving the Short Term FFT, extracting its options and Matching it with a hold on guide. Cepstral constant Calculation and Mel frequency Cepstral Coefficients (MFCC) square measure applied for feature extraction purpose. Vector Quantization via Linde-Buzo-Gray algorithm is employed for generating guide and have matching purpose

Efficient Hardware Implementation of Edge-oriented Demosaicking using Vivado HLS

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Abstract

Abstract—Colour filter array interpolation, also known as demosaicking and 'debayering,' is a crucial process in technology still camera systems for image restoration. This paper introduces an effective very-large-scale integration (VLSI) architecture for colour interpolation, as well as an edge-oriented demosaicking procedure. To capture the colour difference and edges, the architecture employs basic operations (addition, subtraction, transfer, and comparator), but also nearest nearby pixels. The proposed design only needs four lines of line buffering, resulting in a low hardware cost. Extensive tests showed that the proposed technique retained edge features and worked well quantify. Including performances of high visual consistency The proposed architecture achieved better image quality than previous VLSI implementations. According to the synthesis findings, the proposed design will process 200 million samples per second using Taiwan Semiconductor Manufacturing Company's 0.18-m technology

Keywords: Image quality, vlsi