Proceeding of

Micro2022

9th **International Conference on**

Microelectronics, Circuits & Systems

25th and 26th of June, 2022, Jaipur, Rajasthan.

Organizers:
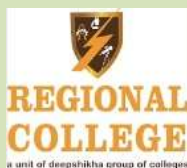University of Technology, Jaipur, Rajasthan.
Regional College for Education Research & Technology, Jaipur.
Applied Computer Technology, Kolkata, West Bengal, India.
Website: https://actsoft.org/micro2022

In Association with:
International Association of Science, Technology and Management

Micro2022

9th international conference on

Microelectronics, Circuits and Systems

June 25th and 26th 2022

Venue: Online conference

Proceeding Book with abstract of papers

Published dates: 25th June 2022

Published by: Dulal Acharjee, Director, Applied Computer Technology,

53 Teachers' Colony, Agarpara, Kolkata-700109, India

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Keynote Speaker:

Prof. Pierluigi Siano:

Professor and Scientific Director, Smart Grids and Smart Cities Laboratory, Department of Management & Innovation Systems, University of Salerno, Salerno, Italy. Pierluigi Siano (M'09–SM'14) received the M.Sc. degree in electronic engineering and the Ph.D. degree in information and electrical engineering from the University of Salerno, Salerno, Italy, in 2001 and 2006, respectively. He is a Professor and Scientific Director of the Smart Grids and Smart Cities Laboratory with the Department of Management & Innovation Systems, University of Salerno. His research activities are centered on demand response, on energy management, on the integration of distributed energy resources in smart grids, on electricity markets and on planning and management of power systems. In these research fields he has co-authored more than 500 articles including more than 300 international journal papers that received in Scopus more than 9700 citations with an H-index equal to 49. In 2019 and 2020 he received the award as Highly cited Researcher by ISI Web of Science Group. He has been the Chair of the IES TC on Smart Grids. He is Editor for the Power & Energy Society Section of IEEE Access, IEEE TRANSACTIONS ON INDUSTRIAL INFORMATICS, IEEE TRANSACTIONS ON INDUSTRIAL ELECTRONICS, Open Journal of the IEEE IES, IET Smart Grid and IET Renewable Power Generation.

Keynote Speaker:

Francesco De Leonardis:

Associate professor Electronics, IEEE Member, Associate Editor of Sensors (MDPI), Department of Electrical and Information Engineering, Politecnico di Bari, Italy.

The research interests of Francesco De Leonardis are in the field of the integrated Optoelectronics, Nanophotonics and Nonlinear Photonics. In particular he developed, giving significant and original improvements, the physical-mathematical modelling, the design and the simulations of both passive and active photonic devices for a large number of applications, such as communications, sensing, optical filtering, quantum and space applications. He mainly adopted semiconductor technological platforms such as GaAs and InP, or Group IV (Si, Ge, SiGe e GeSn alloy). Moreover, he developed physical-mathematical models in order to individuate the design rules of nonlinear photonic devices for applications such as: the all-optical signal processing, on-chip wavelength generation in both near and mid infrared, to quantum devices for high performance sensing and detection and generation of entangled photons in integrated platforms. Many activities are carried out in collaboration with prestigious national and international research groups: University of Massachusetts, Advanced Technology Institute, University of Surrey, Guildford (UK), Dept of Electronics and Electrical Engineering, University of Glasgow, UK, Department of Physics, University of Trento, Rzhanov Institute of Semiconductor Physics, Russian Academy of Sciences, Novosibirsk, Russia, National Institute of Optics.

Invited Speaker:

Mohamed Sultan Mohamed Ali:

Mohamed Sultan Mohamed Ali received the B.Eng. and M.Eng. degrees in electrical engineering from Universiti Teknologi Malaysia, Skudai, Johor, Malaysia, in 2006 and 2008, respectively, and the Ph.D. degree in electrical and computer engineering from the Department of Electrical and Computer Engineering, The University of British Columbia, Vancouver, BC, Canada, in 2012. From 2001 to 2007, he held various engineering positions at Flextronics International Ltd. and Jabil Circuit, Inc. He is currently an Associate Professor in the Faculty of Electrical Engineering, Universiti Teknologi Malaysia. Dr. Mohamed Sultan serves as a consultant for Flextronics Malaysia in failure analysis division and is actively involved in many industrial projects. He was awarded Chartered Engineer (C.Eng.) and Professional Engineer (P.Eng.) by United Kingdom Engineering Council and Board of Engineers Malaysia, respectively. Dr. Mohamed Sultan has published over 150 technical papers in MEMS and related fields. He has also served as the editor of 6 books in Mechatronics and Microsystems. His research interests are in the areas of MEMS, nanotechnology, and also in micro/ nanofabrication technologies, including wireless microdevices, integration of microstructures, and microrobotics.

Invited Speaker:

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Computer skills: • Microsoft Office / MS Project / Autocad / Eplan / Matlab-Simulink / ANSYS - Simplorer / LaTex (TexStudio, JabRef)

Foreign languages: • English, Russian – good, german – basic.

Paper ID: 88

Photovoltaic performance of p-GaAsP/i-GaAs/n-GaAsP solar cells

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ABSTRACT

In this work, we investigate the opto-electronic performance of our proposed p-GaAsP/i-GaAs/n-GaAsP solar cell structure with reference to the thickness of the intrinsic layer ranging from 40 to 200 nm and molar content of As from 70% to 95% in the GaAsP alloy in terms of open circuit voltage (V_{oc}), short circuit current density (J_{sc}), fill-factor and power conversion efficiency (PCE). The optimized solar cell featuring i-layer thickness of 60 nm and 90% molar content of As in GaAsP alloy yields short circuit current density (J_{sc}) of 24.44 mA/cm^2, open circuit voltage (V_{oc}) of 1.05 V, fill-factor (FF) of 0.87, and power conversion efficiency (PCE) of 22.31% at AMl.5G solar spectrum. Notably, the optimized device exhibits the best performance in terms of PCE which is 11.55% higher as compared to that for conventional GaAsP/Si tandem solar cell.

Keywords: GaAsP/GaAs pin solar cell, open circuit voltage, power conversion efficiency, series resistance, short circuit current density.

Paper ID: 07

Design and Comparative Study on Improvement of Drain Current in Junctionless Charge Plasma TFET

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ABSTRACT

This article presents a new design of charge plasma junction less tunnel field effect transistor (CP JLTFET) with improved ON current, I_{on}/I_{off}, and V_{Th}. For the ease of fabrication, source and drain regions are induced in intrinsic silicon material using proper metal work functions. Several device performance parameters are compared with the existing CP JLTFET. The rate of tunneling of electrons is found more in case of proposed CP JLTFET. This increased the ON state performance of device i.e ON drive current, potential and electric field. The increase in tunneling of electrons is mainly due to high recombination of carriers in the channel region. The performance analysis of all the devices is carried out in ATLAS device simulator. The proposed CP JLTFET has shown improved I_{on} (3.14 X 10^{-7} A), reduced OFF current (6.45 X 10^{-18} A), increased I_{on}/I_{off} (4.87 X 10^{10}). These excellent performance parameters of the proposed device can be used for sensing application of biomolecules by introducing a cavity in the device.

Keywords— Charge plasma, work function, tunneling, electric field, ATLAS, recombination, biomolecules.

Paper ID: 26

Hyperspectral Remote Sensing Using Dimensionality Reduction Through CNN

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 Abstract:

Domains such as text, images etc. contain large amounts of redundancies and ambiguities among the attributes which result in considerable noise effects (i.e., the data is high dimension). Retrieving the data from high dimensional datasets is a big challenge. Dimensionality reduction techniques have been a successful avenue for automatically extracting the latent concepts by removing the noise and reducing the complexity in processing the high dimensional data. Hyper spectral image classification is widely used for the analysis of remotely sensed images. This Project aims to find the research gap in the existing dimensionality reduction methodologies and uses feature extraction or features election techniques using unsupervised machine learning approaches. The Hyper spectral Image (HSI) contains different wavelength data which are hundreds in number of the same spatial area. Here the spectral images contain vast information from the electromagnetic spectrum. The huge data increases complexity. The solution is to find research gap in the existing dimensionality reduction methodologies and to use the dimensionality reduction techniques for feature extraction or feature selection from machine learning approaches for efficient image classification. To use a robust algorithm for feature extraction techniques from machine learning approaches for efficient image classification.

Keywords: Hyperspectral, classification, dimensionality reduction, remote sensing

Paper ID: 29

Unmanned Level Crossing Using IR Sensor

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ABSTRACT

In this paper, a different technique to open or close the railway gate without taking help of a person has been introduced. The main objective is to introduce a low costing level crossing system to prevent more railway accidents. Now-a-days "Railway-Accident" is very common term for us. To handle this harsh situation and to overcome the problem this system has been developed in a very simple manner by using Arduino, IR sensor, L293D, DC motor. An IR sensor is to be installed first in the proposed system which will produce a light when any object gain access near the parameter of sensing body. After that it will send information to the system and then the barrier will be closed. A same system has to be installed on the other end too.

Keywords—Sensor, IR Sensor, Level crossing, Unmanned, Arduino, L293D, Railway Accident.

Paper ID: 76

FPGA Implementation of Proposed Number Plate Localization Algorithm based on YOLO v2 Network

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ABSTRACT:

Accurate object detection and recognition define the efficiency and accuracy of many machine learning and artificial intelligent related algorithms. Direct hardware Implementation of such types of algorithms helps to improve accuracy and efficiency of object detection for various applications. The object detection and recognition algorithm require a set of complex algorithms and a series of filtering techniques to work beyond the boundary conditions and hardware implementation of such a type of algorithm requires a large number of resources and large computation time. The use of the YOLOv2 network in place of filtration and complex algorithms provides the best solution to work in overcoming the fixed boundary conditions.
Here in this paper the authors proposed the YOLOv2 Network for object detection and proposed a unique algorithm for localisation to find the region of interest (ROI) that helps to resize and confine the object area. As proposed, the algorithm confined and produced ROI which is the part of the original image where the object lies, resulting in drastically reducing the required resources and the time of execution. The proposed work is directly and easily implementable on an FPGA hardware board that provides high accuracy, efficiency, low execution time and a smaller number of required hardware resources. For the proof of concept and comparison of the proposed work is implemented on the Xilinx Zynq-Z7010 FPGA board and on various software platforms. The results on the targeted dataset shows that the traditional algorithm approach has 20-30% accuracy beyond the fixed boundary conditions and the proposed work achieved 60-70% accuracy in finding ROI beyond the fixed boundary conditions. Also, the proposed algorithm requires only 35% hardware resources at 3x speed as compared with the traditional approach.

Paper ID: 09

A Novel VLSI Architecture Of AES Using MAC(MAC-AES) Algorithm For Reduced Delay

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ABSTRACT

Data transport is the most important aspect of networks that require several nodes to collaborate. The data packets may be misguided by anybody, so data security is vital for data communication. The AES is commonly used block encrypt-decrypt algorithm. This technique is used in every sector all over the globe, and it has its own structure for encryption and decryption sensitive information. Hackers will have a difficult time in decrypting data, when encrypted with the AES algorithm. There is no proof that this algorithm is flawed as of now. The AES algorithm may handle keys of 128, 192, or 256 bits in length. This paper was written in the study to meet the most security requirements. AES with CMAC is suggested in this study by creating a novel equation for data transmission across the MAES.

Paper ID: 23

Analog/RF Performance Analysis for Cylindrical Gate Stacked Junction-less Accumulation Mode MOSFET

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ABSTRACT
In the present work, gate stack engineering is used for cylindrical junction-less accumulation mode (JAM) MOSFET to improve the analog/RF characteristics. The analog/RF parameters are extracted using ATLAS 3D device simulator. The comparative analysis of these analog/RF parameters is done with junction-less accumulation mode (JAM) MOSFET. The gate stack engineering shows the improvements in output resistance (R_{out}), transconductance frequency product (TFP), gain frequency product (GFP), transconductance (g_m), transconductance generation factor (TGF), gain bandwidth product (GBWP), gain transconductance frequency product (GTFP), and cut off frequency (f_T). Further, 20nm CMOS common-source voltage amplifier circuit using GSJAM has also been designed for 20mV and 1GHz input signal.

Keywords: Cylindrical MOSFET, GSJAM, Analog/RF parameters.

Paper ID: 04

A Novel Method for Diabetes Classification and Prediction With Pycaret

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Abstract— The incredible advances in biotechnology and public healthcare infrastructures have resulted in a massive output of vital and sensitive healthcare data. Many fascinating trends are discovered using intelligent data analysis approaches for the early identification and prevention of numerous severe illnesses. Diabetes mellitus is a highly hazardous condition since it leads to other deadly diseases such as heart, kidney, and nerve damage. In this research study, a low code Pycaret machine learning technique is used for diabetes categorization, detection, and prediction. On applying Pycaret various classifiers having different accuracies are produced and shown in the result section. After hyper tuning of various classifiers, it is found that gradient boosting classifier is best which further tuned and accuracy about 90% is achieved which is highest among all existing ML classifiers.
Keywords— Diabetics, healthcare, machine learning, deep learning

Paper ID: 05

Design, Simulation and Analysis of Capacitive Shunt RF MEMS Switch for Low Frequency Applications

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ABSTRACT:
Design, simulation, and analysis of the RF MEMS shunt switch is presented in this paper. We have performed a theoretical calculation to analyze the spring constant and pull-in voltage of switch by varying the materials, thickness of beam and, air gap. The Proper material selection approach for the dielectric layer for capacitive shunt MEMS switches ia very impoartnat. In order to improve the stability and lifetime of the switch various performance indices are evaluated in this paper.Those performance indices are depends upon dielectric material indices. The switching time of the proposed RF MEMS switch is obtained as 4.75ns for Gold Materials. The pull in voltage of the gold is 7.17V displacement is observed as 0.17 µm. The both upstate and downstate capacitance are 2.14×10^{-14}pF and 5.25×10^{-14}fF and stress is observed 3.31 MPa these are evaluated at pull-in voltage using the COMSOL Multiphysics. In electromagnetic analysis, the return loss (S_{11}) and insertion loss (S_{12}) are evaluated by varying the air gap between beam and signal line, and electromagnetic analysis of the proposed switch is carried out by varying the dielectric thickness. For the main switch the return and insertion losses are 33.5dB and 0.0608dB. and isolation is 15.005dB. All these values are observed at 3 GHz.

Keywords: Materials, Pull-in Voltage, Return loss, Isolation, Insertion loss, RF MEMS Switch, dielectric layer, beam layer.

Paper ID: 08

Portal For Farmers and Users To Buy and Sell Goods

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Abstract

Many changes in the field markets in agriculture of our country which is electronic market, Online ware housing loans, contract farming and many more, are growing opportunities for new formats of market .New features that are added in this portal are Multiple users can access the portal at the same time. Farmers and users have same login form they should specify while registering into the portal and whenever they login into the form they will be directly redirecting to their original form. Unauthorized users can not access the portal .Fresh vegetables will be displayed first and old vegetables will be displayed later on based on their freshness. Many changes in our country's agricultural field markets, such as electronic markets, online warehousing, loans, contract farming, and others, are creating potential for new market formats. The following are some of the new features that have been added to this portal: The portal can be used by multiple users at the same time. Farmers and users both have the same login form, which they must specify when registering for the portal, and when they log in, they will be redirected to their original form. The freshest vegetables will be shown first, followed by the oldest vegetables. Later, based on their freshness, they will be exhibited.

Keywords- *Agriculture, E-Auction, SMS*

Paper ID: 10

32-Bit Application Complementary Pass Transistor Logic For Brent Kung Adder

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ABSTRACT

Adders are essential components of every digital system. Using an effective adder design that balances speed and space makes improving the system's performance a lot easier. Along with the speed-space trade-off, power consumption is critical in today's society. The first option is always low-power, high-performance gadgets. Parallel prefix adders are frequently used in the realm of digital design. This is due to the fact that the Adders can be created in many ways. Brent Kung Adder is a low-power adder that uses little circuitry to get the required result. Complementary Pass Transistor Logic helps to improve the design's performance by using the multiplexer approach to construct the different cells. The 16-bit architecture's physical implementation is extended to 32 bits.

Paper ID: 100

Profiling of Dual Unit Induction Heating System with Multi Load by Asymmetrical Duty Cycle Control

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ABSTRACT

Now a day's multiple load topologies for induction heating become advantageous over single load topologies due to uniform heat distribution. This paper presents a multi-load two-unit half-bridge inverter, where each unit consists of three loads. The switching frequency for each unit is the same and they are operated with an asymmetrical duty cycle (ADC) control technique. The power of each unit can be independently controlled and the rate of heat flow has been represented as a function of the current through the working coil. Thus one can heat the required volume of the cylindrical solid workpiece. Multiple unit half-bridge topologies increase the reliability and reduce the switching component count. Thus the configuration is cost-effective. The proposed inverter configuration can be expanded to multiple loads and multiple units.

Keywords: Multiple loads, multiple units, half-bridge series resonant inverter, induction heating, asymmetrical duty cycle control, electromagnetic thermal equation, heat conduction.

Paper ID: 12

Design and analysis of RF MEMS Switch Integration for 5G Applications

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ABSTRACT

This paper presents the design and simulations of the RF MEMS shunt switch integrated with the patch antenna by the HFSS tool. The switch is designed and simulated in the COMSOL Multiphysics tool. The switch has a low pull-in voltage of 1.9 V and fast switching time of 1.82 µs, the return loss of the proposed antenna with RF MEMS switch exhibits -21.57 dB at 49 GHz, -19.42 dB at 57 GHz, the device is reconfigurable at these frequency ranges. So, the performance of the proposed device is utilized for 5G applications.

*Keywords***:** Rectangular Patch, RF MEMS Shunt switch, Return loss.

Paper ID: 24

Design and Analysis of Rad-Hard 10T SRAM Cell for Space & Terrestrial Applications

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ABSTRACT

Soft errors are the most promising issue in space and terrestrial-related IC applications. Especially in memory cells, these soft errors flip the stored bit when the collected charge is greater than the critical charge. This bit flipping causes diminished stability and reliability of the memory architecture. In this paper, we proposed a soft error tolerate 10T SRAM (STS-10T) cell that mitigates soft error issues even at space temperature conditions. By comparing to the conventional 6T and other 10T memory cells, the proposed memory cell achieves better stability and reliability.

Keywords— Soft error, terrestrial, integrated circuits (IC), collected charge, critical charge, stability, reliability, memory architecture, SRAM, space temperature condition

Paper ID: 13

A Hybrid Segmentation Approaches To Detect Breast Cancer Using Machine Intelligence Techniques

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ABSTRACT

Breast cancer is now the second most significant cause of mortality in women, early identification is critical to lowering mortality risk. Female breasts are questioned in establishing tumors; which is maintained through existing examination from 2016 exposed that 2.9 million females all over the globe has presently thought of in connection with breast tumor cells each year. Radiologists can spot irregularities more quickly using computer-assisted detecting. Imaging techniques provide information that can be used to identify and diagnose a variety of diseases and irregularities. Various mechanisms enable radiologists to examine the ultrastructure, and all these technologies have generated considerable interest in a variety of studies. All of these methods has a significant impact in some medical disciplines. This research intends to give a review of novel machine learning techniques for identifying and categorizing breast cancer, as well as an analysis of advancements in the field. This therapy treatment of an individual with a breast tumour is unreasonable also at the same time, provided the value along with the worth of the preservation of the physical condition along with the health of the inhabitant, the avoidance of breast tumor cells has effectively transformed into consideration in public physical condition along with health. This works shows how multi-modality imaging can be used to classify breast cancer. Mechanisms designed to make the identification of malignancies, non-tumors, and dense formations in several imaging systems are also discussed. Moreover, this work discusses potential trends and problems in breast cancer classification and identification.
Keywords: Breast cancer, convolution neural network, deep learning, machine learning, medical image analysis

Paper ID: 11

Successive Cancellation Implementation by VLSI (References) A Polar Decoder is a device that is used to decode polar information.

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ABSTRACT:

Polar codes have been one of the most popular capacities achieving Error Correction Codes because to their simple low encoding and decoding complexity (ECC). Using the low complexity successive cancellation (SC) decoding technique, they are likely to achieve the theoretical capacity of discrete memoryless channels. However, in the few previous consecutive cancellation polar decoder implementations, the needed long code length causes significant decoding latency. With a new polar decoder known as the 2b-SC-Precomputation decoder, you can reduce latency from $(2n-1)$ to $((3n/4)-1)$ without losing performance. Furthermore, when the throughput improves, our technique's decoding time decreases considerably. The results of the simulation show considerable reductions in latency and throughput, as well as ASIC report synthesis outcomes.
Key words: ECC, SC, ASIC.

Paper ID: 03

A Paradigm of Diodes to Resonant Tunneling Diode

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ABSTRACT

This Paper works on study of resonant tunnelling diodes. This paper mainly focuses on study of diodes then gradually studied the importance of resonant tunneling diodes. The V – I characteristics of Resonant Tunneling Diode is also studied.

Keywords— Diode, Tunnel Diode, Resonant-Tunnel Diode.

Paper ID: 22

Design, Analysis, and Simulation of an Pressure Sensor for Continuous Glucose Monitoring System

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Abstract —Diabetes is a metabolic disorder, if a person is once diagnosed it's not resolvable and is identified by variations in glucose concentration levels. We are designing an osmotic pressure sensor for the continuous glucose monitoring system. For this microbridge and microcantilever with different principles are optimized and suitable is integrated to pressure sensor by using FEM tool, the performance analysis of the pressure sensor are analyzed on the aspects of sensitivity and non-linearity.

Keywords: BIO-MEMS, Pressure sensor, Osmotic pressure, Non-Linearity, Sensitivity

Paper ID: 30

A Novelty Hybrid Technique for Big Mart Sales Prediction

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ABSTRACT

Now a day's, every business is depending upon the sales prediction in which they are knowing the sales of a particular product in the future. By applying some techniques and methods to the data set available in the business records that are previous sales data of a product. Previously that is few couples of years back there few scientists introduced sales prediction and they used machine learning techniques and algorithms to get the future prediction of a particular product to increase the business. But the predictions that they got by using single techniques are not so accurate that the business may fail to get success by considering the prediction value. So this paper to proposed the new hybrid techniques that combine 2, 3 techniques that going give accurately predicted value naming as "novelty hybrid techniques for big mart sales prediction", the machine learning algorithms like linear regression, support vector regression, and cubist that are giving the accurately predicted value to give immersive sales growth to the business.
Keywords: Sales Prediction, Hybrid Techniques, Machine Learning Algorithms, Linear Regression, Support Vector Regression, Cubist.

Paper ID: 25

Detection Of Cyber Attack In Network Using Machine Learning Techniques

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ABSTRACT:

Improved PC and correspondence innovations in comparison to the past have given broad and propelled changes. However, new innovations give people, organizations, and governments tremendous advantages, but they also cause problems for those who are working against them. Among these are the security of critical data, safeguards for storing and retrieving information, and ease of access to information. Digital fear-based oppression is a major problem in today's world, depending on how these issues play out. Many people and organizations have been affected by digital fear, which has caused many issues. Different groups, such as criminal associations, skilled people, and digital activists may be frightened enough to undermine openness and national security. The development of IDS was made to guard against such digital assaults as well. This Project is the solution for such kind of problems. By using this project we can detect the kind of Cyber attacks which can be attacked on the network.
Keywords: SVM, CNN, IDS, Random Forest, ANN.

Paper ID: 27

Representation of Reversible Logic Gate By Using Single Spin Logic

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ABSTRACT

In present days, CMOS technology is very popular in designing of electronic circuitry. But due to the scaling down property, CMOS also suffers from high power dissipation like many more difficulties. So, then a new charge independent device like spintronic device has become very popular for it's challenging features like high speed, low power consuming, highest integration density, low power dissipation and which is only 1/106 compared to conventional CMOS topology. Again, Reversible logic designing has become very much useful as it offers very low power consumption, no information lost like features and make it suitable for low power CMOS designing and so on. In the present paper, an initiative has been made to design some Reversible gates using Single Spin Logic (SSL).

Keywords—Complementary Metal-oxide Semiconductor (CMOS), Single Spin Logic (SSL), Reversible logic circuitry, electron spin mobility, garbage value.

Paper ID: 32

Circuit-Level Design of Radiation Tolerant Memory Cell

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ABSTRACT

In this paper, a 10-transistor radiation tolerant SRAM cell has been proposed in 32-nm CMOS technology. The proposed 10T SRAM cell offers higher immunity to soft error than all other compared cell. The proposed 10T cell consumes 4.2% and 35.3% lower hold power than RHMD10T and QUCCE10T SRAM cell, respectively. It exhibits 100% and 18% lower write delay compared to RHMD10T and QUCCE10T SRAM cells. The proposed circuit has higher RSNM and consumes lesser silicon area than other comparison cells. However, these improvements are achieved at the cost of marginal degradation of read delay (16% and 5% as compared to RHMD10T and QUCCE10T, respectively). Hence, the proposed 10T SRAM cell is a promising candidate for future highly reliable Terrestrial application.

A Low Power and Static Noise Margin Enhanced Reliable 8T SRAM Cell:

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ABSTRACT

A low leakage power 8T (LP8T) SRAM cell with high read and write stability is explored in this paper. The proposed LP8T (PLP8T) SRAM cell have separate bit lines for read and write operation. So that, the read disturbance is eliminated. Furthermore, read stability is enhanced with the utilization of schmitt-trigger (ST) inverter. Moreover, the write assist technique can enhance the writing capacity. The PLP8T SRAM cell offers $1.4\times$, $2.3\times$, $1.3\times$ enhancement in HSNM, RSNM and WSNM comparing to conventional-6T SRAM. The read access time and write access time of PLP8T SRAM is lowered by 53.24% and 42.18% respectively. The read and write power of PLP8T SRAM is lowered by 50% comparing to conventional-6T SRAM. In addition, there will be a sufficient improvement when compared to chang10T, HSWA9T, WRE9T and ST11T SRAM cells.
Keywords— SRAM (static random-access memory), Sub threshold, Static Noise Margin, ultra-low power.

Analog Performance Analysis for High Frequency Applications using Gate - Stack Dual Metal (DM) Nanowire FET (4H-SiC)

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ABSTRACT

In this paper, the analog performance characteristics of Gate-Stack DM NW FET(4H-SiC) have been equated with Nanowire field effect transistor (NW FET) (Si), Nanowire field effect transistor (NW FET) (SiC) and dual metal nanowire field effect transistor (DM NW FET) (SiC). This paper combines the advantages of dielectric material having high-k-, HfO_2 (Hafnium oxide) and Al_2O_3 (Aluminium oxide) to attain a higher I_{on}/I_{off} ratio, Intrinsic gain (g_m/g_d), GFP (gain frequency product), GBWP (gain bandwidth product), TFP (transconductance frequency product), GTFP (gain transconductance frequency product), early voltage (V_{ea}) and maximum frequency (f_{max}). This is being deduced further that our proposed device analysis exhibits improved performance characteristics like UPG (unilateral power gain), MTPG (maximum transducer power gain) and all of these factors contribute to its use in high-frequency and high-power applications.
Index Terms— I_{off} current; TFP; GTFP; GFP; GBWP; Gate-Stack;4H-SiC.

Paper ID: 36

Effect of Dielectric Engineering on Double Gate Ferroelectric Junctionless (DGFJL) FET for enhanced analog performance

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ABSTRACT

In this manuscript dielectric engineered gate stack double - gate ferroelectric junctionless field effect transistor (DGFJL FET) has been proposed where the dielectric layer of traditional SiO_2 has been replaced by high K dielectric HfO_2 to minimize the leakage current. In this manuscript, symmetric double gate with a ferroelectric layer of Si: HfO_2 has been proposed. To establish the superiority of our proposed device, a fair simulation comparison has been carried out between DGFJL FET with HfO_2 as dielectric and DGFJL FET with SiO_2 as dielectric. The impact of negative capacitance phenomenon of Ferrolectric layer on DGFJL FET with dielectric layers foreseeing various parameters like drain current (I_{ds}), transconductance (g_m), conducance (g_d), capacitance (C_{GG}), Transconductance Frequency Product (TFP), Transconductance Generation Factor (TGF), f_T (Cut off frequency) have been observed. It has been so found that DGFJL FET with HfO_2 has better f_T which enhances the devices applicability for high frequency applications. ATLAS-3D simulator has been utilized for simulations.

Index Terms— Double gate, Ferroelectric material, Junctionless transistor, High K dielectric, Cut off frequency.

Paper ID: 41

Collating Weather And Grocery Cost

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ABSTRACT

The main idea behind collating the weather data and grocery cost is to show the dependency of prices of fruits and vegetables based on climatic conditions at different geographical sections. Firstly, using web scraping we will extract the data from the website. Usually E-commerce sites, websites, and some others do provide API to get information. In other cases, where we have to scrape other websites to get data, but when API is not available, the main idea or way to get data from the web is Web scraping. We do extract the weather data from the forecast website and Grocery related data from the grocery site that might be fruits or vegetables and converting typically into a central local database or spreadsheet, for later research or analysis. After extracting the weather and grocery data in the form of Excel sheet or CSV file, for later research or analysis that is to show the dependency of prices of the vegetables and fruits on the climatic conditions.

Index Terms—Electronic-commerce sites, Application Pro- gramming Interface,Web Scrapping

Paper ID: 103

Evaluation of Analog/RF metrics of a Cylindrical Dual Metal Gate SOI-Schottky Barrier MOSFET

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ABSTRACT

This work uses gate material engineering to improve the analog/RF characteristics of cylindrical silicon Schottky Barrier (SOISB) MOSFET. The dual metal gate (DMG) is used to suppress the short channel effects and enhance the electrical characteristics of the MOSFET. In the proposed architecture, two gates, G1 and G2, with work functions of 4.1eV and 4.5, are amalgamate analog/RF performance parameters are extracted for DMG SOISB MOSFET and compared with conventional MOSFET. The comparison result shows an on- (Ion) improvement by 14.4367% and increased resistance (Rout) by 30.4448% for DMG SOISB MOSFET compared with SOISB MOSFET. Keywords: Dual metal gate, SOISB MOSFET, linearity, and analog/RF.

Paper ID: 42

Traffic Scene In Different Weather Conditions Using Supervised Learning

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ABSTRACT:

Traffic accidents have been more common in recent years. Because of various conditions such as low light, night periods, and various weather conditions such as fog, snow, and rainy days. Our study focuses on low visibility situations. The current automated driver assistance system aids in the prevention of traffic accidents. Normally, while we travel in any vehicle, accidents can occur owing to limited visibility situations. As a result, an automatic driver assistance system comes into play.
  We use categorization techniques to improve vision in any situation. The activity or process of classifying something is known as classification. Predictive modeling challenges including classification are referred to as classification problems. First, we'll use extraction procedures to clarify the image or vision. Second, locate the object in the image using various algorithms and select the best algorithm. In any situation, the suggested approach provides clear detections.
KEYWORDS: Supervised learning, visual feature complex weather conditions, classification

Paper ID: 37

Modeling, Proposal and Investigation of Perforated Membrane Capacitive Micromachined Ultrasonic Transducer

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ABSTRACT

Capacitive Micromachined Ultrasonic Transducers (CMUTs) have potential applications in non-contact, non-destructive examiner of thin metal films, gas flow metering, high intensity ultrasonic therapy and noninvasive medical imaging. Elements with sealed cavities have difficulty in stabilising the biasing point; hence perforated membranes can come to a rescue. COMSOL multiphysics is used for modeling and studying the physical behaviour of vented elements. Changes in the resonance frequency are obtained with the device structural parameters and membrane materials. It is observed that varying the perforation dimensions can let us achieve the desired performance.

Keywords: CMUT, Ultrasonic Sensor, Resonance Frequency, COMSOL Multiphysics.

Paper ID: 39

Investigation and Analysis of MEMS Capacitive Micromachined Ultrasonic Transducer's Characteristics with the Effect of Electrode Pattern

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ABSTRACT

An investigative accurate model of Capacitive Micromachined Ultrasonic transducer (CMUT) for evaluation of membrane displacement with the consequence of top electrode pattern is presented. A silicon nitride (Si3N4) membrane is subjected to a DC bias voltage. Here behavior of the membrane is studied, on varying the top electrode's dimensional and material properties. It is perceived that on increasing the thickness of top electrode the displacement decreases as it causes more loading effect on the membrane. This also affects the frequency of resonance of the device making the membrane more stressed. The analytic model is well supported by simulations in COMSOL Multiphysics.

Keywords: CMUT, Electrode Patterning, Ultrasonic Sensor, Membrane Displacement, COMSOL Multiphysics.

Paper ID: 44

An Innovative Fibonacci Technique for Secure on Sensitive Data in Edge Computing Environment

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ABSTRACT

Edge computing is becoming increasingly popular as computer environment become more diverse. Process and deploy edge storage data via SaaS to become a global movement. In edge ecosystems, data security has become a serious concern. For the second half of 2018, the worldwide security record was 86.67 percent edge data migration, with one global expert putting the figure at 100 percent. Conversion the information of two or more individuals so that unlawfully people can see the genuine information. In this process, the process examination operation is meant to protect data and prevent unlawful modifications to the data by two or more persons. There are a variety of ways to do this renovation, but the one described there services a text input mechanism to allow the receiver to see the original data. The process query operation in this process is used to acquire data in order to prevent illegal access. The suggested methods are faster encryption and decryption algorithms than existing security techniques. The Fibonacci sequence may be used to safeguard any form of file in this way.
Keywords: Edge Computing, Innovative Fibonacci Technique, Security, Cloud Environment

Paper ID: 48

PV Powered Contactless Charging Station for Electric Vehicles by Electromagnetic Induction

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ABSTRACT

As a result of the encouragement received on electrical vehicles (EVs) by the government of India, the industry is bound to observe expeditious growth. This will significantly foster the increased manufacturing of electric vehicles, charging stations and also contactless power transfer devices for the sake of an efficient way to charge EVs. Owing to the fact that the EV market is experiencing rapid development, it becomes quite essential to overcome the shortcomings in the same. The establishment of an approach to charge the EV contactlessly will be appropriate since it has better convenience due to the exclusion of battery cost, recharge time and weight. This paper focuses on designing photovoltaic (PV) powered EV charging stations by electromagnetic induction. For high frequency contactless charging technique, a synchronous rectifier is also proposed in this paper. For higher output Voltage and frequency beyond 1 kHz, synchronous rectifier is extremely suitable. ANSYS Electromagnetics software has been used for the modelling of the practicability of the contactless power transfer approach for charging EVs by electromagnetic coupling. The charging of EVs through contactless power transfer (CPT) using the principle of electromagnetic induction is of apex concern on account of it being highly efficient and having higher power transmission capability and with immense charging distance. Additionally, the circuit diagram is illustrated with simulations of efficient transfer of energy between two coils which are magnetically coupled, using the PSIM software and Electromagnetics software.
Keywords— Contactless charging; PV Powered; Electromagnetic Induction, High Frequency, Synchronous Rectifier, Ansys Maxwell

Paper ID: 50

Bio-Synthesis, Characterization of Silver Nanoparticles Using Jackfruit Leaf Extract for Power Monitoring

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ABSTRACT

Jackfruit leaf extract was used to synthesize silver nanoparticles (AgNPs). As a precursor, silver nitrate (AgNO3) is utilized. UV-Visible and FTIR methods were used to characterize it. It is shown a sharp peak at around 330 nm for the UV-visible spectrum.It is mentioned that it indicates the band emission of AgNPs. Because of the transition of Ag^0 to Ag^+, which corresponds to the surface plasmon absorption of silver nanoparticles, the greatest absorption is observed with a prominent broad peak at around 450 nm. The FTIR spectra of filtered Jackfruit leaf extract is shown as a result. Several peaks were revealed at 596.00 cm-1, 680.87 cm-1, 1273.02 cm-1, 1641.42 cm-1, 2121.70 cm-1, and 3356.14 cm-1 in the spectrum. The stretching vibration of the C-I, C-Br, and C-Cl bonds of the halo compound caused the peak at roughly 596.00 cm-1 and 680.87 cm-1. The peak at 1273.02 cm-1 could be due to the stretching of an alkyl aryl ether's strong C-O bond. Furthermore, the stretching vibration of C=C caused the peak at roughly 1641.42 cm-1. The stretching vibrations of the C≡C bond of alkynes produce another significant peak at roughly 2121.70 cm-1. In addition, the peak at wave number 3356.14 cm-1 could be attributable to both O-H and N-H stretching. The produced AgNPs were employed in electrochemical cells for power monitoring. An electrochemical cell employing Jackfruit leaf extract was used to compare open circuit voltage, short circuit current, maximum power, internal resistance, power density, and the intensity of light of the LED bulb with and without AgNPs. The open circuit voltage, short circuit current, maximum power, and power density were all greatly increased after employing AgNPs, while the internal resistance was significantly reduced. The intensity of the LED bulb has also been shown to have enhanced significantly after utilizing AgNPs. This research will serve as an outline for future effort.

Paper ID: 14

Detection of Breast Cancer Using Image Classification Techniques

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ABSTRACT

Breast tumor cells are amongst the dominant tumor cells kind amidst females from around the world. A large number of breast cancer cells individuals die annually as a result of the late clinical diagnosis along with therapy. Therefore, in the last couple of years, extremely early breast cancer cells cell exploration systems based upon individual images continue to be sought after. Deep understanding generates numerous scientists simply lately along with at the same time various computer system vision applications have actually appeared in different atmospheres. Convolutional semantic network (CNN) which is described as deep understanding framework, has actually accomplished exceptional lead to various applications. CNN's typically struggle with adjusting a considerable variety of specifications which bring an exceptional quantity of complexity to the system. At the same time, the standardization on the densities of the CNN is an additional mobilities in order they require to be manage completely. From the existing research, relocation of understanding along with at the same time deep feature elimination techniques are incorporated which adjust a qualified CNN design to that of the complication accessible. AlexNet along with Vgg16 design is dealt with in today's benefit component elimination along with AlexNet is incorporated for additional refinement. The acquired components are after that categorized by assistance vector gadgets (SVM). Substantial examination methods death on an honestly provided surgical and cellular pathology breast tumor cells data package is performed along with at the same time the precision rankings are determined for effectiveness assessment. The examination results program that the transfer understanding created a much better outcome than deep component removal along with at the same time SVM category.
Keywords: Convolution neural network, breast cancer detection, image classification, feature extraction

Paper ID: 43

Design of Wide Stopband Lowpass Filter Using Defected Ground Structure

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ABSTRACT:
In this paper, a design and analysis of the wide stopband coplanar (CPW) low pass filter (LPF) with the one cell triangle and cascaded triangle defected ground structure (DGS) are investigated. The frequency response of the proposed lowpass filter structure is presented. The one cell triangle DGS and cascaded triangle DGS LPF were studied with both electromagnetic (EM) and equivalent simulations by using the HFSS and ADS tools respectively. The proposed structure has a good agreement between both EM and equivalent simulations. The one cell DGS LPF structure shows resonance frequency, cut-off frequency, attenuation at the resonance frequency, passband width, and %fractional bandwidth are 24 GHz, 14 GHz, - 29 dB, 16 GHz, and 64% respectively. The same performance characteristics observed for the cascaded triangle DGS LPF are 20 GHz,18 GHz, -27 dB,17 GHz, and 70% respectively. With the good agreement between the EM and equivalent simulations the proposed structure is utilized in satellite and radar communications.
Keywords: Lowpass filter, DGS, Passband width, Resonance frequency, Coplanar waveguide

Paper ID: 52

GROUND-BREAKING DISCOVERIES IN CARDIOVASCULAR DISEASE PREDICTION
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Abstract

 Predicting cardiac disease has been one of the most challenging medical undertakings in recent years. Heart disease kills one person per minute in the contemporary age. An important role in healthcare data processing is played by data science techniques. A challenging endeavor, heart disease prediction necessitates automation to prevent the hazards connected with heart disease and to inform the patient in a timely manner. This study makes use of a heart disease dataset that may be found in the repository for machine learning at the university. Data mining methods such as Schema Chart, generalized linear model and Random Forest are used in proposed study to estimate likelihood of cardiac disease and classify the risk level of each patient. The objective of our study is about to compare capabilities of various machine learning techniques. When compared to other machine learning (ML) methods, Support vector Machine   has the greatest accuracy of 90.16 percent. As it works effectively in high dimensional workspaces. In our project it can predict the coronary artery disease depending upon given input aspects namely sex, exercise induced angina, chest pain type, fasting blood sugar etc. and its memory is efficient as it uses subset of training points.
Keywords: Supervised, Unsupervised, Support Vector Machine, Logistic Regression, Decision Tree, Random Forest Classifier.

Paper ID: 15

AN EFFIECIENT DEEP LEARNING APPROACH FOR RECOGNIZING AND DETECTING HUMANS

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ABSTRACT

In this paper, we are getting to build the Human Recognition and Counting System through Webcam, otherwise you can give your own video or images. This is often an intermediate level deep learning project on computer vision, which can assist you to master the concepts and cause you to become an expert within the field of knowledge of Science. Automatic counting surveillance of individuals publicly is vital for safety control. Previously many techniques and methods were proposed. These methods/techniques aren't producing accurate and high performance for difficult situations. Now Foreground Extraction and Expectation Maximization (EM) based methods are proposed, which provides a far better accurate solution for counting people and locating a private. Single shot detector algorithm(SSD) takes the live stream from a camera and convolutional neural network(CNN) will identify the human and assign a private id and therefore count it accordingly. The aim of this project is to show that detection and counting of humans is most useful in the real time situation to maintain social norms in the public places by setting the people limit. So that we can easily monitor the people and limit them in different situations.

Keywords: COVID-19.computer Vision,Deep learning,Recognition,Detection,

Paper ID: 54

Design of Low Power Dual Gate MOSFET with Oxide Stacking and Comparison of Discrete Spacer Engineering

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ABSTRACT:

Leakage currents and short channel effects have adverse impact on mobility degradation in the CMOS technology under 100 nanometre scale. These adverse effects can be controlled by using material engineering techniques which will not only sway the SCE effects, but also will improve the mobility of charge carriers. In this work, the switching characteristics of dual gate MOSFET is improved by gate stacked with various oxide layers which include SiO_2, HfO_2 & TiO_2 with Low permittivity to high permittivity capability are used to improve the proposed device with different combinations. The proposed device is simulated with the CONMOB (Concentration Dependent Mobility), AUGER (Auger Recombination) and FLMOB (Field Dependent Mobility) techniques are used to get accurate and reliable simulation results. The parameters like drain current, transconductance, electric field, I_{ON}, I_{OFF}, I_{ON}/I_{OFF} are simulated in the SilvacoTCAD tool. The analysis of these parameters is discussed in the paper. So that the proposed device of DGMOSFET is compatible for low power applications.
Keywords: Oxide dielectrics, Spacers, DG-MOSFET, Work function, Dual Metal.

Paper ID: 57

YouTube Video Transcript Summarizer

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Abstract–
Now-a-day's every person is busy using social media, mainly YouTube is most commonly used. Every person is depending on the YouTube classes to make easy learning. Huge number of videos are uploaded and shared on the internet every day. It is impossible work to watch those videos and find the content which the user needs. So our paper provides a easy way of access to YouTube video by providing summary of a YouTube video. This summarization provides an important content from the video to which the users can easily access to the video. Through this summarization it saves the users time and efforts to go through whole videos. The project we have made will use Python programming language. Through python API the video provides summarization by taking important content from the video.

Keywords- YouTube, Summarizer, Video, Transcript,

Paper ID: 16

AN EFFICIENT DEEP LEARNING APPROACH TO DETECT ROAD ACCIDENT

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ABSTRACT
Road Accidents are a major reason behind deaths in India. Several road accidents are going to happen for several reasons which include human-based, traffic based, weather-based etc. More or less accidents are happens at different axes on the road with different reasons, after we zoom the accident-prone image we may result with losing the pixel densities of the image. Many of the existing systems are good at detecting accidents in nearer camera surroundings but fails when it comes to zoomed or blurred images. Convolutional Neural Networks has been recognized to be a fast and accurate approach to classifying images. CNN based image classification would achieve greater accuracy for feature extraction as the accidents happen in a different location having different features we need to extract all the features to detect, classify the images. So, to realize the most possible accuracy we proposed a system which involves zoomed or low pixel images for training (which includes blurred, low light images too). With our proposed model we train and attain the result of ~92% accuracy of detection using the model of ResNet50 which is suitable for feature extraction and classify between accident and non-accident.

Keywords: Deep Learning, Road Accidents, Supervised Learning, convolutional neural network (CNN), ResNet50

Paper ID: 55

Design and Analysis of Nanoscale GAA-MOSFET with 7 nm Technology

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Abstract:
In this paper we proposed the design of nanowire MOSFET which is designed using 7 nm technology with various high and low potential dielectric spacer materials especially using TiO_2 we can see a drastic improvement in the performance of the transistor. The main agenda of this paper is to see how the various dielectric materials have their impact on the performance of the proposed GAAFET. We applied material engineering and structure engineering in the device. The simulation of proposed device includes extraction and comparison of parameters such as drain currents, bandgap, Ion/I off ratios. Underlap region is introduced in the device which is doped with different concentration for lateral band to band tunnelling. Also, in the proposed device halo doping is induced in the channel which is designed to mitigate the short channel effects [1] and parasitic capacitance. The effective 7 nm technology device model is simulated with AUGER model using GUMMEL newton method to sensitize the parameters of device under various conditions to ensure the ultra-low power compatibility of device.
Keywords: Nanowire MOSFET, band to band tunnelling, short channel effects

Paper ID: 60

DETECTION OF CYBER ATTACK IN NETWORK USING MACHINE LEARNING TECHNIQUES

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ABSTRACT:

Improved PC and correspondence innovations in comparison to the past have given broad and propelled changes. However, new innovations give people, organizations, and governments tremendous advantages, but they also cause problems for those who are working against them. Among these are the security of critical data, safeguards for storing and retrieving information, and ease of access to information. Digital fear-based oppression is a major problem in today's world, depending on how these issues play out. Many people and organizations have been affected by digital fear, which has caused many issues. Different groups, such as criminal associations, skilled people, and digital activists may be frightened enough to undermine openness and national security. The development of IDS was made to guard against such digital assaults as well. This Project is the solution for such kind of problems. By using this project we can detect the kind of Cyber attacks which can be attacked on the network.
Keywords: SVM,CNN, IDS, Random Forest, ANN.

Paper ID: 17

PNEUMONIA DETECTION AND CLASSIFICATION USING DEEP LEARNING

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Abstract

Lungs are the most vital organs for living organisms. Pneumonia is a dreadful lung disease that is caused either by any of these - bacteria, viruses and fungi. It affects many people across the globe, especially in underdeveloped and developing countries, where the pollution levels, unhygienic living conditions are high and also huge populations with inadequate medical resources are some of the root causes of pneumonia. Pneumonia is an infection that causes pleural effusion (a condition in which fluids fill the lungs) to the lungs, causing respiratory problems. Nowadays, COVID-19 is the leading cause of the increase in pneumonia cases worldwide. Early diagnosis of this disease ensures curative treatment and enhances survivability rates. CXR (Chest X-ray) imaging is a frequently used approach for detection and diagnosis of pneumonia. The examination of chest X-rays is a challenging task and usually leads to variations and errors in some cases. In this paper, we have developed an automatic pneumonia detection system i.e., a CAD (Computer-Aided Diagnosis), that can relatively decrease the time and cost of obtaining the results of the CXR images. This paper uses deep learning models to process X-ray images to assist in decision-making and to obtain correct diagnosis of pneumonia. The biomedical images are passed to the system, and then the system classifies and detects the pneumonic lungs, this is the first stage of classification. The second stage of classification is to detect the cause of pneumonia i.e., virus, or bacteria. This model is very much supportive to medical practitioners and the affected people.

Keywords: Deep Learning, CNN, Transfer Learning, DenseNet-121

Paper ID: 19

MONITORING SOCIAL DISTANCING USING DEEP LEARNING

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Abstract

When dealing with the global COVID-19 pandemic,if citizens do not take particular responsible actions to control or stop from spreading of the viruses. In these epidemics, the most important thing is to maintain the safe distance between persons in all the public places. Maintaining respective distance from other people may result in reducing the major spread of the dreadful diseases. People are now being asked to reduce their social gatherings and meetings with one another just to reduce the risk of spreading this dreadful disease which majorly comes through physical contact or close touch. Without any additional information, it is very difficult and impossible to find the distances between the people. One method is to request certain inputs from the user, which leads to an estimate of the distance between the pedestrians. If the user is able to exactly mark two points on the frame who are 6 feet apart which is certainly known as threshold value. The pedestrians becomes larger as they get closer to the camera and smaller when they move farther from the camera. Deep Learning is majorly utilised here to detect the pedestrians. If we have the coordinates of the pedestrians which are specifically known as the factors of the social distancing it is simple to estimate the distance between them.

Paper ID: 63

Object Detection from the Video Taken by Drone Using Deep Learning

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Abstract:

The extensive research in the space of deep learning has resulted in unimaginable solutions to various problems around us. Deep learning has spread its roots fairly into computer vision, speech, text. Vision applications through CCTVs, mobiles and cameras are dominating the market. Hence, this paper attempts to display that aerial based videos which are possible to fetch through drones when coupled with computer vision-based object detection deep learning networks will give promising results leading to remarkable solutions benefiting the sectors of agriculture, surveillance, military, logistics, search, and rescue. Furthermore, drones have less battery and computational hardware, therefore performing object detection on drones is highly challenging. It is very essential to understand how an object detection model would perform on certain architecture before deploying the model on to drone. Therefore, this paper implements object detection models on a drone-based images and makes an analysis that helps in choosing a best model to deploy by making a performance comparison.

Keywords: Deep learning, Tensorflow, Python, Object detection, drones, performance analysis.

Paper ID: 20

HATE SPEECH DETECTION ON SOCIAL MEDIA USING DEEP LEARNING

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ABSTRACT

Hate speech directed at an individual or mass of people centered on social order, cult, physical disability, personal identity, or some other factors can harm the community. Detection of hate speech in social networking website is essential, but it's a difficult undertaking. On hand some issues related to the proper and social media networking certain accessibility of datasets and the significant supervised classifiers for identification of the hate speech. The obtainability of a social media networking certain broad and balanced dataset, multi-class labels and the automatic classifier, a dataset with very small details of a language, a dataset labelled under a absolute definition and definite rules, a dataset labelled with well-built annotator agreement, and so on are among the issues addressed in this study By examining a variety of text mining variables, this work seeks to accurately forecast the diverse types of hate by addressing distinct categories of hate separately. For problem appropriateness, two independent categories of features are explored. In this paper, we offer a routine for automatically categorizing tweets into three categories: hate, offensive, and neither.

Keywords: Text-based Hate Speech detection, Supervised classifier, multi-class labels, text mining.

Paper ID: 65

DESİGN AND ANALYSİS OF A STACKED MİCROSTRİP PATCH ANTENNA FORWLAN APPLİCATİONS

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ABSTRACT:

This research mainly focuses on a stacked edge and slot cutting microstrip Patch antenna for WLAN (Wireless Local Area Networks) applications. The operating frequency of the proposed design is 5.2GHz.The overall dimension of the design is 20mm×20mm×3.2mm .The same height and different dielectric constants are proposed in this design. To improve the gain and low return loss, the proposed stacked design uses RT5880 as the bottom substrate with a height of 1.6 mm and FR-4 as the upper substrate with a height of 1.6 mm. For better results, the proximity-coupled rectangular microstrip antenna is proposed. In this stacked design, the microstrip feed line is on the bottom, and the active patch is on the second substrate. The proposed antenna has a two-layered substrate where the radiating patch is on the top substrate and a microstrip feed line on the bottom substrate. The operating bandwidth is from 4.93 GHz to 5.44GHz.The simulation results are obtained using Computer Simulation Technology Microwave Studio (CSTMW) 2018. The advantages of this proposed design are its simple structure and compact size. By comparing antenna -1 to antenna-4 we obtained enhanced results. The simulated results of the antenna-4, S11 are -45.6dB, the gain is 4.44dB, from the simulation results, this structure is well recommendedfor WALN applications.

Keywords: Stacked microstrip patch antenna, Gain, Bandwidth, WLAN.

Paper ID: 66

Covid19 Imprecise Wearing Facemask Detection Using Convolution Neural Networks

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Abstract

According to the study of the World Health Organization (WHO), the current status of the COVID-19 disease (COVID-19) has infected over 200 million individuals universally, causing over 5 million deaths. The coronavirus pandemic has increasingly affected our daily lives, affecting world exchange and development. Wearing a protective face mask has become mandatory for every resident. Soon after, many public experts , cooperates will request that customers wear the mask correctly for the benefit of their administration. In this way the face should be covered with a mask, they help in reducing the virus and help people not to be harmed by the virus. This paper presents a worked-out approach to accomplish this cause using some basic machine learning algorithms . The proposed classifier effectively separates the face from the picture and then detects whether it has a mask or not.This technique achieves accuracy of up to 91% when compared to other algorithms like SVM(89%) , DecisionTree(83%) . compared to other classifiers as CNN is providing more accuracy with less run time of 7.24s we have choosed CNN for classification . We investigate ordered upsides of boundaries using convolutional neural network model to identify the presence of cover effectively without over-fitting .

KEYWORDS – Covid-19 ,Detection, Machine Learning, Tensor Flow , Keras , Open CV ,Scikit-Learn , CNN

Paper ID: 18

An Efficient Deep Learning Approach To Classify a Kidney With a Tumor Or a Stoneby Using CT Images

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ABSTRACT
Deep learning models are widely used to work with images where it can extract features from the images and can use them for a prediction or an identification. This study demonstrates the prediction of tumors in a kidney by using the CT scan image. This study proposed a system which can be able to differentiate the kidney with tumors from the kidney with normal stones by using the CT scan images. If the CT image of a kidney consists with normal stones, then will be treated by using simple medicine. If the image contains tumors, then they should follow different medical procedures or a surgery. Manually, it is possible to identify whether the kidney has a tumor or a normal stone by finding the chemical composition of the stone. But the proposed system can identify a tumorous kidney or a kidney with a normal stone by just using the CT scan images of a patient. The system used CNN model named DenseNet -121. This model can classify a tumor kidney or a normal stone kidney with 96% accuracy.
Keywords: Deep learning, Kidney stones, CT, CNN, DenseNet -121, Kidney cancer.

Paper ID: 49

Advance Detection of Machine Failure in Automated Industries using Machine Learning Algorithms

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Abstract
The estimation of failure and observance of performance of commercial device acts as a prominent role not uniquely within factor made quality material nevertheless collectively within cash and time quantity saved within entire maintenance. Also, this project needs to research the final development analysis and upgradation within ML/AL strategies usage for fault estimation instrumentality in companies over a period. The research topics in this survey paper incorporate algorithm ML, concepts and use cases, which relate to utilize of such technique within an extensive range of companies incorporating hardware as well as software company and many more. Moreover, this research addresses among 2000-2017 and current research, contribution has been carried out in earlier 2 years. Therefore, it has been finalized that, project carried out a comprehensive research of divergent AI/ML models utilized in industrial manufacturing fields. The models such as LSTM have been identified as some of well-known models utilized.
Keywords: Applications of IoT , Fault estimation, Formal check, procedural analysis, Multi-layer perceptron, Toolkit.

Paper ID: 53

Design and simulation of HC-DG-JLTFET for bio-sensing applications

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ABSTRACT:

In this paper, a horizontal cavity double gate junction less tunnel field-effect transistor with material stacked spacers (HC-DG-JLTFET) based device is put forward and discussed using various structure modifications which cover the overall behavioral characteristics of the device. A Label-free electrical recognition for detecting biomolecules technique is used. This paper reports a HC-DG-JLTEFET for detection of biomolecules such as protein, biotin, uricase etc. The novelty of this device is a horizontal cavity region under the gate is etched for the immobilization of biomolecules, presence of these biomolecules in the nanocavity placed above the tunnelling regions causes variations in the electrical properties of the device which are discussed in this paper for various types of biomolecules with different relative permittivity. A high 'k' material (HfO2) is used as a spacer along with a low 'K' material (SiO2) and the impact of these spacers have been investigated on parameters such as Id, Electric field, surface potential and band energy. We achieved an I_d of 2×10^{-5} with this device. This paper evaluates the capabilities of HC-DG-JLFET for biosensor-based applications while varying the relative permittivity, cavity length and spacer variations. the proposed device is implemented by using ATLAS device simulator.

Keywords: Band to Band tunnelling, TFET, Junction less tunnel FET (JLTFET), horizontal cavity dual gate (HC-DG), Biosensor application.

Paper ID: 56

Implementation of Two Input Boolean Function Using Single AlGaAs/GaAs/AlGaAs DG-HEMT

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Abstract

HEMTs are being investigated as a potential alter- native of CMOS technology in digital applications. In this paper a novel compact realization of two input OR and AND boolean logic function using single enhancement type double/quad-gate high electron mobility transistor (DG/QG-HEMT) with independently-controlled gate has been proposed. Furthermore, other two input boolean logic functions-NOR, NAND, NOT are derived from OR and AND logic using circuit analysis. In addition, this paper also analyses the transient behavior of aforesaid boolean logic functions and calculate transient delay. And our studies reveal that DG-HEMT based boolean logic functions are enhancing the capability in terms of high power handling, compact and fast response, high I_{ON}, high I_{ON}/I_{OFF} ratio.

Index Terms—Double-gate HEMT, Quad-gate HEMT, Two- variable boolean function, AlGaAs/GaAs/AlGaAs, OR, AND, NOR, NAND, NOT.

Paper ID: 51

A Behavioral Control with Obstacle Avoidance for Co-operative type FPGA based Multi Robot

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ABSTRACT

This paper proposes the autonomous obstacle avoidance algorithm in indoor environment for transportation by using multi robot which are of cooperative type. The Behavioral control mechanism between multi robots in transportation of loads with cooperative methods is challenge in real time scenario. The proposed algorithm is a versatile approach and consists of 1) Behavioral control between multi robots with balanced formation and optimized communication method, 2) An obstacle avoidance of the multi robot. The leader follower approach is developed between group of FPGA based multi robot. The leadership swapping between robots is also developed to establish smart behavioral control of robots. The static and dynamic obstacle avoidance method is developed in lines of Bug2 algorithm for cooperative type FPGA based multi robots. In this paper, behavioral control with obstacle avoidance is developed and it is coded in Verilog HDL and it is simulated using Xilinx ISE and Vivado tools. The equivalence hardware system is developed and synthesized for proposed algorithm by using of Xilinx FPGA , Zynq-7000 SoC ZC702.
Keywords: FPGA, Formation, Behavioral Control, Multi robots, Obstacle avoidance.

Paper ID: 59

Residual Network based Ocean Wave Modeling from Satellite images using Ensemble Kalman Filter

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Abstract

Non-linear Ocean waves have a significant impact on the functioning of several offshore activities. Predicting the internal ocean waves plays a crucial role on submarine and ship operations. Data assimilation is a mechanism in which data observed is interpreted, processed and adapted so that the initial fields for numerical predictions are as accurate as possible. The existing works for estimating the future atmospheric condition are highly dependent on the exact initial state, which mostly differ from the observation. This paper proposes modeling of internal ocean waves using automatic internal wave detection and data assimilation. Our methodology proposes a system to model ocean waves using ensemble Kalman filtering and image processing techniques. The proposed system is focused on satellite images. The images are preprocessed for speckle noise using adaptive filters. Enhanced Residual Network is used for edge detection. Unlike the existing edge detection methods that have high complexity, this enhanced residual network works with low complexity and make a direct map-ping between the input wave image and wave edge. Finally, the potential edges of the internal wave are detected and adapted using Ensemble Kalman Filter. Adaptive thresholding technique is used to determine the appropriate threshold to segregate objects from background. The proposed enhanced edge detection model is compared w.r.t to the parameters Weighted Cross Entropy Loss Function, F-Measure and Root Mean squared Error with canny edge detection and proved to be better. The detection of internal wave is demonstrated and the accuracy of the approach is 91% with low RMSE when compared to existing works.

Keywords— Satellite images, Data Assimilation, Adaptive Filter, Internal wave modeling, Residual Network, Adaptive Thresholding.

Paper ID: 62

Accurate Medical Image Segmentation by Correcting Errors (SESV)

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Abstract

Computer-aided diagnosis relies on medical picture segmentation[1]. Although DCNNs are widely used and successful, more work needs to be done to increase their accuracy and robustness so that they may be used in therapeutic settings. New and generic framework SESV (Segmentation-Emendation-Re Segmentation-Verification) is presented in this paper to improve the quality of existing DCNNs [2] in medical image segmentation. Segmentation mistakes can be predicted and then corrected using an existing model. Because segmentation faults are difficult to forecast, we devised two strategies to deal with them. Prior to concatenating error maps with images and segmentation masks as input to a re-segmentation[4] network, Our approach is to use this knowledge to forecast where segmentation errors will occur. A verification network is set up using the refined mask to assess whether or not the data is acceptable. According to the findings of our experiments, DeepLabv3accuracy +'s in segmenting gland cells, skin lesions, and retinal microaneuryms can be greatly improved by implementing our SESV architecture. Using segmentation networks such as PSPNet, U-Net, and FPN has comparable consequences. As a result, SESV helps in improving the accuracy of the working of DCNNs in image segmentation process.

Index Terms—Medical image segment, deep CNN, correction learning.

Paper ID: 67

Comparative performance study of $GaAs_{0.99}Bi_{0.01}$ nanowire solar cell with radial P-i-N doping and with carrier selective contact

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Abstract—A comparative theoretical analysis has been made considering photovoltaic characteristics of perpendicularly aligned $GaAs_{0.99}Bi_{0.01}$ radially doped P-i-N nanowire and that of a nanowire unit cell having ZnO coating as electron selective contact around $GaAs_{0.99}Bi_{0.01}$ core.ZnO coating as electron selective contact has been proved to be more efficient in terms of light trapping capability thereby producing good amount of J_{sc} and improved efficiencyhas also been observed. The doping complexity in radial P-i-N junction can also be minimized due to selecting wide bandgap passivating ZnO layer as ESC around the p type $GaAs_{0.99}Bi_{0.01}$core. The core diameter for $GaAs_{0.99}Bi_{0.01}$ nanowire is 160nm (R_c=80nm) and the thickness of ZnO shell layer is chosen to be 10nm. An overall efficiency of 16.6% is obtained for radial P-i-N junction nanowire solar cell with open circuit voltage of 0.82V for minority carrier lifetime of 1ns whereas an overall PCE of 22% with open circuit voltage of 0.998V is achieved even with very less minority carrier lifetime of T_n=25ps and SRV of 10^5cm/s at $ZnO/GaAs_{0.99}Bi_{0.01}$ interface.

Paper ID: 68

Design of Low Pass and High Pass Active Filters using 20nm Cylindrical Gate Stacked Junction-less Accumulation Mode MOSFET

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ABSTRACT

In the present work, 1st-order active low pass and high pass filters are designed using a 20nm Gate Stacked Junction-less Accumulation Mode (GSJAM) MOSFET. For circuit applications, analog/RF parameter analysis is done for a 20 nm GSJAM MOSFETs upto 10 GHz frequencies. Its ac-signal model parameters are also extracted. This paper proposes 1st order active low pass filter and high pass filter based on three GSJAM MOSFETs. For filtering, an active load GSJAM N-type MOSFET is utilized as a resistor in conjunction with a passive capacitor. In the output stage, a CMOS GSJAM MOSFET amplifier is employed to amplify the filtered signal. With cut-off frequency, further bode-plot analysis of the low pass filter and high pass filter circuit is conducted.

Keywords: MOSFET, GSJAM, Active filters.

Paper ID: 69

Prediction with Data Exploratory Analysis of Ongoing COVID - 19 Impact of Omicron in India

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Abstract.

Primarily behavioral aspects and various other aspects of people's daily lives have been affected and changed their personal life. By requiring the investigation and response to be available in government health applications, the COVID-19 research has changed the way we work, which includes many different fields. This proposed work presents the current situation of COVID-19 spread in India along with the major factors that lead to the rapid spread with the inclusion of major impacts of the Outbreak on various sectors and Domains. Machine learning algorithms (Polynomial Regression (PR) and Recurrent Neural Network (RNN)) are used to build various prediction models and to compute and evaluate their performance. The current data is used as a source for Data-centric comparison of Omicron with the previous pandemics. An Exploratory Data Analysis (EDA) technique is implemented to study and analyze the reports. The result of the analysis helps in predicting the future economic and social losses caused by the further waves.

Keywords: Exploratory Data Analysis, Prediction, Recurrent Neural Network, Omicron, COVID-19, Polynomial Regression.

Paper ID: 70

Design of Analog Circuits Using 22nm gate all around Silicon-on-Insulator Schottky Barrier MOSFET

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Abstract:

In the present work applications of the gate all around silicon-on-insulator Schottky barrier (SOI-SB) MOSFET as analog circuits are discussed. Three basic building blocks of analog circuits are proposed using SOI-SB MOSFET named as NMOS SOI-SB differential amplifier, CMOS SOI-SB voltage amplifier, and SOI-SB current mirror. Results of DC analysis and transient analysis are obtained for the proposed analog circuits. The Silvaco TCAD simulator is used to obtain the results and to perform numerical simulations. The simulation result obtained for proposed amplifier circuits shows the high amplified output voltage and current mirror circuit works properly.

Keywords— SOI-SB MOSFET, transient analysis, differential amplifier, gate all around

Paper ID: 06

Design of metamaterial loaded Microstrip Patch Antenna by FSS for WLAN, WiMAX Applications

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Abstrac

In this paper, a micro-strip patch antenna is designed, loaded CSRR metamaterial structure and FSS is used to enhance the characteristics of the antenna for wireless communication. Here, we have designed various types of patch antennas for optimized the dimensions. The antenna is designed and simulated in HFSS software, and the proposed W-shaped patch antenna is achieved the operating frequency of 6 GHz, and the antenna is fabricated with FR4 substrate. The reflection coefficient and gain of the antenna are measured -21.42 dB, 1.28 dBi, which are closed to the fabricated results of the antenna. From the different analysis the antenna parameters are not getting up to the mark, so we are added the metamaterial and FSS layer for enhanced the performance of the antenna. The proposed antenna is provided CSRR (complementary split ring resonator) metamaterial which is enhanced the gain, bandwidth, and reflection coefficient, which is obtained as 5.9 dBi, 5.5 GHz and -27.56 dB, at 6 GHz, -12.65 dB at 4 GHz, -21.24 dB at 8 GHz and also good radiation performances have been achieved. The metamaterial antenna with FSS is also achieved a good results, such as return loss are -13.61, -16.42, -35.86 dB at 4.2, 6.2, 8 GHz, -35.86 dB and the gain is 7.1 dB at 6.2 GHz. The various aspects of the effect of metamaterial antenna with FSS on antenna performance are also studied. The overall antenna performance is obtained as multi bands at 4 GHz, 6 GHz and 8 GHz frequency. The proposed antenna is applicable for WLAN (4/6.2/8 GHz) and WiMAX (4/5.5 GHz) applications.

Index Terms—Simple patch, high gain, broadband, FSS.

Paper ID: 73

Semi-supervised based Naïve-Bayes clustering Technique for Unsolved Crime Series Identification

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Abstract
Using statistical clustering of crime events, crime analysts can generate suspect lists for unsolved crimes, locate crime clusters that may have been committed by the same individual or group of individuals, forecast future events, and develop offender profiles. A log-bayes factor is used as a similarity metric in this paper to suggest a nave-bayes-based clustering for solving an unsolved case. Since the offender is known only for a fraction of crimes, our approach is partially semi-supervised. It employs the crime attributes, along with spatial and temporal locations, to describe the offender. It is possible to link and compare crimes using a single link, average link, and a comprehensive linking strategy, all while employing the agglomerative hierarchal-based clustering method described above. As an added benefit, our nave Bayes model calculates the Log-Bayes factor, which helps investigators uncover unsolved murders that are linked to one another.
Keywords: agglomerative hierarchical clustering, Bayesian model-based clustering, log Bayes factor, Euclidean distance, crime.

Paper ID: 74

Metamaterial Parameter Estimation by Machine Learning Method

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Abstract.
Artificial neural network modeling is used to synthesize the metamaterial unit cell. Artificial neural networks are powerful tools to establish the relation between inputs and outputs parameters under highly nonlinear conditions. Artificial neural networks captured the synaptic weights according to their training data set. In artificial neural networks, the back propagation technique is the fastest learning method, which reduces the computer's processing time and provides the best results under the nonlinear relationship between input and output. This work is divided into two parts. In the first part, we design a metamaterial unit cell, which is in the shape of square split rings. This shape is widely used to realize a metamaterial unit cell. In the second part, we develop a regression model using artificial neural networks to estimate the output resonance frequency when design parameters are used as input of artificial neural networks. Therefore, the objective of this research work is to develop a hypothesis using backpropagation method, to find the resonance frequency when dimension of the metamaterial unit cell is given.

Keywords: Metamaterial, machine learning, artificial neural network, backpropagation.

Paper ID: 79

OSE-WQI: An optimized Stacked Ensemble Classifier to aid water quality assessment

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Abstract.
Water is an essential resource for human life. Safe and pure water is an important component of the ecosystem. Freshwater covers about 2.5 % of the earth's surface, and only 1% of it is usable. River water has a significant proportion of freshwater which is used for vari-ous purposes. However, excessive exploitation and inappropriate use of water resources have led to water pollution. The degraded water quality can cause transmission of diseases and it cannot be used for drinking, agricultural and industrial use. Analyzing the water quality has become one of the prime aspects of water management and monitoring. In this work, machine learning techniques are adopted to automate the process of water quality assessment. The complete process is divided into two stages i.e. In the first stage correlation among water parameters is identified and water quality factors are forecasted. During this process, the regression method is applied to forecast the missing water quality parameters. These forecasted parameters along with the original parameters are then used to formulate a Water Quality Index (WQI) which is further used to categorize the water quality using a stacked ensemble classification approach. The proposed approach is implemented on Yamuna river's data collected from various sampling locations In the Delhi region. The experimental analysis shows that the Root Mean Square Error (RMSE) and Mean Absolute Percentage Error (MAPE) for predicting Biological Oxygen Demand (BOD) and Chemical Oxygen Demand (COD) are 0.4132, 0.1707, and 0.5134, 6.0588 respectively For the next stage classification scenario, a comparative analysis shows that the proposed approach achieves an overall performance as 95.833,91.66, 92.31, and 92.05% in terms of accuracy, precision, recall and F-score, respectively.
Keywords: water quality, regression, classification,WQI.

Paper ID: 80

Reliable Data Outsourcing Scheme Based on Cloud-of-Clouds Approach with Quick Recovery

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ABSTRACT:
Cloud computing is becoming increasingly popular among celebrities today. Cloud services and data extraction solutions are attracting an increasing number of individuals with significant amounts of data to the cloud garage, and businesses are turning to the cloud garage for effective remote backup. In 2011, DEPSKY illustrates and overcomes four factors that impede cloud garage efficiency: loss of access, data loss and corruption, loss of privacy, and vendor lock. DEPSKY, on the other hand, has no mechanism of detecting faults and begins with enormous computer expenditures. As a result, we propose that the new information system overcomes not only the four constraints, but also the DEPSKY flaws. We control the Nyberg accumulator in this paper and use it in our three error detection methods. Additionally, we have developed a way to get this faster than DEPSKY and opportunity options.
KEYWORDS: Data privacy, cloud computing, cloud-of-clouds approach, data outsourcing, dependable system

Paper ID: 87

Power Quality Enhancement Of Microgrid Using Fuzzy Logic Controlled Inverter And SFCL: S. Dhara, P.K.

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 Abstract

The use of a fuzzy based inverter and a superconducting fault current limiter (SFCL) in this paper provides a novel technique to mitigating power quality disturbances in microgrids (MGs). Incorpora-tion of multiple power electronics converters in a mi-crogrid typically increases total harmonic distortion (THD), causes power quality issues. Furthermore, the unpredictability of solar and wind power produces power oscillations, creates voltage sag in renewable-based MG. This study offers an intelligent control ap-proach for making power balance in renewable-based MGs using a fuzzy logic controlled (FLC) pulse width modulation (PWM) inverter. The MG consist of hy-brid photovoltaic (PV) and a PMSG based wind en-ergy conversion system (WECS) with optimum torque controlled maximum power point technique (MPPT). The battery energy storage system (BESS) is implemented to deliver power during emergency con-dition or to supply constant load power during varia-ble load. The SFCL is used as a voltage compensation device during voltage sag condition. The effectiveness of proposed control strategy is analyzed by compar-ing THD of load voltage with and without SFCL. The results show that the combination of FLC inverter-SFCL-BESS is capable enough to reduce the THD and voltage sag as per IEEE519 standards. The re-search work is simulated using MATLAB/SIMULINK environment.

Keywords−− Renewable energy sources, Maxi-mum power point tracking (MPPT), Battery storage, Hybrid energy, Total harmonic distortion (THD).

Paper ID: 92

Design and Performance Analysis of FSPV System for Powering Mini Micro-grid

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Abstract

The floating Solar Photovoltaic System (FSPV) is emerging as a favorable technology to policymakers for economically harvesting renewable energy. The implementation of large-scale photovoltaic (PV) systems is often disrupted due to the unavailability of land. This paper explores the design and performance analysis of the FSPV System with the objective of electrification of rural micro-grid. The performance of the system is evaluated in terms of annual energy generation, annual performance ratio (PR). Seasonal variation of energy output is also observed. A comparison of energy output and performance ratio has been made for the FSPV system and its equivalent land-based PV system of equal area. The FSPV system generates 18.079886 GWh, which is 10.04% more than the land-based PV system. The performance ratio of the FSPV system is calculated to be 83.4% which is 7.8% higher than the land-based PV system. The results indicate that the FSPV system is an economic and cleaner alternative to power renewable energy-based mini micro-grid and provide cost effective electricity to all.

Keywords — Microgrid, FSPV, Renewable, Performance Ratio, Capacity Utilisation Factor

Paper ID: 93

Parameter Optimization of Floating solar PV models with a proposed weighted mean of vector optimization algorithm for sustainable clean energy generation

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Dhanbad, Jharkhand- 826004, India.

ABSTRACT:

FSPV (Floating Solar Photovoltaic) is a modern kind of renewable energy that strives to improve the environment. The lasting performance, effective control, and feasibility studies of FSPV plants are not analyzed effectively as the technology is in its nascent stage. FSPV panel parameter estimation is critical in the evaluation of real performance, enduring operation, feasibility and carbon saving capacities of FSPV systems. An INFO algorithm is used for five parameter estimation of the single diode model of the FSPV system. In addition, FSPV reduces the environmental consequences of land-based PV (LBPV) plants, including deforestation for land clearance and other civil work necessary to install panels. INFO algorithm is compared with War strategy optimization (WSO) and gradient-based optimization (GBO) and presents an effective and high accuracy optimization with a standard deviation of 3.74E-17 and a mean of 7.729E-4.

Paper ID: 89

Consistency of IP address allocations for cloud computing platforms

J. Thirupathi[1], N. V Krishna Rao[2,] Aswini kilaru[3], T. Saritha [4], M. Srikanth [5], S. Sai Aneesh [6]

ABSTRACT:
Dos is the frequent network problem as we generally see in our daily life. Cloud computing platforms provide IP address randomization for reducing the dos attack by that the search space of an IP address increases so that the attacker unable to predict the targeted IP address. But this is practically a hypothesis since we are predicting IP address by the collection of data sets. AWS and GCP providers provide IP address for a user based on the geographical locations and virtual machines. We are analyzing the sets in two major cloud computing platforms AWS and GCP. We assess models for predicting like random based and frequency based models that produces an IP prediction Considering predicting IP addresses for cloud providers takes more time, our results predict IP addresses with more accuracy than the Clustering model. Because we are anticipating the users as the targeted network, our approach increases the effort of cloud providers for user security.
KEYWORDS: IP Address Randomization, moving target defense, Amazon Web services, Google Cloud platforms, Random Forest technique, Network security

Paper ID: 41

COLLATING WEATHER AND GROCERY COST

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Chelimela Sanjay[1]and Bonthala Swathi[1,*1]

Abstract

The main idea behind collating the weather data and grocery cost is to show the dependency of prices of fruits and vegetables based on climatic conditions at different geographical sections. Firstly, using web scraping we will extract the data from the website. Usually E-commerce sites, websites, and some others do provide API to get information. In other cases, where we have to scrape other websites to get data, but when API is not available, the main idea or way to get datafrom the web is Web scraping. We do extract the weather data from the forecast website and Grocery related data from the grocery site that might be fruits or vegetables and converting typically into a central local database or spreadsheet, for later research or analysis. After extracting the weather and grocery data in the form of Excel sheet or CSV file, for later researchor analysis that is to show the dependency of prices of the vegetables and fruits on the climatic conditions.
Index Terms—Electronic-commerce sites, Application Pro- gramming Interface,Web Scrapping

Paper ID: 81

Electrical Performance Analysis of 20 nm Gate Length Based FinFET

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ABSTRACT

An electrical performance characteristic of p-type lightly doped channel Silicon on Insulator (SOI) FinFET is performed. In this work the gate and channel length is set at 20 nm and the material having high dielectric constant 25 hafnium dioxide (HfO_2) is used for the gate oxide layer. By changing the gate length, the performance of various parameters are investigated such as threshold voltage, drain current, drain-induced-barrier-lowering (DIBL), ON/OFF current, current density, and recombination rate is also analyzed. The results showed that by Hafnium Dioxide and gradual decreases of gate length, the ON/OFF current increases which increases the threshold voltage, thus the drain current is increased which gives better performance of the device. The DIBL and leakage current of the device are also decreased. The simulation result also gives the adverse behavior of the device after decreasing the gate length below 20 nm, the shortening of gate length loses its control over the channel and the negative drain current leakage occurs.
Keywords: FinFET, HfO_2, Drain Current, DIBL

Paper ID: 83

Mechanical Characterization of Banana Fibre Reinforcement Polymer Composites.

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Abstract : The fibre-reinforced polymer composite are widely used in engineering applications and there is an increasing need to understand the mechanical properties of such composites. Due to increase in environmental awareness, the world attracts towards the utilization of natural materials. The natural/renewable fibres are widely used for the fabrication of fibre-reinforced polymer composites. The banana fibre falls in natural fibre category have low weight.

Accordingly, the key objective of this study is to investigate the effect of fibre length, fibre loading and % wt of filler content Aluminium Oxide (Al_2O_3) on mechanical properties (tensile strength, flexural strength, impact strength and hardness) and the optimized results by Grey Relation Analysis the banana fibre reinforced polymer composites.

This investigation revealed that variation in length of banana fibre, % wt of fibre loading and % wt of filler material affects the mechanical properties (tensile strength, flexural strength, impact strength and hardness) of unfilled banana reinforcement polymer composites. The best tensile strength, flexural strength and impact strength of the banana fibre reinforced polymer composites is achieved with 10 mm fibre length, fibre loading of 20 % by weight and filler loading of 10 % weight , while maximum hardness is achieved with 10 mm fibre length, fibre loading of 20 % weight and filler loading of 20 % weight.

On the other hand, To optimize the results of best samples (S4, S6, S7, and S8) as per mechanical properties by grey relation analysis, sample S6 is the best and the Composition of sample S6 is 10mm of Fibre length,20 Wt. %of Fibre loading,70 Wt. % of Matrix, 10 Wt. % of Filler Al2O3,18.90 Mpa of tensile strength, 46.20 Mpa flexural strength, 6.55 J of impact strength, and 41.08 HRB of hardness.

Keywords: Banana fibre, length of fibre, fibre loading, Al_2O_3, mechanical properties.

Paper ID: 75

Development of Indian Villages with Smart and intelligent power generating system

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Abstract–As we know that Electricity is the one of best way to develop Indian villages. The provision of electricity to rural areas is acknowledged to have a positive impact on household activities through the increased ownership and use of appliances, reduction of fuel wood use, improved education, and improved employment, Electrification provides a solid basis for development of local communities. Once a community has access to electricity, it can also have access to safe potable water, better health conditions, food security, as well as lighting and information. An average village in India has a total electricity demand of 1,826 kWh per day, with about 52% contributed by households, 7% by enterprises, and the remainder by agriculture. Most of the electrified rural households use electricity for lighting and agriculture but less than half use it for entertainment and less than a fifth use it for medium to high-power appliances such as a refrigerators, irons, and mixer-grinders. In "Development Indian villages program" we used uncultivated land of village for solar power generation and provide to users, collection of electricity bill amount used for development for rest necessary program like – road, water, digitization of people.

Keywords:Used Uncultivated land(UUL), Solar Power Generation(SPG), collection used for other development program

Paper ID: 78

A Review of Machine Learning Techniques in Power System Security Stability

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ABSTRACT
Power demand is increasing exponentially as nonlinear loads are used on a daily basis. The assessment of power system security is very important for the first identification and detection of problems due to voltage instability, power quality disturbance through the complex network of power system, as the need for maintaining power quality and energy market is prominently raised, so in order to reliable and safe functioning of power system, the early detection and identification of problems caused by voltage instability and power quality disturbances has been be solved for the PS security in the complex power network. Nowadays, integrating machine learning technologies with massive amounts of real-time data efficiently improves power system resilience and ensures efficient or secure power system operation. With their learning capabilities, pattern recognition, and high-speed, machine learning algorithms provide a viable strategy for power system security. Various machine learning approaches for power system security and stability are discussed in this review study.
INDEX TERMS T.S.A (Transient Stability Assessment), R.L. (Reinforcement Learning), D.R.L. (Deep Reinforcement Learning), P.S.S. (Power System Security), M.L.T. (Machine Learning Technique), P.M.U. (Phase Measurement unit), O.L.T.C. (On-load Tap Changer).

Paper ID: 84
Processing and Mechanical Behavior of Banana Fiber Reinforced Epoxy based Composite with Alumina and silicon Carbide

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Abstract
Polymer composites have outstanding qualities such as high strength, flexibility, stiffness, and lightweight. Currently, research is being performed to develop innovative polymer composites that may be used in many operational situations and contain a variety of fiber and filler combinations. Banana fiber has low density compared to glass fiber and it is a lingo-cellulosic fiber having relatively good mechanical properties compared to glass fiber. Because of their outstanding qualities, banana fiber reinforced polymer composites are now widely used in various industries. The primary goal of this study is to determine the effect of the wt.% of banana fiber, the wt.% of SiC, and the wt.% of Al_2O_3 in banana fiber reinforcement composites on the mechanical and physical properties of banana fiber reinforcement composites. Tensile strength and flexural strength of unfilled banana fiber epoxy composite increased with the increase in wt. of banana fiber from 0 wt.% to 12 wt.%. Further, an increase in wt.% banana fiber drop in mechanical property was observed. It has been concluded from the study that the variation in percentage weight of filler material with fixed amount (12 wt.%) of banana fiber affects the mechanical properties of filled banana reinforcement composites. Optimum mechanical properties were obtained for BHEC5 (72 wt.% Epoxy + Hardener, 12 wt.% banana fiber and 16 wt.% Al_2O_3).
Keywords: Polymer composites, banana fiber, epoxy, SiC, Al_2O_3, tensile strength, and flexural strength

Paper ID: 86

Enhancement in Mechanical Properties of Al6061 reinforced with Al_2O_3-Cr by stir casting method

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Abstract

Al6061 is universally used due to its advantageous properties like toughness, strength, good corrosion resistance to marine water, good working conditions and enormous availability. At present outstanding research is going on specially on aluminium alloy to cope up with wide use in applications like marine, space technology and automobile industry as engine components.

The objective of the present research work is to investigate the effect of % wt. of Al_2O_3 particulates on the mechanical properties of Al6061/Al_2O_3 and Al6061/Al_2O_3/Cr MMCs.

It has been revealed from the results that Al6061/6Al_2O_3 MMC exhibits superior tensile strength. Also, addition of chromium particles in Al6061/6Al_2O_3 MMC shows the inverse effect on the tensile strength, flexural strength.

Keywords: - Al6061 alloy, MMC, Al_2O_3, Cr, Mechanical properties, Sliding wear,

Paper ID: 91

Effective Prediction of Heart Disease: Data Mining in Healthcare Domain

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Abstract— For extracting concealed patterns, mining of Data, applying clubbed schemes of Database technology, machine learning and statistical analysis, is being implemented in Big Databases. In addition to this, due to their applications in enhancing various uses in outstanding areas of Medical systems, health care data mining became an ever growing important subject for research and study. While scanning fatalities world over, cardiac ailment seems to be main reasons. Sensing people's probability in getting into diseases related to heart is quite complicated task for cardiologists, involving a good deal of years into their expertise and extensive medical testing. Businesses dealing into medical fields accumulated huge chunk of information pertaining to particular data that is found to be essential in better decision making for health care expert. For taking Good decisions and provide adequate results on data Particular developed data mining schemes are implemented. Concerning this research, 3 groups for data mining schemes such as Naïve Bayes, Decision tree and K-NN, were taken for discussion, and implemented in enhancing diseases of heart disease for casting systems in prediction and analysis. Main aim of such research lies in establishing optimal methods of grouping in maximizing accurate classification of abnormal and normal population. In avoiding precious life loss before time, hence is became possible. Testing setup was developed in measuring behavior of algorithms by UCI machine learning Repository's dataset on cardiac ailments. In comparison with remaining prevention of heart disease algorithms, it was seen that Naïve Bayes algorithm is best by providing precision of up to 98%.

Index Terms— Naïve Bayes; Decision Tree; K-NN; Data Mining ; classification.

Paper ID: 97

Design and Analysis of Hybrid Renewable Energy System using Fuzzy Logic Controller

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Abstract : This paper presents a novel adaptive scheme for energy management in hybrid power systems. The proposed management system is designed to manage the power flow between the hybrid power system and energy storage elements in order to satisfy the load requirements based on fuzzy logic controllers. The advance fuzzy logic controller is developed to distribute the power among the hybrid system and to manage the charge and discharge current flow for performance optimization. The developed management system performance was assessed using a hybrid system comprised PV panels, wind turbine (WT), battery storage. The dynamic behaviour of the proposed model is examined under different operating conditions. Real-time measured parameters are used as inputs for the developed system. The proposed model and its control strategy offer a proper tool for optimizing hybrid power system performance, such as that used in smart-house applications.

In this study, fuzzy logic controller (FLC) has been designed that fix the voltage amplitude to a constant value of 380 V and 50 Hz for loads supplied from a wind/battery hybrid energy system are explained and compared. The quality of the power produced by the wind turbine is affected by the continuous and unpredictable variations of the wind speed. Therefore, voltage-stabilizing controllers must be integrated into the system in order to keep the voltage magnitude and frequency constant at the load terminals, which requires constant voltage and frequency. A fuzzy logic-based controller to be used for the voltage control of the designed hybrid system is proposed and compared with a classical PI controller for performance validation. The entire designed system is modeled and simulated using MATLAB/Simulink GUI (graphical user interface) with all of its subcomponents. Thus in this study to get the advantages of both the system we integrate both these systems and this resulted hybrid system is sued for the charging and discharging of batteries. It is observed from comparison that minimum ripple in solar PV model DC current and Voltage. Track maximum power in solar PV mode and wind turbine Total harmonics distribution is 2% in 3 phase inverter current as compared to previous algorithm. Perfect DC current and voltage at solar PV panel.2 KHz switching frequency of SVPWM in Voltage source inverter very less power device loss.

Keywords: Hybrid system comprised PV panels, wind turbine (WT), battery storage, fuzzy logic controller (FLC). SVPWM.

Paper ID: 98

Distribution Considering Imbalance And Its Long Run Incremental Costagents Based Bilateral Trade Market Of Emerges.

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Abstract- In the paper of a various larger numbers of small-scales producer and prosumer (the consumers that involve in customizing products for their own uses) with distributed energy resource (DERs) have necessitated its development for market and its main purpose is to the management of grids distribution .However, in present scenarios it do not account for the purpose of settlement and regulatory of electricity market for the two sided transaction.In this work , we will give a construction equally .The entity (sellers/buyers) maximize social welfare along with penalty consideration which may associated with practical system imbalance for the settling in real time .To obtain this we use a discrete profile of energy instead of a singly coordinated energy auction is used .This work uses the agent technology for the designing of sellers and buyers negotiations by modeling behaviour of seller and buyer. From this behaviours sellers agent try to earn maximum revenue and reduces the payment due to imbalance penalty. However, the buyers agent is try to reduce its contractual agreements .The different study of cases are being establish and simulated to show the proposed methodology .

This work offers a novel tactic for giving long-runs incremental costs (LRICs) price in networks charge .The suggested tactic made uses of the unused capacities of a withdrawing networks to revert back the charge of progressing or accepting futures asset resultant over the addition of generations or burden at every focusing lump on the distribution grid . The suggested method of LRICs have confirmed with a comparisons of the conventional assets cost relating the prices (ACRP) technique use for the calculation of transmission cost in Great Britain.

The main novelty of this work is to by considering price unbalancing for the two sided concession and settle by taking care of welfare of society and trying to the cost imposed due to imbalance is less . In future ,by considering future demand of load entity and due to load increase .

Keywords: Distributed Energy Resource (DERs) , long-runs incremental costs (LRICs), assets cost relating the prices (ACRP).

Micro2022, June 25th - 26th, 2022, Jaipur, Rajasthan.
List of invited Speakers/ Session Chairs/Experts

	Keynote Speaker **Prof. Pierluigi Siano**, Professor and Scientific Director, Smart Grids and Smart Cities Laboratory, Department of Management & Innovation Systems, University of Salerno, Salerno, ITALY.
	Invited Speaker **Dr Jerzy R. Szymanski,** University Professor, Faculty of Transport, Electrical Engineering and Informatics Kazimierz Pulaski University of Technology and Humanities, Radom – 26-000, POLAND
	Francesco De Leonardis Associate professor Electronics, Associate Editor of Sensors (MDPI), Department of Electrical and Information Engineering, Politecnico di Bari, Italy. The research interests of Francesco De Leonardis are in the field of the integrated Optoelectronics, Nanophotonics and Nonlinear Photonics. In particular he developed, giving significant and original improvements, the physical-mathematical modelling, the design and the simulations of both passive and active photonic devices
	Invited Speaker **Dr. Raghvendra Sahai Saxena** Scientist, grade F, Defence Research and Development Oorganization, Delhi, India. Since 1998, he has been a Scientist with the Solid State Physics Laboratory (SSPL), DRDO, Delhi. His B.E. degree in ECE from G. B. Pant Engineering College, Pauri Garhwal, India in 1997, M.Tech. in Microelectronics from Indian Institute of Technology (IIT), Bombay, India in 2003 and Ph.D. degree from Indian Institute of Technology (IIT), Delhi, India in 2012.
	Invited Speaker **Dr. Mohamed Sultan** **Associate Professor,** Faculty of Electrical Engineering, Universiti Teknologi Malaysia. B.Eng. and M.Eng. degrees in electrical engineering from Universiti Teknologi Malaysia, Skudai, Johor, Malaysia. Ph.D. degree in electrical and computer engineering from the Department of Electrical and Computer Engineering, The University of British Columbia, Vancouver, BC, Canada. Dr. Mohamed Sultan has published over 150 technical papers in MEMS and related fields.
	Session Chair **Prof. N.P Maity** Professor and HOD, Department of Electronics and Communication Engineering Mizoram University(a Central University) Mizoram, India.

		Invited Speaker
	Prof. Md. Kamrul Alam Khan Professor, Department of Physics, & Ex-Chairman (Department of Physics), & Ex - Dean (Faculty of Science) Jagannath University, Dhaka-1100, Bangladesh.	Invited Speaker
	Dr. Harsupreet Kaur Department of ECE, University of Delhi, Delhi, India. And Secretary of IEEE(EDS), Delhi Chapter.	Invited Speaker
	Dr. Reshmi Maity Department of Electronics and Communication Engineering Mizoram University(a Central University) Mizoram, India.	**Session Chair**
	Dr. Pranab Kumar Mondal Department of Mechanical Engineering, Indian Institute of Technology, Guwahati, Assam, India	**Session Chair**

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