Abstract Proceedings of

# CCSN 2021

**10th International Conference on**

# Computing, Communication and Sensor Networks
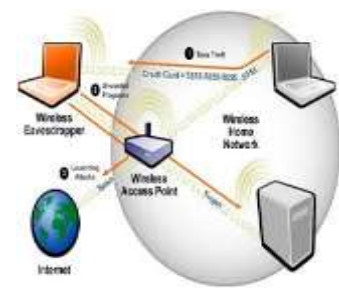
## 2nd to 4th of October, 2021

# CCSN 2021

10th international conference on

Computing, Communication and Sensor Networks

October 2nd to 4th 2021

Venue: Online conference

Website of conference: actsoft.org/ccsn2021



Proceeding Book with abstract of papers (this book is for only authors reference and should not be linked with any server).
Published date: 2nd October 2021

Published by: Dulal Acharjee,

Director, Applied Computer Technology,

Address of registered office:

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

Email: dulal@actsoft.org

Website: https://actsoft.org

## Inaugural Song:

**Prayer**
Translated in English
By
Hillol Ray
http://www.iwvpa.net/rayh
http://www.iwvpa.net/rayh/index-hra.php

Desires are all yours,
You are the universal star-
You do your own works, mom,
People say, I do them from a far!!

You stuck elephant into clay,
And push a handicap to ascend hill-
To some, you offer "Brahmo" feet,
And make others descend downhill!!

I am a machine, you are the machinist,
I am the home, you are the homemaker-

I am the chariot, you are the charioteer,
You drive as you like, and I am a happy taker!!

"Milestone"
June 25, 2019
Garland, Texas, USA

## Editorial

On behalf of the Applied Computer Technology Kolkata, and International Association of Science, Technology and Management, the organizing committee of CCSN2021 is delighted to invite you to the $10^{th}$ international conference on Computing, Communication and Sensor Networks. The conference will be held virtually for three days on October $2^{nd}$ to $4^{th}$ 2021.

In the light of current exceptional circumstances, CCSN2021 has been re-envisioned as a virtual conference, for the safety of our community and to offer an inclusive experience. The virtual format will provide an opportunity for our community to continue to present their research and collaborate with their peers across the globe.

About 124 papers were received and 68 were selected for presentation in the areas of wireless technology, application of IoT for environment monitoring, Mine Communication, Artificial Intelligence Methods, Machine Learning, Development of an alert system for monitoring underground mines, RNN Model, applications of various types of Sensors, algorithms for stochastic simulation, Software Defined Network and Security Issues, FinFETs for Ultra Low Power VLSI, Internet Of Drone Things, ZF CSI technique etc:

The CCSN2021 conference will convene experts in the field of Computing, Communication and Sensor Networks for technical communications through presentations and online discussions, providing a fantastic opportunity to network with like-minded professionals from around the world. The online conference will feature invited talks and keynotes, and will give you the opportunity to exchange efficiently.

We look forward for the active participation of all our delegates and participants in the CCSN2021.

With due thanks and best wishes to all our team including the Chief Guest, other invited speakers, Chair persons, Authors, participants etc. for sparing their valuable time in making the event a success in this typical pandemic period of COVID19.

This proceedings are prepared with the abstracts of all papers for the delegates of the conference and for offline uses only- which will never be available online as because, after the conference, most of the papers will be forwarded for possible publications in Special Issue of the Journal of Microsystem Technologies, SCI indexed, Springer-Nature publisher or in different proceedings as Book Chapters as per theme of the paper.

The Editors

10<sup>th</sup> International Conference on
"Computing, Communication and Sensor Networks", CCSN2021
Dates: 2<sup>nd</sup> to 4<sup>th</sup> October, 2021, Online, India.
………………………………………………………………………….

**Agenda of Inaugural Session**

Program conductor: Dr. Sulagna Chatterjee, Asst.Professor of Adamas University, Kolkata, will take microphone and give her introduction and say something about CCSN2021 and she will call all guests on the Dais (Online).

1. Prof. Singam Jayanthu, General Chair, CCSN2021, and Professor, NIT,Rourkela, Odisha.
2. Prof. Marcin Paprzycki, Systems Research Institute Polish Academy of Sciences,Vice Chair of IEEE Poland.
3. Prof. Supriya Pattanayak, Vice Chancellor of Centurion University, Odisha.(as Guest of Honor).
4. Prof. Jerzy Szymanski, Kazimierz Pulaski University of Technology and Humanities in Radom, Poland.
5. Prof. Dulal Acharjee, Chairman of CCSN-2021 and Director of Applied Computer Technology, Kolkata.
6. Prof. Piotr Bilski, Professor, Faculty of Electronics and Information Technology, Vice-Director in charge of science, Warsaw University of Technology, Poland.
7. Prof. C K Jayasankar, Professor, Department of Physics, Sri Venkteswara University, Tirupati, Andhra Pradesh, India,
8. Dragana Bajic,Department of Communications and Signal Processing, University of Novi Sad, Serbia, Europe.
9. Prof. Kamrul Alam Khan, Professor, Jagannath University, Dhaka, Bangladesh
10. Sri Hillol Ray, A writer, poet, engineer and a high official of ,US Environmental Protection, USA
11. Prof. Zoran Jaksic,Professor, Institute of Chemistry,National Institute of the Republic to Serbia,University of Belgrade, Serbia, Europe.
12. Susanta Kumar Das, Ph. D.,Professor and Head, School of Physics,GANGADHAR MEHER UNIVERSITY, SAMBALPUR, Odisha.
13. B Veera Reddy , Director (Technical), Eastern Coalfields Limited (Central Undertaking company), West Bengal

All guests will take their seats on the dais(Online).
16:00-16:10 Inaugural Song by : Ms.Debjani Bhattacharya and group.
(at the same time, Lightning will be done, Flowers will be given to portaits of Vidyasagar, Lotfi A Zadeh and Michel Faradey).
Then Program conductor will invite all guests to deliver their talks one by one:
16:10-16:15: Welcome speech by Prof.Singam Jayanthu, General Chair, CCSN2021

16:15-16:20: Speech by Prof. Dulal Acharjee, Chairman, CCSN-2021 and Director, Applied Computer Technology.
16:20-16:25: Prof. Jerzy Szymanski, Kazimierz Pulaski University of Technology and Humanities in Radom, Poland.
16:25-16:30: Prof. Kamrul Alam Khan, Professor, Jagannath University, Dhaka, Bangladesh
16:30-16:35: Prof. Dragana Bajic, Department of Communications and Signal Processing, University of Novi Sad, Serbia, Europe.
16.35-16.40: B Veera Reddy , Director (Technical), Eastern Coalfields Limited (Central Undertaking company), West Bengal
16:40-16:45: Prof. Supriya Pattanayak, Vice Chancellor of Centurion University, Odisha.(as Guest of Honor).

16:45-16:50: (Digital Proceeding book will be opened by clicking on Mouse by the Chief Guest Prof.Piotr Bilski);
(to help him Prof. Dulal Acharjee will open Proceeding Book from the office of the conference.)
16:50-16:55: The Chief Guest: Prof. Piotr Bilski, Professor, Faculty of Electronics and Information Technology, Vice-Director in charge of science, Warsaw University of Technology, Poland.

**16:55-17:00: ** Declaration of Lotfi A Zadeh Memorial Awards**

(from the office draft certificates will be displayed on Screen, VC will tell the names and spread hands to deliver, receivers will put hands to receive. When certificates will be displayed, a short biodata will be read out

in back ground.)
Prof. Dr. Marcin PAPRZYCKI, Systems Research Institute Polish Academy of Sciences,Vice Chair of IEEE Poland Section.
Prof. Zoran Jaksic, Professor, Institute of Chemistry, Technology and Metallurgy,
National Institute of the Republic to Serbia, University of Belgrade, Europe.

**17:00-17:05 : ** Declaration of Vidyasagar(Iswar Chandra Memorial) Awards**

Sri Hillol Ray, A writer, poet and engineer of US Environmental Protection Agency, Dallas,Texas,USA

Susanta Kumar Das, Ph.D., Professor and Head, School of Physics, Gandhidhar Meher University, Sambalpur, Odisha.

17:05-17:10 : invite them to Say something : calling names of-

Prof.Dr.Marcin Paprzycki (2 mins)
Prof. Zoran Jaksic (2 mins)
Sri Hillol Ray (2 mins)
Sushanta K Das (2 mins)

17:20-17:25 :Vote of Thanks by : Dr. Marta Zurek Mortka, Specialist, Department of Control Systems, Lukasiewicz Research Network-Institute for Sustainable Technologies, Radom, Poland, Europe.

## **END OF INAUGURAL SESSION**

===========================================
Link of conference presentation to CCSN2021 for all sessions is:

meet.google.com/uwc-tctf-wnc

List of Registered papers:

Session-1:  Paper IDs: 13, 18, 24, 70, 35, 102

Session-2: Paper IDs: 46, 6, 67, 17, 19,45, 93, 52, 60

Session-3: Paper IDs: 49, 21, 25, 34, 44, SJ1

Session-4: Paper IDs: 15,57, 26, 87, 31, 101, 82

Session-5: Paper IDs: 58, 20, M2, 30, 63,72

Session-6: Paper IDs: 22, 83 29, 16,84

Session-7:  Paper IDs: 32, 37,69, 42,51,76

Session-8:  Paper IDs: 54,33, 97,48, 71, 75

Session-9: Paper IDs: 12,65, 36, 43,106, 90

Session-10: Paper IDs: 100, 50, 86, 56, 59, 107, 64,66

Session-11: Paper IDs: 113, 105, 111, 112, 114,

For details about conference: https://actsoft.org/ccsn2021

# Index-CCSN2021

Technical Session-1 : Paper IDs: 13, 18, 24, 70, 35, 102

| SL | (PID)Paper Title/Author | Page |
|---|---|---|
| T1 | **Invited Talk:** Wireless Communication Technology In Underground Coal Mine Dr.Ankita Pramanik, | 11 |
| T2 | **Keynote Talk:** AI-based methods for the electrical appliances load monitoring Prof. Piotr Bilski, Ph.D, D.Sc | 12 |
| 1 | ( 13) Design & Implementation of Non-invasive Fetal Monitoring System using LabView: *C.V. Keerthilatha, Lalitha Malladi, Dr. M. Kezia Joseph, Prof. A. Gopala Sharma* | 13 |
| 2 | *(18)* Implementation of Community Detection using DBSCAN Algorithm: *Myneni Madhu Bala, M Sai Manikanta, R Sai Keerthana* | 14 |
| 3 | *(24 )* On Message Routing in Extended Double Star Network Topology for Massive Parallel Communications : *SadashibaPati,Lipsa Priyadarshini Singh, Nibedita Adhikari, Vinay Singh* | 15 |
| 4 | *(70 )* Design of an Edge Slotted Waveguide Antenna Array Based on Semicircular Cutting for LTE Signal Detection :*AshutoshTripathi, RiyazPathan,* | 16 |
| 5 | *(35 )* A Case Study and Troubleshooting Experience of Safety Power Channel of Instrumentation and Control System of the BAEC TRIGA Research Reactor: *Md. Bodhroddoza Shohag, Md. Sayed Hossain, Md. Rakibul Hasan, Kamrul Alam Khan, Md. Mobasher Ahmed, Abdullah Al Mahmud and Md. Abdul Malek Soner* | 17 |
| 6 | *(102 )* Ananth Algorithm: A New Sorting Algorithm : M.Velladurai, Dr.S.Godfrey Winster , Prof. Jayarajesh Vattam, Prof. Mayank Mangal, Vivek Pandey. | 18 |

Technical Session-2: Paper IDs: 46, 6, 67, 17, 19,45, 93, 52, 60

| SL | (PID)Paper Title/Author | Page |
|---|---|---|
| 7 | (46 ) Image Illumination and Seam Carving using MIRNET: *Varun Luthra, Mohit Pandey, Sachin, Harmandeep Kaur Kaler, Akash Rawat* | 19 |
| 8 | ( 6) Web Application Enabled Face Recognition System for Smart Attendance Application using AI Algorithm: *Lakshmi Narayana Thalluri , Addepalli V S Y Narayana Sarma, Thati Surya Teja, Chikkala Mohan Sundar,Janga Vijay Kumar* | 20 |
| 9 | ( 67) Image recognization in python using OpenCV : *Pulkit Jain, Gurmeet Singh, Inderpreet Singh, Harjot Singh Gill, Manoj Dewangan* | 21 |
| 10 | ( 17) Blind's Bib: An Invention of Wearable Aid Prototype: *Myneni Madhu Bala, Sai Sravan Kothacheruvu* | 22 |
| 11 | ( 19) Implementation of Mood Based E-Learning platform with Facial Emotion Recognition: *Myneni Madhu Bala, S Siva Abhishek, A Siddharth, P Krishna Vamshi* | 23 |
| 12 | ( 45) Internet of Things in Agriculture Industry: Implementation, Applications, Challenges *and Potential*: *Kiran Jot Singh , Divneet Singh Kapoor, Anshul Sharma, Khushal Thakur, Tanishq Bajaj, Ashwin Tomar, Sparsh Mittal, Baljap Singh, Raghav Agarwal* | 24 |
| 13 | **(93**) Deep Learning and SVM based Hybrid Approach for Indian Licence Plate Character Recognition **:** *Nitin Sharma, Pawan Kumar Dahiya, B R Marwah, Reema Lalit* | 25 |
| 14 | (52) A Technological scrutinize on Energy Harvested Wireless Sensor for IoMT Health Care System : *Piyush Samant, Bhanu Priyanka.Valluri* | 26 |
| 15 | (60) Grey Scale Image Skeletonization of Vein Pattern using Hausdroff Image Binarization technique in Biometric Security System; *Dilpreet Kaur Arora* | 27 |

Technical Session-3: Paper IDs: 49, 21, 25, 34, 44, SJ1

Technical Session-4: Paper IDs: 15,57, 26, 87, 31, 101, 82

Technical Session-5: Paper IDs: 58, 20, M2, 30, 63,72

Technical Session-6: Paper IDs: 22, 83 29, 16,84

| SL | (PID)Paper Title/Author | Page |
|---|---|---|
| 36 | (22) Low Pass Filter Control of Energy Storage System in a DC Micro-grid with Improved Battery Life: *Ajay Dheeraj, Afzal Sikander* | 47 |
| 37 | *(83)* Emotion Recognition: A Review : *Bhavesh, Sandeep, Pulkit Jain* | 48 |
| 38 | *(29)* Performance Analysis of a Grid Connected Microgrid System under Fault Condition: *Suman Ghosh, Chandan Kr. Chanda, J. K. Das* | 49 |
| 39 | *(16)* An Observation - Power density of a PKL, Aloe Vera, Myrobalan,Lemon and Tomato Unit Cell: *K.A.Khan, Md. Sayed Hossain, Salman Rahman Rasel* | 50 |
| 40 | *(84)* Smart Shirt: A Leap Into Technological Fashion: *Alok Barwal, Pulkit Jain* | 51 |
| 41 | | |

Technical Session-7: Paper IDs: 32, 37,69, 42,51,76

| SL | (PID)Paper Title/Author | Page |
|---|---|---|
| 42 | (32) Implementation of Low Cost Intelligent System for Coal Mines Using GSM: *Vijaya Bhasker Reddy, Suneetha Ghatikanti* | 52 |
| 43 | (37) Architecture, Protocols and Challenges of Internet of Things: An Overview *Srishti Sabharwal, Ashima Shahi* | 53 |
| 44 | (69) Fuzzy clustering-based under-sampling algorithm (FCA) for class imbalance problem: *Vibha Pratap, Amit Prakash Singh* | 54 |
| 45 | (42) Improved resampling algorithm through a modi_ed oversampling approach based on Spectral Clustering and SMOTE: *Pankaj Kumar Jadwala, Sonal Jainb, Sunil Pathakc, Basant Agarwald* | 55 |
| 46 | (51) Comparative Study of Multiple Influential Parameters and Measures in Social Network *Priyanka, Dr. Monica Luthra* | 56 |
| 47 | (76) Application of Blockchain Technology for Defending the Pandemic. A Bibliometric Analysis: *Rana Gill,* | 57 |

Technical Session-8: Paper IDs: 54,33, 97,48, 71, 75

| SL | (PID)Paper Title/Author | Page |
|---|---|---|
| 48 | *(54)* Cloud Based Surveillance using ESP32 CAM : *Harmandeep Kaur Jhajj* | 58 |
| 49 | *(33)* Design and analysis of bandpass/ bandstop filter by serpentine meander stub/ open stubs for K band : *Sk. Shoukat Vali, K. Srinivasa Rao* | 59 |
| 50 | *(97)* Regionalization of Precipitation In Andhra Pradesh and Telangana State by using PCA: *Gore Vikas Sudam Ashutosh Chaturvedi and Dr. K. V. Jayakumar* | 60 |
| 51 | *(48)* Assessing Dynamic Ram Technology With Contrast Era of Megabit, Gigabit & Merged Dynamic RAM/Logic: *Sanchit Yadav, Ritika Rattan* | 61 |
| 52 | (71) Analysis of Computational Complexity in Interference Mitigation with 3D MIMO Beamforming Techniques in 5G Networks: *Ashutosh Tripathi , Ranjeet Yadav* | 62 |
| 53 | (75) Sensor Technology for Fuel tank Monitoring. A Bibliometric Review: *Arshdeep Singh Kalsi, Harjot Singh Gill* | 63 |

Technical Session-9: Paper IDs: 12,65, 36, 43,106, 90

| SL | (PID)Paper Title/Author | Page |
|---|---|---|
| 54 | *(12)* Applications of Green Energy Storage Systems using PKL Battery : *K.A. Khan, Md. Sayed Hossain, Salman Rahman Rasel* | 64 |

| | | |
|---|---|---|
| 55 | *(65)* Machine learning in Artificial Intelligence and Robotics Vision: A Review<br>Gurmeet Singh , Pulkit Jain, Vinay Shah, Inderpreet Singh, Harjot Singh Gill,<br>Manoj Dewangan | 65 |
| 56 | *(36)* Analysis of An IOT Based SDN Smart Health Monitoring System:<br>*M. Tejeswara Kumar, Hemanta Kumar Bhuyan, Mamidi Gopi* | 66 |
| 57 | *(43)* Energy Harvesting Using Piezoelectric Devices:<br>*Tripti Sharma, Deepak B Kuttan and Satwinder Kaur* | 67 |
| 58 | (106) A New Hybrid Boost Converter with Cuckoo search MPPT for High Gain Enhancement of Solar PV System: *CH. Siva Kumar,  G. Mallesham* | 68 |
| 59 | (90) Malware and Communication Network in Cyber Security: *Shruti Aggarwal* | 69 |

Technical Session-10: Paper IDs: 100, 50, 86, 56, 59, 107, 64,66

| SL | (PID)Paper Title/Author | Page |
|---|---|---|
| 60 | *(100)*  Study of Sound Waves on Triazinothiocarbamides in Dioxide Water Mixture | 70 |
| 61 | *(50)*  Destination Sequenced Distance Vector Implementation Using NS-2:<br>*Nitin Sharma, Reema Lalit* | 71 |
| 62 | *(86)* Design and Performance Analysis of DWDM Optical Link for High Speed Optical Communication: *Harpreet Kaur   ,  Ahsanullah Umary* | 72 |
| 63 | *(56)* The effect of Chaotic Mapping on Naked mole-rat algorithm for numerical optimization and engineering design problems :*Supreet Singha, Urvinder Singh* | 73 |
| 64 | (59) Optimisation in routing techniques to obtain maximum network life time in WSN :<br>*Kritika Raj Sharma* | 74 |
| 65 | (107) Self-consistent Non-linear Physics based predictive model for the computation of THz-signal attenuation in Fog with varying visibility in tropical climatic zone :<br> *Debraj Chakraborty, Moumita Mukherjee* | 75 |
| 66 | (64) Thermal Imaging or Thermography: A Review:<br>*Inderpreet Singh, Gurmeet Singh, Pulkit Jain, Harjot Singh Gill, Rakesh Kumar* | 76 |
| 67 | (66) Applications of Nano Particles in Bio Medical: A Review<br> Vinay Shah, Pulkit Jain, Gurmeet Singh, Harjot Singh Gill, Rakesh Kumar | 77 |
| T3 | Invited Talk: Splitting codes for incremental ARQ retransmission:<br>*Dr.Dragana Bajic, Department of Communications and Signal Processing, University of Novi Sad, Serbia* | 78 |

Technical Session-11: Paper IDs: 113, 105, 111, 112, 114,

| SL | (PID)Paper Title/Author | Page |
|---|---|---|
| 68 | *(113)* Energy e_cient algorithms for enhancing lifetime in wireless sensor networks:<br>*Sanjoy Mondal, Saurav Ghosh, Sunirmal Khatua, Utpal Biswas, and Rajib K Das* | 79 |
| 69 | *(105)* Congestion Control, Mobility, and Scalability Issues in VANETs:<br>*Jagdeep Kaur,Harsh Jindal* | 80 |
| 70 | *(111)* Assessing the electricity energy efficiency of university campus exterior lighting system and proposing energy-saving strategies for carbon emission reduction: *Alper Kerem* | 81 |
| 71 | *(112)* A Hybrid Neuro-Fuzzy Prediction System with Buttery Optimization for Air Quality Forecasting: *Samit Bhanja, Santanu Metia, Abhishek Das* | 82 |
| 72 | *(114)* Energy efficient participant selection algorithms for Mobile<br>Crowd Sensing Environment: *Sanjoy Mondal, Anirban Mukherjee, Sukanta Mitra,<br>Saurav Ghosh, Sunirmal Khatua, Rajib K Das and Abhishek Das* | 83 |

Invited Talk:

# Wireless Communication Technology In Underground Coal Mine

## Ankita Pramanik

Assistant Professor
Department of Electronics and Telecommunication Engineering,
Indian Institute of Engineering Science and Technology (IIEST),
(An Institute of National Importance),
Shibpur, Howrah-711103, West Bengal, India.

Due to mining operations, the underground coal mine air is filled with different toxic gases, namely carbon dioxide, methane, carbon monoxide, sulphur dioxide, dinitrogen, hydrogen sulphide, nitrogen dioxide, suspended dust particles, moisture, and oil droplets from machinery. This nature of the environment makes underground mines an accident prone area. So continuous monitoring of these gases and dissemination of this information within the mine and to above the ground monitoring station is essential.

To make matters worse, the dynamic nature of the underground coal mine poses challenges in establishing wireless communication [2]. The radio frequency signals while propagating experience electromagnetic interference, signal attenuation, multipath fading and noise [3]. Thus wireless technologies such as radio frequency identification (RFID), wireless fidelity (Wi-Fi) and Zigbee, popular for indoor positioning above the surface [4] fail to provide satisfactory service in underground environments. Moreover, wireless sensors cannot be deployed in an underground mine unless they are proven to be intrinsically safe (transmitted power below 25mJ). Underground mine is an accident prone area. So locating and rescuing trapped miners is important. However this task becomes daunting as the underground mine is a global positioning system (GPS) denied area [3]. Thus, it is a very challenging task to design a sustainable framework for remote monitoring, message broadcasting and location tracking of miners.

To enable environment monitoring in underground coal mines, different sensors with minimum power consumption need to be used. Long Range (LoRa) gateways and transceivers working on the principle of low power wide area network (LPWAN) have shown promising results to solve the problem of data transmission over a long range while adhering to mine safety rules [5]. The new emerging visible light communication (VLC) is being implemented these days to track the miners and also to illuminate the mine area. In [4] an algorithm to locate a miner using received signal strength has been proposed.

So in short, though mining is the second oldest industry, the underground coal mine area is a blind spot where miners are risking their life every day. The present talk will focus on the technologies aiming to improve mine conditions. Thus these technologies are beneficial to the production and also boost the physical, mental and working condition of the miners.

References
[1] Tien, Jerry C. "The impacts of MINER Act of 2006 on the US mining industry." Journal of Coal Science and Engineering (China) 14.3 (2008): 501-506.
[2] Chowdhury, Ankita Ray, Ankita Pramanik, and Gopal Chandra Roy. "On wireless communication in underground mine system." Proceedings of the 2nd International Conference on Communication, Devices and Computing. Springer, Singapore, 2020.

Keynote Talk:

# AI-based methods for the electrical appliances load monitoring

Prof. Piotr Bilski, Ph.D, D.Sc.

Professor, Faculty of Electronics and Information Technology, Vice-Director in charge of science, Warsaw University of Technology, Poland.

The Non-Intrusive Load Monitoring (NILM) is the important field of research in the electrical engineering, due to the pressing need to save energy consumed by the households. The aim is to identify each appliance operating in the power network, subsequently identifying the change of state in the particular device (like turning it on or off). Currently there are multitudes of original approaches aimed at identifying operating appliances with the highest accuracy, differing regarding multiple criteria.

The general monitoring system architecture will be introduced, covering both hardware and software part. The task of the former is to acquire voltage and current samples, which could next be processed to identify particular appliances. The latter are aimed at signal processing operations and succeeding appliance identification and assessment of the energy consumed by it.

Classification of various NILM architectures is crucial for understanding various approaches. Although there are multiple taxonomy criteria possible, the most significant ones include the sampling frequency, categories of appliances identified, analysis domains and methods for the device identification.

The analyzed signals are sole current, or both current and voltage. The corresponding signal sampling frequencies are divided into three ranges: low (single Hz), medium (up to tens of kHz) and high (up to hundreds of MHz). Selecting any of these depends on the available data acquisition hardware and determines the ability to extract crucial information. Appliances may be analyzed in the steady (after the device was turned on or off) or transient states (during the appliances operation change). The former are much more popular and easier to implement, but decrease the ability to distinguish between different appliances.

Features extraction depends on the analyzed domain and applied sampling frequency. In the time domain, DC component, duration of the operation, RMS and similar statistical measures are used. In the frequency domain, particular values (like multiplications of the fundamental component) are applied. If the transient state is analyzed, Short-Time Fourier Transform or Wavelet Transform are exploited to extract coefficients both it time and frequency domain.

The most significant step in the NILM architecture is the identification of the appliance that changed its state, as it allows for the subsequent estimation of the energy consumed by this device. In most cases, Artificial Intelligence methods are used due to their ability to learn from the available cases and scenarios, high accuracy even in the uncertainty conditions, and flexibility. The key feature is the data collection for training algorithms and a priori knowledge about the configuration of devices to be analyzed. The NILM systems are categorized based on the number of devices identified and algorithms used for this purpose. The latter is important regarding the obtained accuracy and computational effort (which may be crucial in the embedded systems implementation). The most popular are rule-based approaches (like decision trees, random forests) and traditional Artificial Neural Networks (multilayered perceptrons, RBF networks and Support Vector Machines). Another often used approach are Hidden Markov Models, which work based on the a priori and computed probabilities of occurring the specific event (appliance's state change). Presented methods are often compared to each other, allowing for selection of the best group in the specific case.

The experiments show that the successful appliance identification and energy consumption evaluation strongly depends on the combination of the feature extraction and classification methods (which in turn, are driven by the data acquisition technique). The remaining problems include training of the system from scratch (with zero-knowledge in the beginning), maintaining the high accuracy with large number appliances in the set and identifying energy-efficient devices operating with multiple power-hungry ones working at the same time.

Pid-13

# Design & Implementation of Non-invasive Fetal Monitoring System using LabView

C.V. Keerthilatha[1], Lalitha Malladi [2]
Dr. M. Kezia Joseph[3] , Prof. A. Gopala Sharma[4]

[1]Assistant Professor, [2]Assistant Professor
[3]Professor, [4] Professor
Department of ECE, Stanley College of Engineering and Technology
for Women, Abids, Hyderabad, India.

**Abstract:**

In today's world, infant mortality rate is not in check as expected.It is very important to monitor or observe heart rate of the fetus during pregnancy and laboras it provides crucial information about the fetal and mother health conditions. This paper gives information on different types of health monitoring for the fetus before and during labor along with clear information about the newborn like basic disorders and also detects any abnormalities of the same.It alsodeals with implementation ofa prototyped device using LabVIEW simulation in real time monitoring at low cost aimed for rural areas.

We can connect various sensors to myRio kit to measure the fetus and observe the results in labView software.

**Keywords:** myRio, Microphone sensor, Accelerometer sensor, Temperature sensor

**Pid-18**

# Implementation of Community Detection using DBSCAN Algorithm

Myneni Madhu Bala, M Sai Manikanta, R Sai Keerthana

Department of Computer Science and Engineering
Institute of Aeronautical Engineering, Hyderabad – 500043, INDIA
m.madhubala@iare.ac.in

**Abstract:**

In the present world, online social networks are rich in multimodal data sources includes the various objects, URLs and comments. which are real time dynamic sources for analyzing and that lead to discovering facts and hidden relationship among the groups in networks. Finding closed community in social networks is an existing and attracting area for the researchers. Broadly, these algorithms are based on dynamic networks as humans as key players and other one is the graph structure similar to the topological structure. These two are being used from past years but these algorithms and structures have its own limitations. This article aims to overcome the said limitations by using Density based clustering technique called DBSCAN to detect communities. Detection and removal of these noisy nodes in the detected communities leads to the improvement of the quality. The comparison of the experimental results will assure the removal of noisy nodes will impact the quality of the community detection. This is done with by using fast greedy approach by fusing with DBSCAN.

**Keywords:** Social Networks, Density based clustering, community detection, Fast Greedy, Facebook, MinPts.

Pid-24

# On Message Routing in Extended Double Star Network Topology for Massive Parallel Communications

[1]SadashibaPati, [2]Lipsa Priyadarshini Singh, [3]Nibedita Adhikari, [4]Vinay Singh

[1,4]Usha Martin University, Ranchi, Jharkhand, India
[2,3]CAPGS, BPUT, Rourkela, Odisha, India

## Abstract

The digital philosophy claims that all physical course of our environment are forms of computation or information processing at the most fundamental level. This concept gives rise to the concept of Big data. As a human nature we all need thing to be fast always. For faster processing we have to rely on parallel processing. Recently a new parallel computing architecture called as Extended Double Star (EDS) for implementing the big data framework has been proposed. The different topological parameters are derived for EDS and compared with the parent networks. Next efficient routing and broadcasting algorithms are proposed to show the efficient message passing using the network controllers.The link complexity of EDS network is found to be least among all extended topologies. While packing the highest number of nodes the EDS network retains all original features of the base network but results in faster routing and broadcasting.

**Keywords:** Interconnection, Message passing, Routing, Star graph

**Pid-70**

# Design of an Edge Slotted Waveguide Antenna Array Based on Semicircular Cutting for LTE Signal Detection

[1]AshutoshTripathi, [2]RiyazPathan,

[1] Department ofElectronics & Communication, Chandigargh University Jaipur, (Rajasthan), INDIA
(Email id:ashu20034@gmail.com)

[1]Department of Electronics & Telecommunication, Mumbai, (Maharashtra), INDIA
(Email id: riyazp4@gmail.com)

**Abstract:**

An edge slotted waveguide antenna array based on semicircular end of inclined slots radiating waveguide is proposed. Semicircular end inclined slots waveguide is analyzed and designed to operate in X band. The radiating slots are etched and rotated alternatively on the broadened top plate with semicircular cutting into the adjacent walls. This results in cancellation of radial component of Electromagnetic waves while axial component of electromagnetic waves get added. Semicircular cutting adds to the resonant length and enhances the gain of the antenna. Resultant waveguide model gives optimum gain while cross polarization is reduced.

**Keywords:** Antenna, Array, Gain, Inclined slots, Radar, Radiation pattern.

**Abbreviations:** SWG, Slotted Waveguide; IS, Inclined Slots.

Pid-35

# A Case Study and Troubleshooting Experience of Safety Power Channel of Instrumentation and Control System of the BAEC TRIGA Research Reactor

[1]Md. Bodhroddoza Shohag, [1]Md. Sayed Hossain*, [1]Md. Rakibul Hasan, [2]Kamrul Alam Khan, [1]Md. Mobasher Ahmed, [1]Abdullah Al Mahmud and [1]Md. Abdul Malek Soner

[1]Center for Research Reactor, Bangladesh Atomic Energy Commission, Dhaka, 1349, Bangladesh.
[1]Center for Research Reactor, Bangladesh Atomic Energy Commission, Dhaka, 1349, Bangladesh.
[1]Center for Research Reactor, Bangladesh Atomic Energy Commission, Dhaka, 1349, Bangladesh.
[2]Department of Physics, Jagannath University, Dhaka-1100, Bangladesh
[1]Center for Research Reactor, Bangladesh Atomic Energy Commission, Dhaka, 1349, Bangladesh.
[1]Center for Research Reactor, Bangladesh Atomic Energy Commission, Dhaka, 1349, Bangladesh.
[1]Center for Research Reactor, Bangladesh Atomic Energy Commission, Dhaka, 1349, Bangladesh.

## Abstract

Bangladesh Atomic Energy Commission TRIGA Research Reactor (BTRR) is a MK II type nuclear research reactor with a maximum thermal output power of 3 MW. Nuclear research/test reactors are designed for the development of nuclear science and technology including all necessary safety features. Safety issues are the prime concern for the nuclear reactors to protect the nuclear accidents. BTRR has a number of passive and engineered safety features against any accidental failure of its control mechanisms leading to meltdown of the reactor core or any other nuclear incident/accident. Nuclear percent power channel (NPP-1000) is one of the vital parts of the safety systems of the BTRR. Suddenly, the instrumentation and control (I&C) system of BTRR is tripped with a system SCRAM message "NPP HV Low". Safety variables are electrically conditioned, firstly, by the conditioning units. Trip signals are generated through the trip units by comparing the conditioned safety variables with the appropriate safety system settings. These trip signals are processed by the protective logic units to generate the signals which are used to trigger the safety actuation systems. The module (NPP-1000) monitors conditioned safety signals for their rationality, validity, and conformity up to the defined operational ranges and upon comparing with safety system settings provides corresponding outputs. After a long time circuit analysis, it was found that a relay in the trip circuit for high voltage was not working. Then, all the components of the trip circuit were checked carefully and finally, a fault transistor was found inside the HV trip. By replacing this transistor with a good one, the relay is now functioning successfully and the "NPP HV low trip" condition as well as the "trip alarm" have been removed from the I & C system. Various types of experiments are now going on using this BTRR facility by ensuring safe shutdown of the reactor during any abnormal condition.

**Pid-102**

# Ananth Algorithm: A New Sorting Algorithm

M.Velladurai[1] , Dr.S.Godfrey Winster[2] , Prof. Jayarajesh Vattam[3], Prof. Mayank Mangal[4],
Vivek Pandey[5]

[1] Assistant Professor, Department of Computer Engineering, Alamuri Ratnamala Institute of Engineering and Technonlogy, A.S.Rao Nagar, Vill. Sapgaon, Tal.Shahapur, Dist. Thane, Maharastra-421 601.
[2] Associate Professor, Department of Computer Science and Engineering, Kattankulathur Campus, SRM Institute of Science and Technology, Chengalpattu District, Chennai, Tamilnadu-603 203.
[3] Dean Academics, Alamuri Ratnamala Institute of Engineering and Technonlogy, A.S.Rao Nagar, Vill. Sapgaon, Tal.Shahapur, Dist. Thane, Maharastra-421 601.
[4] Hod, Department of Information Technology, Alamuri Ratnamala Institute of Engineering and Technonlogy, A.S.Rao Nagar, Vill. Sapgaon, Tal.Shahapur, Dist. Thane, Maharastra-421 601.
[5] Assistant Professor, Department of Computer Engineering, Alamuri Ratnamala Institute of Engineering and Technonlogy, A.S.Rao Nagar, Vill. Sapgaon, Tal.Shahapur, Dist. Thane, Maharastra-421 601.

## Abstract:

This paper proposes a new data arranging algorithm, "Ananth Algorithm" which is better like some available sorting algorithms. Here every two numbers are compared as lesser and grater in the available input list. When all the pairs are compared, first-last logic is applied to arrange the numbers in order.

Keywords: bubble sort, insertion sort, selection sort, merge sort, quick sort

**Pid-46**

# Image Illumination and Seam Carving using MIRNET

Varun Luthra, Mohit Pandey, Sachin, Harmandeep Kaur Kaler, Akash Rawat

Apex Institue of Technology
Chandigarh University
Punjab, India

**Abstract:**

With the rise of all social media platforms the use of imagery daily has increased by a huge amount. Hence, the quality of images becomes an integral part of it. In many cases, the image lighting is uneven in quality and visibility. Image illumination is a quickly developing technology that helps in normalizing the lighting of the image to increase the quality of the image.

Seam carving is the process of resizing an image while keeping the quality of the image intact. It is done so by using the concept of seams (paths that are of least importance) in an image and automatically removes seams to reduce image size or inserts seams to extend it. It also gives the option to manually define areas in which pixels will not be modified, which in turn helps to remove objects from the image.

The purpose here is to enhance images and display them without any distortion and be available in various sizes. HTML supports dynamic resizing but not for images.

Keywords— Image resizing, Image retargeting, Image seams, Content-aware image manipulation, Seam Carving, Image Illumination, Image Resizing, React.js, JavaScript, MIRNET

Pid-6

# Web Application Enabled Face Recognition System for Smart Attendance Application using AI Algorithm

Lakshmi Narayana Thalluri , Addepalli V S Y Narayana Sarma, Thati Surya Teja, Chikkala Mohan Sundar, Janga Vijay Kumar

**Abstract**

In this paper, we designed an Web application enabled face recognition system for smart attendance application. One of the developments that are made in the Image processing domain are the biometric service  and the research on the human face recognition. The face recognition is going a great research where the recognition and the detection of the human faces in an image are done by using the specific and certain Algorithms in the Machine Learning and Neural Networks. The Biometrics are used in the present day by finding the thief's and robberies done in the higher official places. The biometrics of the individual are checked for clues and if they are found, they are matched with the existing database. In the previous days, the face recognition is done for the single face in the image or in the live video. If the user wants for the Multiple faces in an image, then there is a problem in the recognition and detection of the faces in an image. So, In this paper we are going to describe about the detection of the Multiple images and recognizing the faces in an Image. So after extracting the images, the features are checked with the existing database. If the data is matched with the database, it sends the Class id. Here  we  are  linking  the  data  to  the  web application, which can be accessed  by  the  authenticated  users. The face recognition and detection are done by using the specific algorithms and the data is stored in the  database.

Keywords— *Machine Learning, K-Nearest Neighbour, Face Recognition, Face Detection, Smart Attendance, Web Application, Server, Database.*

**Pid-67**

# Image recognization in python using OpenCV

[1]Pulkit Jain, [2]Gurmeet Singh, [3]Inderpreet Singh, [4]Harjot Singh Gill, [5]Manoj Dewangan

*[1,2,3,4,5]Department of Mechatronics Engineering, Chandigarh University, Mohali, Punjab, India*

**Abstract.**

Image recognition is the capacity of machine vision programming to perceive objects, text, spots, and exercises in pictures. The computer utilizes machine vision innovation to accomplish image recognition. The computer utilizes cameras and counterfeit programming to image perceive. Image recognition is utilized to perform machine-based visual errands. For instance, it is utilized for assignments, for example, independent robots, looking for picture content, self-driving errands, and mishap anticipation. Image recognition calculations are routinely set up on numerous pre-named pictures with guided computer learning. Directed publicizing, shrewd photograph libraries, media intuitiveness, and admittance to the visually impaired are remembered for current and future utilizations of image recognition. Google, apple, microsoft, and facebook are among the various associations that are putting basic resources and examination into image recognition and related applications. Protection worries over image recognition and similar headways are agonistic as these associations can pull a gigantic volume of data from customer photos transferred to their online media stages. This paper depends on the picture rearrangement measure (how a computer/robots distinguish object on pictures). This paper will examine python-a programming language, AI, Unique Clint Identification (UCI) archive, open source computer vision library (OpenCV), and furthermore deep learning.

*Keywords-* python(a programming language), open source computer vision library(OpenCV), Unique Clint Identification (UCI) machine learning repository, and deep learning.

Pid-17

# Blind's Bib: An Invention of Wearable Aid Prototype

1stMyneni Madhu Bala, 2nd Sai Sravan Kothacheruvu

Department of Computer Science and Engineering
Institute of Aeronautical Engineering, Hyderabad – 500043, INDIA

## ABSTRACT

Recently, the population of Blind people autonomy is increasing around 250 million in the world and attempt to improve quality of their life. However, in spite of the promising research outcomes, the existing wearable aids for blind or visually impaired people has numerus weaknesses in terms of weight, feature limitations and cost. In this manuscript, we present a novel invention of lightweight design of wearable aid for visually impaired and blind people. The proposed design of a wearable aid will help to walk and detect the environment around them with ease and make them independent in their life. The proposed system uses fusion of sensor and vision based technologies. It includes Google Vision API services, Lidar Technology, Arduino nano and Raspberry pi 4. Based on the appearance of this prototype, this invention is named as Blind's Bib. This assures the proposed aid is designed with light weight, easy to use and with minimum number of instructions for operation. All the necessary security and frequently needed features are included in this system. Experimental results are demonstrated with blindfolded subjects and visually impaired participants.

**Keywords:** VL53L1X Time-of-flight Distance Sensor, Raspberry pi, Arduino Nano, Google Vision API, Object Detection, Pi camera, Text to speech conversion, Adafruit Ultimate GPS breakout.

Pid-19

# Implementation of Mood Based E-Learning platform with Facial Emotion Recognition

1stMyneni Madhu Bala, 2nd S Siva Abhishek, 3rd A Siddharth, 4th P Krishna Vamshi

Department of Computer Science and Engineering
Institute of Aeronautical Engineering, Hyderabad – 500043, INDIA

**ABSTRACT**

The advancement in the technology provides various opportunities for the students to encourage academic development and provides ease of access to education using the e-learning systems. The most challenging and demanding task during the learning is to be aware and support the emotional side of students. Humans can easily recognize emotions of a person, but it's been a significant challenging task to do with a computer as the human face consists some specific and peculiar characteristics. With the recent advancements in the computer and image processing fields it has become possible and easy to detect and classify emotions present in the images. The most common facial expressions classified from a human face are happy, sad, fear, surprise, anger, disgust, neutral. After the system has successfully classified different emotions then the next major task is to propose a method which will be combining few emotions to represent a single listener entity. Presently a research is being conducted on facial expression to classify a person's category of listening based on facial expression. The categories of learners considered in this paper are active listener, passive listener, nonlistener and evaluative listener. In this paper, we propose a novel technique called facial emotion recognition using Convolutional Neural Network.

**Keywords:** Facial Expression Recognition, Deep Learning, Convolutional Neural Network, Cascade, Education, E-learning system, Active Listener, Passive Listener, Non-Listener, Evaluative Listener.

Pid-45

# Internet of Things in Agriculture Industry: Implementation, Applications, Challenges and Potential

Kiran Jot Singh[1] , Divneet Singh Kapoor[1], Anshul Sharma[1], Khushal Thakur[1], Tanishq Bajaj[1], Ashwin Tomar[1], Sparsh Mittal[1], Baljap Singh[1], Raghav Agarwal[1]

[1] Embedded Systems & Robotics Research Group,
Chandigarh University, Mohali – 140413, Punjab, India.

Abstract:

The Internet of Things is enabling agriculture, especially arable farming, to become data-driven, resulting in timelier and more cost-effective farm production and management while also lowering environmental impact. This study would include an empirical survey of the actual and future applications of the Internet of Things in arable farming, where spatial details, widely varied landscapes, mission diversity, and mobile devices present particular obstacles to solve as compared to other agricultural systems. The analysis provides a description of the state of the art of deployed technology. It addresses the existing and future applications and offers an overview of the current and potential applications, and addresses the issues, as well as potential alternatives and implementations. Finally, it discusses any potential possible paths for the Internet of Things in arable farming. Smart phones, intelligent control of wireless sensor networks, middleware platforms, integrated field management information systems through the supply chain, and automated vehicles and robotics stand out as current problems with the ability to lead arable farming to smart arable farming. Various problems arise during deployment, and interoperability is a significant impediment across all levels of an Internet of Things system's architecture, which can be addressed by shared standards and protocols. Challenges like data privacy, affordability, consumption of power, latency in network, data analytics and security along with others issues have been recognized by the article reviewed and are discussed in detail. Different resolutions to all recognized challenges are presented by technologies such as artificial intelligence, intelligent data managing, and further addressed in depth issues such as availability, device power usage, latency of network, big data processing, data protection, and protection, among others.

Keywords: Internet of Things, IoT, agriculture, machine learning

Pid-52

# A Technological scrutinize on Energy Harvested Wireless Sensor for IoMT Health Care System

Piyush Samant

*AIT-CSE*
*Chandigarh University*
*Gharuan, Punjab140413, India*

Bhanu Priyanka.Valluri

*Department of Electronics and Communication Engineering*
*Chandigarh University*
*Gharuan, Punjab140413, India*

*Abstract*

The emerging technology is providing a solution to transforming our lives in a way that no one could think of before. Be it security, commercial centers, banking industry, or any industry, without any hesitation, the technology is proving a smart and feasible solution for every question. One of such domains is medical or health care services, technology is helping to simplify our lives by reducing or limiting the need for clinic/hospital visits. We are utilizing the genuine force of the Internet of Things (IoT) to eliminate the burden on medical / health care services outlines by permitting patients to associate with their medical advisors by moving the clinical information in a protected climate. The Internet of Medical Things (IoMT), is an assortment of various clinical appliances as per the applications that can associate with all the data networks of health services systems through different approaches. Medical equipment will gather, examine and send data across the web using this technology. IoMT is making its place in the world at a fast pace with 65% of global health care organizations already making use of it and it's likely to increase by 27% by the end of 2021. To power up different applications of IoT systems and to make the emerging technology sustainable there is a high demand for energy harvesting schemes. In this paper, we will be discussing the introduction, areas of applications, types of IoMT devices, advantages, Challenges, and energy-efficient methods.

**Keywords:** Internet of Medical Things (IoMT), challenges, opportunities, applications, energy-efficient system

Pid-93

# Deep Learning and SVM based Hybrid Approach for Indian Licence Plate Character Recognition

Nitin Sharma[1], Pawan Kumar Dahiya[2], B R Marwah[3], Reema Lalit[4],

[1]Department of Electronics & Communication Engineering, Chandigarh University, Mohali, 140413, India

[2]Department of Electronics & Communication Engineering, DCRUST Murthal, 131039, India

[3]Department of Transportation Engineering, IIT, Kanpur, Uttar Pradesh, 208016, India

[4]Department of Computer Science Applications, PIET, Smalkha,132102, India.

**Abstract:**

Every developing country depends upon transportation mechanism and exponential increase has been observed in developing different types of vehicles with different configurations which is a leading factor empowering automobile industry. India is a developing country with an increase in traffic on roads, facing problems such as more accidents on roads and traffic supervision issues. Density of traffic also leads to chaos at checking centres and toll plaza in absence of parametric approach used for recognition of vehicle with accuracy which is major concern in terms of reliability. System incorporating intelligent domain approach with more sustainability indices is a better solution to solve problems in resolving traffic density and improving transparency. One of the components of the intelligent transportation system for the monitoring of traffic is Automatic Licence Plate Recognition (ALPR) system. This research work is based on a detailed and comprehensive literature review in the field of ALPR. The main objective of a research is to develop automated system for pattern recognition with different combinations and better accuracy in order to provide more reliability and significant improvement for characterization of numerals and alphabets in a vehicle plate. Research is based on the fact that recognition using different soft techniques opens a diverse environment with allied field in an area of image processing. In this research work, the features of characters are used to recognize the Indian license plate. Analysis has been carried out over a range of more than 200 images with different parameters and various soft computing techniques have been used for recognition of license plate. It has been concluded that hybrid approach with Convolution Neural Network (CNN) and Support Vector Machine (SVM) classifier are having efficacy of 98.45% as compared with neural networks.

**Keywords:** Intelligent Transportation System; Automatic License Plate Recognition System; Neural Network; Random Forest; Convolutional Neural Network; Support Vector Machine.

Pid-60

# Grey Scale Image Skeletonization of Vein Pattern using Hausdroff Image Binarization technique in Biometric Security System

Dilpreet Kaur Arora

Apex Institute of Technology
Chandigarh University
Mohali,India

Dr.Krishnendu Rarhi
*Apex Institute of Technology*
*Chandigarh University*
Mohali,India
https://orcid.org/0000-0002-5794-215X

**ABSTRACT**

In recent years, biometric systems for identification purposes have been developed for different traditional methods like fingerprint, face, iris, retina, voice, signature, hand geometry. But each method has some limitation. Fingerprint system has little security issue as, impressions can be left behind which can be cloned. Similarly, voice and face patterns can also be cloned. Comparing with other biometric systems, vein patterns are more secure and resistant to forgery. In this paper, we have proposed a method for calculating maximum curvature in cross sectional profiles of veins.

*Keywords— Biometric Security, Fingerprint, veins, Hausdorff distance, Feature extraction,* finger vein verification, minutiae ,matching, curvature points

Pid-49

**Deep Learning and SVM based Hybrid Approach for Indian Licence Plate Character Recognition**

**Nitin Sharma[1], Pawan Kumar Dahiya[2], B R Marwah[3], Reema Lalit[4],**

[1]Department of Electronics & Communication Engineering, Chandigarh University, Mohali, 140413, India
[2]Department of Electronics & Communication Engineering, DCRUST Murthal, 131039, India
[3]Department of Transportation Engineering, IIT, Kanpur, Uttar Pradesh, 208016, India
[4]Department of Computer Science Applications, PIET, Smalkha,132102, India.

ABSTRACT:

Every developing country depends upon transportation mechanism and exponential increase has been observed in developing different types of vehicles with different configurations which is a leading factor empowering automobile industry. India is a developing country with an increase in traffic on roads, facing problems such as more accidents on roads and traffic supervision issues. Density of traffic also leads to chaos at checking centres and toll plaza in absence of parametric approach used for recognition of vehicle with accuracy which is major concern in terms of reliability. System incorporating intelligent domain approach with more sustainability indices is a better solution to solve problems in resolving traffic density and improving transparency. One of the components of the intelligent transportation system for the monitoring of traffic is Automatic Licence Plate Recognition (ALPR) system. This research work is based on a detailed and comprehensive literature review in the field of ALPR. The main objective of a research is to develop automated system for pattern recognition with different combinations and better accuracy in order to provide more reliability and significant improvement for characterization of numerals and alphabets in a vehicle plate. Research is based on the fact that recognition using different soft techniques opens a diverse environment with allied field in an area of image processing. In this research work, the features of characters are used to recognize the Indian license plate. Analysis has been carried out over a range of more than 200 images with different parameters and various soft computing techniques have been used for recognition of license plate.  It has been concluded that hybrid approach with Convolution Neural Network (CNN) and Support Vector Machine (SVM) classifier are having efficacy of 98.45% as compared with neural networks.

**Keywords:** Intelligent Transportation System; Automatic License Plate Recognition System; Neural Network; Random Forest; Convolutional Neural Network; Support Vector Machine.

Pid-21

# Driver Drowsiness Detection Using OpenCV and Machine Learning Techniques

Ms. K Radhika , Mr. N V Krishna Rao, Ms.N Shalini,Ms.V Divya Vani, Ms.B Geetavani

Assistant Professor,Department of Computer Science and Engineering, Institute of Aeronautical Engineering,Dundigal,Hyderabad.

## ABSTRACT

Driving in fatigue is a serious issue in recent times. Lorry drivers, bus drivers, car drivers drive for long distance throughout day and night. Driving even when in tired is the major cause for road accidents and death. It is very much important to have a system to monitor the person drowsiness and its manifestation. This system is an area of dynamic research. The models already present are either intrusive or tend to divert the person from driving. These are also not cost efficient and also requires huge setup. Thus, a project which is a budget friendly and handy is developed. The system developed is behavioral system. This works on the visual face features of the person driving. The opencv can easily detect the face of the person and a forewarning is given to person if there is any slight indication of any sleep in the driver. This helps in reducing many road accidents forehand thus saving lots of lives.
**Keywords:** Open CV, Drowsiness, Fatigue, Visual monitoring

Pid-25

## Brain Tumor Detection and Classification from MRI Images using Cascaded Deep Neural Networks

Pallavi Priyadarshini[1], Abdul Kayom Md Khairuzzaman [2], Priyadarshi Kanungo [3],
C. V. Raman

Global University, Odisha

**ABSTRACT:**

The Brain tumor is one of the leading causes of morbidity and mortality worldwide. Early detection of the tumor is a challenging task for the radiologist. Therefore, diagnosis and classification of tumors from MRI images are more important to assist radiologists and can become a gold standard noninvasive method of diagnosis in comparison to hazardous invasive methods like tissue biopsy. Both computer-aided diagnosis system and Deep neural network architecture are the most prevalent method which has shown outstanding performance in both brain tumor classification and segmentation tasks. This paper discusses and compares two CNN Models for MRI image classification with the existing works and shows the robustness of our system. Performance parameters are used to assess the result and their accuracy, recall, precision, and F1 score for tumor detection and classification.

**Keywords:** CNN, MRI, VGG-16, Resnet-50

Pid-34

# Assessment of Clustering algorithms for Credit risk evaluation applied on Factorial coordinates obtained using Multiple Correspondence Analysis

Pankaj Kumar Jadwal[a], Sunil Pathak[b], Sonal Jain[c]

[a]Research Scholar, JK Lakshmipat University, Jaipur,India
[b]Dept. of Computer Sc. & Engg., Amity University, Jaipur
[c]JK Lakshmipat University, Jaipur, India

ABSTRACT:

This research concentrates on segmenting credit card clients of Taiwan into optimal groups. Unsupervised Learning plays a signi_cant role in dividing customers into similar groups based on several parameters. If customers are clustered in groups optimally, it leads towards the retrieval of better precision from ma-chine learning models applied to customers associated with the clusters. Di_erent machine learning algo-rithms(Linear discriminant analysis, logistic regression and random forest) were applied on the obtained clusters through K-means, hierarchical and HK Means clustering algorithm, and predictive accuracy is com-pared with the accuracy obtained via applying mentioned machine learning models on the whole dataset. In this paper, a novel approach of combining K Means and hierarchical clustering(HK Means) is used. In this approach, HK means clustering algorithms are applied on the factorial coordinates, obtained from multiple correspondence analyses for segmenting customers into optimal groups has been proposed. The accuracy of the clustering techniques is evaluated from the decomposition of inertia. The results demonstrate that the combination of K Means and hierarchical clustering proved to be optimal clustering techniques for customer segmentation which can be used further for applying Machine Learning techniques for credit risk analysis.

**Keywords:** Customer segmentation, clustering, credit risk analysis

Pid-44

**New Era of Communication: Cognitive Radio
A Future Scope**

Sanchit Yadav, Ritika Rattan

Department of Electronics & communication Engineering
Chandigarh University
(University Institute of Engineering)
Mohali, Punjab

ABSTRACT:

Since the advancement being developed in each field, cognitive radio took an important place in communication area. In wireless communication system and mobile technology Cognitive radio plays an important role better in future. It is used in machine learning and with other fields and technologies as well. In this paper we presented a survey on cognitive radio, associated research issue, its architecture and various components related to it. Also, we discuss about the efficient utilization of spectrum bands followed by the various effective applications in different fields has been present.

*Keywords:* Cognitive Radio, Wireless Communication, Cognitive Radio Network, Licensed, Unlicensed.

Pid-Sj1

# An Effective Method for Detection of Cancer using Machine Learning Algorithms

Kabita Sahoo [1], Jitendra Pramanik [2], Dr. Abhaya Kumar Samal [3] , Jyotiranjan Sahoo [4]

1 Research Scholar (Enrollment No. DSR01011), Biju Patnaik University of Technology Rourkela, Odisha, India.
2 Asst. Professor, Centurion University of Technology and Management, Odisha, India,
3 Professor, Dept. CSE, Trident Academy of Technology, BPUT, Odisha, India,
4Asst. Professor, Dept. CSE, Trident Academy of Technology, BPUT, Odisha, India,

Abstract.

Cancer is considered to one of the most life-threatening disease in the world. Among different types of cancer, breast cancer is one of the most common type of cancer detected among woman. Timely detection of breast cancer has been proved to be curable and therefore, adopting proper mechanism for early detection of important for improving the chance of survival of the patient. There are many techniques used in practice for the detection of breast cancer. Most common technique of cancer detection is based upon the assessment of the malignancy of the cell in patients. Modern image processing techniques for cancer detection works on the principle of histopathology involving examination of image captured by the microscope. There are variety of algorithms and computer aided mechanisms adopted to obtain improved result of assessment. Machine learning technique is one of the recent approaches that has exhibited dependable outcome in variety of field of application. In this research paper we have used different classifier algorithm to ascertain the malignancy of the cancer cells. We have used machine learning technique with python as the implementation programming language. In this work, algorithms like Logistic-Regression(LR), Decision Tree(DT, Random Forest(RF)Classifier, Support Vector Machine(SVM), Naïve Bayes(NB) classifier and K-Nearest-Neighborhood (KNN) classifier have been implemented in order to assess their truthfulness in detection of cancer cells. Result of the study presents the degree of accuracy of measurement compared at par with other algorithms.

Keywords: Machine learning(ML) Algorithms; Support Vector Machine; Decision Tree; Cancer Prediction; Logistic Regression; Random Forest Classifier; Naive Bayes Classifier; KNN Classifier

Pid-15

# Comparative and Robustness Study of 3-Bit Adder

Md Faizan Khan, Subham Chowdhury, Ravi Kumar, Shashank Kumar Dubey, Santashraya Prasad
and Aminul Islam

Dept. of ECE, Birla Institute of Technology, Mesra, Ranchi- 835215, INDIA

ABSTRACT

The Full Adder circuit is an important component in application such as Digital Signal Processor (DSP), microprocessor ($\mu$P), microcontroller ($\mu$C), and other data processing units. This paper performs the comparative study of various adders. Adders that are under consideration in this paper are transmission gate (TG) based full adder, mirror adder, and carry bypass adder. The simulations of a 3-bit full adder at 16-nm technology are carried out in this paper using the SPICE simulation tool. Performance analysis of 3-bit full adder designs are carried out based on different design metrics like average power ($P_{avg}$), propagation delay ($t_p$), and power-delay product ($PDP$). We have analyzed all these circuits for their robustness by carrying out variability analysis in terms average power ($P_{avg}$), propagation delay ($t_p$), and power-delay product ($PDP$). The average power for transmission gate, mirror and carry bypass adder at 16-nm technology are 0.20 $\mu$W, 0.22 $\mu$W, and 0.39 $\mu$W, respectively. Propagation delay ($t_p$) for transmission gate, mirror and carry bypass adder at 16-nm technology are 0.13 ns, 0.09 ns, and 0.02 ns, respectively at a nominal supply voltage of 0.7 V. It is observed that the propagation delay of the carry bypass adder is very less as compared to other logic styles and Average power of transmission gate based full adder is less as compared to other logic styles. TG based full adder has the lowest variability for propagation delay as compared to other logic styles at a nominal supply voltage of 0.7 V.

**Keywords:** Full Adder, TG, Mirror adder, Carry bypass adder, PDP, Variability, Propagation delay, Average Power.

**Pid-57**

# Design of Dynamic logic Circuit based NOR Gate for Low Power

Saumya Srivastava

Department of Electronics and Communication Engineering
Chandigarh University , Gharuan Punjab

## ABSTRACT

In this paper NOR gate is designed by the help of dynamic logic circuit. As NOR Gate is one of the universal logic circuit it means any digital circuit can be easily designed using NOR gate. The main purpose of this paper is to design NOR gate using Dynamic logic circuit for power reduction the power consumption and enhance the speed of the device. All the simulation is carried out on LT SPICE software and power consumption is reduced approximately 50% as compared to conventional CMOS design. Here both pre-charge and evaluation mode is very useful for dynamic logic circuit. The drawback of this circuit area increased slightly by increasing the number of transistor and power dissipation is almost half to the conventional circuit.

**Keywords:** Dynamic Circuit, Digital logic, Pre-charge, Evaluation, Electronic automation design

Pid-26

# A high linear LC cross-coupled Low Noise Amplifier for X band applications

V.Thenmozhi and Dr. M. Bhaskar

Department of Electronics and Communication Engineering
National Institute of Technology, Tiruchirappalli

 ABSTRACT-

This paper presents the design and analysis of a low power, high linear low noise amplifier for X-band applications. In addition to the gain, noise figure, and impedance matching, achieving high linearity is inevitable for wireless, satellite and radar communication. The LNAs in such applications should have good interference tolerance capacity for efficient communication. The proposed modified Common Gate-Common Source LNA topology with LC cross-coupled network enhances the linearity for this high band applications. The LNA is designed and implemented in UMC 180nm CMOS process technology. From the post-layout simulations, the observed IIP3 is 13.09dBm at the center frequency of 10GHz. The proposed LNA provides a maximum gain of 18.07dB and a minimum NF of 2.88dB with 5.3mW power consumption at a supply of 1.2V.

*Keywords- High linearity, LC cross-coupled, LNA, wireless, satellite communication.*

Pid-87

# A Data Hiding Technique for Digital videos using Entropy-based Blocks Selection

Simrandeep Singh

Department of Electronics and Communication Engineering, Chandigarh University,

simrandeepsingh.ece@cumail.in

**ABSTRACT:**

The technique of hiding knowledge in certain details is steganography. One of the main trends of computer infrastructure and connectivity following the advent of the Internet has been cyber protection and information security. It is required to hide valuable information like passwords, bank details, and another personal documents. In this perspective, a new algorithm is proposed to make the message more secure. In which firstly random frames are selected by using a key and then random macroblocks are selected. The macroblocks with high entropy have chosen to hide the data in them. In this experiment, the author explains the effect of noise on Steganography video with the help of PSNR, MSE & BER.

*Keywords:* video steganography, cover video, encryption key, secret message, macroblocks, Steganography video

Pid-31

# Design and analysis of RF MEMS Shunt Switch for V-band application

K.Srinivasa Rao[1], T.Madhuri[1], R.Leela Krishna[1], T.Manish sairam[1*], Ch.Gopi Chand[3], Girija Sravani[1,2]

[1] Microelectronics Research Group, Department of ECE, KL University, Green Fields, Vaddeswaram, Guntur-522502, India.

2 Department of ECE, NIT Silchar, Assam, India.
3Department of ECE, Mizoram Central University, Mizoram, India

**Abstract:**

This paper presents the design and simulations of the RF MEMS shunt switch. The Electro-Mechanical analysis and RF performance of the switch have been done using COMSOL Multi-Physics and HFSS tool. Here, we have designed and simulate the switch with different beam materials such as gold, silver, aluminium, and the dielectric material is taken as Si3N4. The pull-in-voltage acquired for the beam material gold is 3.3 V for an air gap of 3 μm which is efficient when contrast with other materials like silver and aluminium. The up and downstate capacitance of the switch is 4.9 fF and 11.9 pF. By using HFSS (High-Frequency Structure Simulator) software we have performed RF performance analysis such as isolation, insertion loss and return loss were measured. The return loss, insertion loss is -20.09 dB, -3.13 dB, and high isolation of −22.60 dB at 40 to 75 GHz. The presented switch is used for V band applications.

**Keywords:** Pull-in Voltage, Capacitance analysis, S-parameters

Pid-101

# Octagon Quad Shaped Dual Band Broadband Antenna For Wireless Applications

Rahmani Naveed Akhtar[1], Dr. Anupama A. Deshpande[2], Dr. A. K. Kureshi[3]

[1]Research Scholar JJTU Rajasthan, [2]Professor JJTU Rajasthan, [3]Principal M. H. Saboo Siddik Polytechnic, Mumbai

## ABSTRACT

As huge number of applications has been found for a Micro-strip antenna due to its compact and small structure, a Quadratic octagon shaped dual band and broadband Micro-strip antenna has been discovered for wireless applications such as (2.1 GHz and 5.4 GHz). In this research work, it is obtained by combining four octagon shaped patch structures with a micro-strip feed line and a partial ground structure. Presented micro strip antenna is suitable for providing dual band output i.e. a frequency band from 1.672 GHz to 2.788 GHz and a frequency band from 4.876 GHz to 6.232 GHz. The resonance frequency of the presented antenna is at 2.58GHz and 5.39 GHz. Results shows that the antenna attains a good S11 return loss outcome characteristics. The designed antenna can manage10-dB impedance bandwidths and 45.655 % &24.4 % of these made the antenna more applicable for WiMAX and WLAN applications. The antenna has been tested on FR-4 substrate having thickness of 1.6 mm, Loss Tangent (t ). The presented antenna has been also examined on CST Microwave Studio. To make the presented antenna for dual band as well as for broadband the dimensions of four Octagon-shaped patch have been attached with partial ground.

**Keywords:** Micro strip Patch Antenna, WLAN, WiMAX, Quadratic Octagon Shaped Patch and Partial Ground.

Pid-82

# Fingerprint Door Lock System using Arduino and Bluetooth Application

1Jaspinder Kaur, 2Harjot Gill3Ajay Kumar and 4Jasmeet Singh

*1, 2,3,4 Department of Mechatronics Engineering, Chandigarh University, Mohali, India*

**Abstract.**

This project is based on door locking mechanism with a fingerprint scanner. The components required are Arduino UNO, fingerprint scanner, Bluetooth module, servo motor, lock and a few different hardware devices. The fingerprint scanner is on the outward panel of the door as a way to get input from person and all of the circuitry can be on the inward panel to keep away from the reach of the consumer. The fingerprint scanner scans the finger and offers output to Arduino. If the print matches with registered print, Arduino sends a call through Bluetooth module to the related tool and asks his permission. If the owner permits the consumer, Arduino will liberate the door in any other case the door could be locked. If the consumer is an unknown individual, the Arduino tells the owner that the individual is unknown and asks if the owner desires to permit the consumer or not. If the owner lets in the consumer to allow in, then Arduino asks the owner to go into the call of the consumer and saves his fingerprints else the door will continue to be locked. For the owner's fingerprint, the Arduino will release the door without asking permission from different devices. In this paper, implementation of door locking mechanism with a fingerprint scanner using Arduino UNO has been discussed in detail. This locking mechanism system ensures precise reliability, fast fingerprint scanning speed and very high protection to the operator that makes this mechanism more reliable.

**Keyword-** Arduino UNO, Bluetooth module, Fingerprint Scanner, Servo Motor.

Pid-58

# Design of Domino Logic Based NOR Gate Circuit for Reduction of Charge Sharing

Saumya Srivastava

Department of Electronics and Communication Engineering
Chandigarh University, Gharuan Punjab

**ABSTRACT:**

In this paper NAND gate circuit is designed by the help of Domino logic circuit to improve the performance of NAND gate circuit. Domino logic circuit is introduced to resolve the problem of dynamic logic circuit. Domino logic circuit will help to remove the problem of charge sharing in dynamic logic circuit. This NAND gate circuit is the universal logic gate and by the help of this any digital circuit block can be easily design. In this modern era all the things are digital. Here power dissipation of the circuit is improved approx 50-60% and delay of the circuit is reduced. Speed of the device will improve and the charge sharing problem is also resolved. All the simulations are carried out on EDA (Electronic design automation) tool on LTSPICE software.

**Key Words:** Domino logic, Time delay, Digital circuits, Electronic design Automation tool

Pid-20

# Comparative Analysis and Robustness Study of Logic Styles

Pratik Kumar Singh, Rohit Raj, Vivek Kumar, Monalisa Pandey, Santashraya Prasad and Aminul Islam

Dept. of ECE, Birla Institute of Technology, Mesra, Ranchi- 835215, INDIA

**ABSTRACT**

This paper explores design of various components that are extensively used in ALU namely AND gate, OR gate and Full Adder using GDI logic. Power dissipation and area of the circuits are one of the main issues encountered while fabrication of the chip. The design of 1-bit ALU which aims to solve these problems has been proposed in this paper. All the simulations are performed in SPICE using 32-nm CNTFET and results are tabulated showing comparison of circuit performance between STATIC logic, DOMINO logic and GDI logic. The proposed GDI cell required 64% less transistors to implement the 1-bit Full Adder as compared with STATIC logic. AND gate realized with GDI logic consumes $6.26 \times 10^4 \times$ ($6.04 \times 10^4 \times$) lower average power than that of AND gate realized with STATIC logic (DOMINO logic). GDI AND gate also shows $2.89 \times 10^4 \times$ ($1.51 \times 10^4 \times$) lower PDP than that of STATIC AND gate (DOMINO-AND gate). The GDI OR exhibits $4.8 \times 10^3 \times$ ($725 \times$) lower PDP than that of STATIC OR (DOMINO OR). GDI 1-BIT Full Adder also shows $179 \times$ ($107 \times$ $\times$) lower PDP than that of STATIC 1-BIT Full Adder (DOMINO 1-BIT Full Adder).

**Keywords:** Arithmetic Logic Unit (ALU), CNTFET, Domino Logic, Static CMOS Logic, GDI

Pid-M2

## Study of Characterictics of Resonant

# Tunnelling Diode

Manisha G[1], Ketan Mishra[2], Kunal Maharana[2], Punyaban Patil[3], Aminul Islam[4]

[1]KG Reddy College of Engneering and Technology, [2]Institute of Aeronautical Engineering, [3]CMR Technical Campus, [4]Birla Institute of Technology, Mesra, Jharkhand.

ABSTRACT

In the proposed paper, the work has been done to derive the I-V characteristic equation of an RTD. The concept of quantum mechanics, that forms the basis of working of the RTD has been studied and the existing work on tunnel diode has been taken into consideration. Also, the simulation of an RTD has been done to obtain the I-V characteristic curve. The equation obtained as a result of this work has the scope of further developments and thus, will help in understanding the RTD to a higher extent in future researches in this area. The resonant tunneling diode (RTD) has advantage over conventional transistor technology when ultrahigh-speed applications are required. And therefore, RTD happens to have wide range of applications in the field of Nano-science and technology.

*Keywords— Resonant Tunnel Diode, Quantum Mechanical Effect, Negative Resistance Region, Tunnel Current Diode Equation.*

Pid-30

# RF, linearity and intermodulation distortion analysis of tunable bandgap arsenide/antimonide tunneling interfaced JLTFET.

Samriti Sharma [a], Rishu Chaujar [a,*]

a *Department of Applied Physics, Delhi Technological University, Delhi, India*

## Abstract

This paper presents the radio frequency (RF), linearity and intermodulation distortion analysis of a charge plasma based junctionless tunnel field effect transistor (JLTFET) based on a novel combination of an arsenide/antimonide tunable bandgap source to channel (S/C) tunneling interface by incorporating binary/ternary compound semiconducting materials (InAs/AlGaSb) in the source and channel regions, respectively. The hetero-material JLTFET (H-JLTFET) is compared with a conventional homo-material (silicon) based JLTFET to explore the possible scope of HJLTFET for RFIC and wireless applications. The simulation study reveals that the HJLTFET achieves an enhanced performance in consideration of RF, Linearity and intermodulation distortion FOMs as parasitic capacitance ($C_{gg}$, 60.7% ↓), maximum oscillation frequency ($f_{max}$, 2292% ↑), gain bandwidth product (225 times ↑), Intrinsic gain ($A_v$, 708% ↑), peak transconductance ($g_m$, 79 times ↑), and various signal performance metrics such as VIP2 (97.9% ↑), VIP3 (326% ↑), IIP3 (237.9% ↑), and 1-dB compression point (11.6% ↑) in comparison to JLTFET. Therefore, HJLTFET appears to be an efficient alternative for future RFIC designs and wireless communication systems

*Keywords*: Antimonide; Band to band tunneling; Hetero-material; Junction-less tunnel FET; Linearity; Radio frequency.

Pid-63

## Modeling of Group IV Material Based MQW Transistor Laser

Jaspinder Kaur[1], Rikmantra Basu[2] and Harjot Singh Gill[3]

[1,3] Department of Mechatronics Engineering, Chandigarh University, Mohali, Punjab.
[2] Department of Electronics and Communication Engineering, National Institute of Technology, Delhi.

**ABSTRACT.**

The application of group IV materials in optoelectronic devices is one of the active research field nowadays for Si Photonics. In this present work, group-IV material based multiple quantum well (MQW) transistor laser (TL) is designed for mid-infrared applications. The incorporation of multiple quantum wells into the base region enhances the carrier confinement as compared to the bulk structure. In addition, GeSn alloy shows the direct band gap behavior with the insertion of proper amount of tin (Sn) content into the germanium which ensures that the population inversion condition is achieved. The low value of threshold base current and high modulation BW makes the proposed transistor laser structure attractive for wide range of applications in mid infrared range.

**Keywords:** GeSn alloy, multiple quantum well, TCAD simulation.

Pid-22

# Low Pass Filter Control of Energy Storage System in a DC Micro-grid with Improved Battery Life

[1]Ajay Dheeraj, [1]Afzal Sikander, [2]Abhi Chatterjee

[1]Department of Instrumentation and Control Engineering
Dr. B R Ambedkar National Institute of Technology
Jalandhar, India
[2]Energy Market Modelling, Strategy and Transactions
Ernst & Young (EY), Auckland, New Zealand

ABSTRACT-

Today's world is reliant on a steady supply of low-cost, eco-friendly electricity. As the global population urbanizes at an accelerated rate, existing infrastructure, especially the local power grid, is put under additional stress. The concept of the microgrid reduces this load. As electricity demand increases, the system must keep up with the voltage and transient stability, as the load varies more dynamically. This issue can be handled and controlled by the microgrid energy storage system, bus voltage, and transient stability. The power storage devices in this paper are the battery and the ultracapacitor. A novel low-pass filter control technique is proposed to establish an ultracapacitor reference current to keep the DC bus voltage under stable operation. According to the results, the proposed method has better voltage stability for the system as well as it helps extend battery's life.

**Index Terms-** DC Microgrid, Voltage Stability, Low Pass Filter, Battery, Transient Stability

Pid-83

# Emotion Recognition: A Review

[1]Bhavesh, [2]Sandeep, [3]Pulkit Jain

[1,2]*Student, Mechatronics Engineering, Chandigarh University, Mohali, India*

[3]*Assistant Professor, Chandigarh University, Mohali*

 **ABSTRACT**

The attracting field of Emotion Identification has obtained a good interest from both industrial and research point of view. There are various applications of emotion recognition in Human-computer interaction, video gaming, 24X7 monitoring of infants and patients suffering from diseases like Parkinson's, Alzheimer, Depression and Falls etc. This paper discusses about the approaches towards recognizing the emotions of human beings and is aimed at finding out the best and cost-effective method to recognize the emotions. The techniques with an accuracy of about 80 – 90 % comparable to EEG, ECG Signals have been also discussed. From the review it has been found that by using the low power RF Signals, a person's emotional condition can be determined without any wearables on his/her body and that too just by extracting out features like heart rate, breath rate etc.

**Keywords :**RF Signals, ECG, EEG, SER Technology, Sensors, Wearable health devices

Pid-29

# Performance Analysis of a Grid Connected Microgrid System under Fault Condition

Suman Ghosh[1], Chandan Kr. Chanda[2], J. K. Das[3]

1 Department of Electrical Engineering, GNIT, Kolkata,

India 2 Department of Electrical Engineering, IIEST, Shibpur, Kolkata, India 3 Department of Electrical Engineering, GNIT, Kolkata, India

**ABSTRACT** :

The energy demand in the modern power system is increasing day by day. Thus integration of microgrid with the conventional grid can fulfill the high power demand but it can cause many changes in the power system. In this paper, a real valued Damodar Valley Corporation (DVC) grid connected microgrid system is formed with the help of Power System Analysis Toolbox (PSAT) software and analyzed the performance by Continuous Power Flow (CPF) method. A three phase symmetrical fault is also introduced in the main grid and voltage profile is observed. It is also observed that the voltage profile of the faulty system is improved when a microgrid is connected with that main DVC grid system.

**Keywords:** Microgrid, Three phase fault, Voltage Stability, Power System Analysis Toolbox

Pid-16

# An Observation - Power density of a PKL, Aloe Vera, Myrobalan,Lemon and Tomato Unit Cell

[1]K.A.Khan, [2]Md. Sayed Hossain, [3]Salman Rahman Rasel

Department of Physics, Jagannath University, Dhaka-1100
[2]Center for Research Reactor,Bangladesh Atomic Energy Commission, Bangladesh
[3]Local Government Engineering Department (LGED), Sherpur Sadar, Sherpur, Bangladesh

**ABSTRACT**

Green energy means the energy which comes from the nature. The exmple of green energy are: solar, wind, biogas, biomass, water, geothermal,water, wave, Tidal and OTEC (Ocean Thermal Energy Conversion). These energy sources are called renewable energy sources. It does not have a limited source. It can be generated again and again and will never run out. It is sustainable and environment friendly.The aim of this study is to find the one of electrical parameters named power density for different leaves and vegetative like PKL (Pathor Kuchi Leaf), Aloe Vera, Myrobalan,Lemon and Tomato extract using an electrochemical cell as a comparative study. The extract was prepared by a manual blender and then filtered by a whatman papers 41 and 42. It is used zinc and copper electrodes as an anode and cathode respectively. It is shown that the specific power density is better for PKL than the other leaves and vegetative. It is also found that this PKL electric system can be used for the lighting system at the offgrid areas instead of solar photovoltaic system. In conclusion, it is said that this research output will help to generate electricity in near future.

**Keywords:** Power density, PKL, Aloe Vera, Myrobalan,Lemon,Tomato, electrochemical Cell

Pid-84

# Smart Shirt: A Leap Into Technological Fashion:

Alok Barwal[1], Pulkit Jain[2]

*1Student, Mechatronics Department, Chandigarh University,*
*2Assistant Professor, Chandigarh University, Mohali*

## ABSTRACT

Clothing is one of the basic necessities of life but now with modern era of technological and fashion developments, it has taken the form of Smart Clothing or particularly Smart Shirt. A major advantage of Smart Shirt is its ability to provide an effective way to monitor human body in a discreet manner. This paper provides the basic information, needs, requirements, methods and developments that have taken place related to this field during the span of roughly two decades since 1990's when the concept of smart shirt was first realised. The topic Smart Shirt has been illustrated which provides us with its innovative and lifesaving applications in the field of healthcare, sports, military, space exploration, public safety, consumer fitness and research.

**Keywords:** Smart Shirt, MEMSWear, SQUID, PDMS, Smart Sensing, Smart Vest

Pid-32

# Implementation of Low Cost Intelligent System for Coal Mines Using GSM

**Vijaya Bhasker Reddy[1], Suneetha Ghatikanti[2]**

Assistant Professor[1], Assistant Professor[2]

Department of Electronics and Communication Engineering

KG Reddy College of Engineering and Technology, Hyderabad Telangana[1]

Usharama College of Engineering and Technology, Vijayawada, Andhra Pradesh[2]

**ABSTRACT:**

Safety for coal mine workers is a major concern in present days, as we need more production and a large number of people to work for the same, as we are depending on thermal power mostly. The main aim of this proposed paper is to design an intelligent system for Hazardous gas, temperature monitoring, Using GSM technology, ultrasonic distance measuring and humidity control in coal mines. We created a system in which the analogue quantities that need to be recorded on a regular basis are taken and converted into digital values using an analogue to digital converter. For detecting dangerous gas in coal mines, a gas sensor is connected to the controller. The Ultrasonic sensor is used to measure the certain distance which provides an alert to a person using Buzzer when the train is approaching to the person at a certain distance who is working near to the track and also information is send to concerned person using GSM.

**KEYWORDS:** *Coal Mines, Intelligent System, GSM, Sensors*

Pid-37

# Architecture, Protocols and Challenges of Internet of Things: An Overview

Srishti Sabharwal, Ashima Shahi

Electronics and Communication Engineering
Chandigarh University
Punjab, India

**ABSTRACT:**

Internet of Things is an emerging technology which transforms the communication over internet to Machine to Machine basis. It is spanning over leading trends like smart homes, health care, industries etc. It is result of evolution in communication technologies and aims at enhancing the user experience using various protocols and possible applications. This paper overviews the architecture of the IoT along with the protocols which form the base of communication in IoT. Various application of IoT and challenges of it are discussed to provide insight of its future prospects.

Pid-69

# Fuzzy clustering-based under-sampling algorithm (FCA) for class imbalance problem

Vibha Pratap[1], Amit Prakash Singh[2]

[1]*USICT, Guru Gobind Singh Indraprastha University, New Delhi, India &*
*Indira Gandhi Delhi Technical University for Women, Delhi, India*
[2]*USICT, Guru Gobind Singh Indraprastha University, New Delhi, India*

**Abstract**

The class imbalance problem occurs in various real-world datasets. Although, it is assumed that samples of the classes are evenly distributed in various applications but, in many cases, datasets are highly imbalanced. Classification of such datasets is challenging in machine learning. In the present study, authors have introduced a new under-sampling method FCA in which a fuzzy C-mean based clustering method balances the dataset at the data pre-processing level. In addition to FCA, we have proposed a combined approach for two level under-sampling, in which FCA is applied over under-sampled data obtained from different state of art algorithms. The experiments are performed over 30 small scale public imbalanced datasets and the results obtained revealed that the proposed method improves the classification performance.

**Keywords:** Machine learning, class imbalance, under-sampling, oversampling, ensemble method, Fuzzy C-mean

Pid-42

# Improved resampling algorithm through a modi_ed oversampling approach based on Spectral Clustering and SMOTE

Pankaj Kumar Jadwala, Sonal Jainb, Sunil Pathakc, Basant Agarwald

aResearch scholar, Dept. of Computer Science and Engineering, JK Lakshmipat university, Jaipur, Rajasthan
bDept. of Computer Science and Engineering, JK Lakshmipat university, Jaipur, Rajasthan
cDept. of Computer Science and Engineering, Amity University, Jaipur, Rajasthan
dDept. of Computer Science and Engineering, IIIT Kota, MNIT Campus, Jaipur, Rajasthan

Abstract

Generation of optimal results from class imbalanced datasets is crucial for supervised machine learning models. Predictive outcomes obtained from such models are biased towards major class samples. P2p lending dataset used in the research paper is purely imbalanced in nature. Recently, various data level resampling algorithms have been proposed to balance the imbalanced datasets . SMOTE oversampling algorithm is the most popular algorithm due to generation of effective results and ease of use. Various variants of SMOTE have been proposed to combat several issues associated with SMOTE but very few discussed about handling generation of noise, between and within class imbalance problem. We proposed a novel oversampling algorithm which uses spectral clustering as a preprocessing to segment the p2p lending dataset in optimal clusters. Afterwards, Within and between class imbalance issue is resolved via segregating the whole dataset into clusters irrespective of class labels. Further, SMOTE is applied on the sparse areas to avoid generation of noise. Experimental results on p2p lending datasets showcased the significant performance of the
proposed Spectral SMOTE algorithm and outperformed SMOTE and various variants of SMOTE.
Keywords: Imbalanced dataset, Classification, Oversampling, Clustering, Between class imbalance,

Within class imbalance, noise

Pid-51

# Comparative Study of Multiple Influential Parameters and Measures in Social Network

**Priyanka**
Research Scholar
Department of Computer Science & Engg,
Chandigarh University,
Chandigarh-140413
priyanka.khurana3@gmail.com

**Dr. Monica Luthra**
Research Coordinator
Department of Computer Science & Engg
Chandigarh University,
Chandigarh-140413
monica.e9836@cumail.in

ABSTRACT:

Using Internet-based social media sites to stay in contact with friends, family, colleagues, customers, or clients is known as social networking. Social networking may serve social, commercial, or other objectives via Facebook, Twitter, LinkedIn, and Instagram. The use of technology to create and maintain personal and business relationships is known as social networking[1]. In this article, we examine the transmission of influence in social networks. Consequently, we may describe it as finding seed nodes in a social network to maximize the transmission of influence. The process by which the presence or activity of others affects an individual's attitudes, beliefs, or conduct is referred to as social influence. Conformity, compliance and obedience, and minority influence are the four elements of social influence. Individuals change their behavior to fit the requirements of the social environment, which is referred to as social influence. Social impact is typically the result of a specific action, command, or request. This article examines whether features and measures are suitable for particular applications, and it offers a multiplicative perspective on several key parameters and metrics used in social networks. We classified social influence variables into three groups in this study, one based on uniform property and the other two based on time-dependent user behavior and user interaction [12]. On the basis of these three parameters we analysed the impact of these parameter type in the field of diffusion. As a consequence, we aim to offer a comprehensive and solid beginning point for interested readers in this survey by asking about the most current work in this area.

*Index Terms: Multiplicative Influential factors, Social media platform, Parasitic Influence, Collective prestige.*

Pid-76

# Application of Blockchain Technology for Defending the Pandemic. A Bibliometric Analysis

[1]Rana Gill,

[1]Department of CSE -AIT,, Chandigarh University, Mohali, Punjab, India

## ABSTRACT

COVID 19, the pandemic is had disrupted the health system in the world and modern technologies are essential for drug delivery, monitoring, sanitation, regulating access controls, and for many more initiatives. Blockchain technology plays a significant role in the development of vibrant health and preventive system against COVID19. India and the United States of America lead in the research related to the application of blockchain technology The leading research organizations and funding agencies are from the Middle East and China. The future researchers can concentrate on these leading institutions for sponsorships and collaborations. Future research can be on the innovative applications of blockchain technology in vaccine delivery, controlling, and education of people.

Keywords: Blockchain, VOS Viewer, Bibliometrics, Pandemic, Data, COVID 19

Pid-54

## Cloud Based Surveillance using ESP32 CAM

Harmandeep Kaur Jhajj

Abstract

The idea of surveillance has always lingered around from community to guards to police to CCTV to Drones. It is just getting upgraded with time. The recent times with the involvement of artificial intelligence, the surveillance and cloud monitoring has changed the way and efficiency. This project involves similar surveillance techniques in which we intend to detect people not wearing a mask. The project was an inspiration for the current pandemic situation and to be ready for the future. The project also includes cloud monitoring and streaming the live footage on the server. A Convolutional Neural Network is developed to predict whether someone is wearing a mask or not. It is deployed on a self-made server and can be monitored remotely. The camera used to capture the video is ESP32. This project has huge implementation around the world in the COVID19 situation and also has the potential to be used in the future.

*Keywords—Django, ESP32, HTTP STREAMING Protocol, OpenCV, Convolution Neural Network, Accuracy.*

Pid-33

# Design and analysis of bandpass/ bandstop filter by serpentine meander stub/ open stubs for K band

Sk. Shoukat Vali, K. Srinivasa Rao

MEMS Research Center, Department of ECE, Koneru Lakshmaiah Educational Foundation (Deemed to be University), Guntur, Andhra Pradesh-522502, INDIA.

## ABSTRACT

This paper reports the design and simulation of the bandpass filter in coplanar waveguide implemented with serpentine meander-shaped stubs. The inductive loading is increased by placing the meander and the size of the bandpass filter is reduced. The behaviour of the proposed bandpass filter is studied by using the equivalent circuit model. The bandpass filter exhibits the center frequency, bandwidth, and insertion losses of 20GHz,8GHZ, and <0.1 dB. The size of the bandpass filter is 4x2.6mm$^2$. The proposed bandpass filter discloses the excellent agreement between the simulation and measured results; hence the bandpass filter is used in k band applications. The device-level simulations are done by the HFSS simulator and the equivalent circuit study by the ADS software.

**Keywords:** coplanar waveguide, bandpass filter, open stub, communication system, microwaves, lumped element equivalent.

Pid-97

# Regionalization of Precipitation
## In Andhra Pradesh and Telangana State by using PCA

**Gore Vikas Sudam[1] Ashutosh Chaturvedi[1] and Dr. K. V. Jayakumar[2]**

[1] *Assistant Professor, Department of Civil Engineering*
*Alamuri Ratnamala Institute of engineering and Technology Thane, Maharashtra-421601*
[2] *Professor, Water & Environmental Division, Department of Civil Engineering,*
*National Institute of Technology Warangal*

**ABSTRACT**:

Precipitation is one of the most important climatic variables for sustaining civilization. It is characterized by extremely high variability in space and time. The magnitude and frequency of precipitation is of great significance in hydrologic and hydraulic design and has wide application in various areas. However, precipitation data is available only in those regions where the rain gauges are installed. The magnitude and frequency of precipitation in ungauged sites can be assessed by grouping areas with similar characteristics. The procedure of grouping of areas having similar behaviour is termed as 'Regionalization'. Principal Component Analysis (PCA) which is based on consecutive sieving of stations was initiate for Regionalization. PCA used for the reduction of the scale of the dataset with minimum reducing of information's. Principal elements (PCs) that are orthogonal to every alternative are derived from interstation correlation and/or variance matrix of precipitation within the study space. If the primary few leading PCs account for vital % of the full variance, their spatial patterns are analysed to make undiversified precipitation regions. This approach may involve either plotting the unrotated and/or revolved computer loadings on the map of the study space, or representing stations as points in two-dimensional house of leading PCs.

**Keywords—** Precipitation, Regionalization, Principal Component Analysis, Normalization, Eigenvalue, ArcMap

Pid-48

# Assessing Dynamic Ram Technology With Contrast Era of Megabit, Gigabit & Merged Dynamic RAM/Logic

Sanchit Yadav, Ritika Rattan

Department of Electronics & communication Engineering

Chandigarh University

(University Institute of Engineering)

Mohali, Punjab

ABSTRACT :

DYNAMIC RAM or Dynamic RAM (Dynamic random-access memory) is a type of random-access semiconductor memory in which a bit of data get stored into the memory cells which consist of capacitors and transistors. In digital electronics DYNAMIC RAM technology is widely used with the requirement of low cost and higher memory capacity. With the new emerging techniques, technology, challenges in DYNAMIC RAM technologies problem of high energy consumption, leak aging etc. also rises. In this research paper we will able to know about DYNAMIC RAM, various fields of DYNAMIC RAM , such as merging of logic and DYNAMIC RAM,  various trends of megabit, era of gigabits and newly advanced 3D DYNAMIC RAM technology. In this review we learn about various techniques used in the above mentions topics there problems and effective solution, advantages disadvantages, few analyses and its application.

Keywords:  DYNAMIC RAM, Logic Technologies, Merging, Megabit, Gigabits,  Bandwidth.

Pid-75

**Sensor Technology for Fuel tank Monitoring. A Bibliometric Review**

[1]Arshdeep Singh Kalsi, [2]Harjot Singh Gill,

[1]*Asst Professor, Department of mechanical engineering, Baba Farid college of engineering and technology, Bathinda*

[2]*Department of Mechatronics Engineering, Chandigarh University, Mohali, Punjab, India*

**Abstract**

Sensor technology for fuel tank monitoring is still evolving. This technology has diversified applications and different types of sensors are used for the diversified applications. Scopus database was used for this review. This review of 554 documents identifies the dominant authors, funding sponsors, research institutes, future research themes, and regions. Detailed bibliometric analysis was conducted by "R" and results were visualized. The findings of this paper can be beneficial for future researchers to evaluate the themes, future publications, and collaborations. Similarly, future researchers can focus on the mentioned funding sponsors for funded projects in the future.

Keywords: Fuel tank, VOS Viewer, Bibliometrics, Wireless sensor, Sensor, Review, fuel efficiency

Pid-12

# Applications of Green Energy Storage Systems using PKL Battery

62

[1]K.A. Khan, [2]Md. Sayed Hossain, [3]Salman Rahman Rasel

Department of Physics, Jagannath University, Dhaka-1100
[2]Center for Research Reactor, Bangladesh Atomic Energy Commission, Bangladesh
[3]Local Government Engineering Department (LGED), Sherpur Sadar, Sherpur, Bangladesh

## ABSTRACT

Green energy means renewable energy that does not have a limited source, it can be generated again and again and will never run out. Pathor Kuchi Leaf (PKL) extract has been used as an electrolyte whereas zinc and copper plates have been used as an electrode. Copper plate is used as a cathode and the Zinc plate is used as an anode. AgNPs have been synthesized using green synthesis (PKL extract) and used in PKL module as a liquid form to enhance the performance. Different circuit parameters have been studied like open circuit voltage, load voltage, voltage efficiency and energy efficiency of the PKL module for both with and without AgNPs. It is seen that the open circuit voltage, load voltage, voltage efficiency and Energy efficiency have been increased for using AgNPs. So that it can be concluded that the PKL battery can be used long time as an energy source using AgNPs in the PKL module.

**Keywords:** Green Energy, Energy Source, PKL Battery, AgNPs Synthesis,Electrochemical Cell

Pid-65

# Machine learning in Artificial Intelligence and Robotics Vision: A Review

[1(a)]Gurmeet Singh, [2(b)]Pulkit Jain, [3(c)]Vinay Shah, [4(d)]Inderpreet Singh, [4(e)]Harjot Singh Gill, [5(f)]Manoj Dewangan

*[1,2,3,4,5]Department of Mechatronics Engineering, Chandigarh University, Mohali, Punjab, India*

**ABSTRACT.**

Artificial Intelligence (AI) means an artificial mind. It is a process of computer programming simulation that machines are given human intelligence and make more advanced so they could act like a human. This conatains three processes namely first learning (in this process the order Is feed into the mind of computer according to set rule so that they follow those rules to complete a given task), The second is Reasoning (under this machines are instructed to move towards the results by following the rules so that they can achieve approximate or definite conclusion) and third is Self-Correction. In this field, many developments have been done considering different aspects. Now self- decision making robots are in existence, scientists are already working on it and it is coming out as a Sophia and an Andro -Humanoid robot. Robots are already being used in virtual assistance, agriculture and farming, autonomous flying, egovenanve, supervision health secttor and medical imaging analysis, self-driving car and autonomous vehicles, and many more places. In this research work, we will discuss robotic vision. How a model/robot will take self-decision through Machine Learning, programming languages. We will use it as a method to program our model, Machine learning (ML) Algorithm, and Unique Client Identifier (UCI) machine learning repository-DATASETS.

*Keywords-* Artificial Intelligence (AI), Machine Learning, Machine Vision, Unique Client Identifier (UCI), machine learning repository- DATASET, Robotic programming.

Pid-36

# Analysis of an IOT Based SDN Smart Health Monitoring System

M. Tejeswara Kumar[1], Hemanta Kumar Bhuyan[2], Mamidi Gopi[3]

[1] Department of ECE, KG Reddy College of Engineering and Technology (KGRCET),Hyderabad, India

[2] Department of information technology, Vignan's Foundation for Science, Technology & Research, Deemed to be university , Andhra Pradesh, India

[3] Department of ECE ,Sree Vahini Institute of Science &Technology, Tiruvuru, Andhra Pradesh, India

## ABSTRACT

The need for IoT-based remote health monitoring devices to look after the health of seniors was promoted by health experts and scientists. Such technologies may, however, generate vast quantities of data, making the security and privacy of that data essential. The study evaluates the safety and privacy risks of the existing health monitoring system (HMS) and proposed the management of a safety IoT-based health monitoring system (IBS), privacy and dependable delivery of services to patients and seniors in order to minimize and avoid health hazards. Good health is very important factor for living a quality of life. For health care required a continuous health care monitoring system and store the data in cloud through a network which is help for doctors and nurses to get immediate medication to patient. For remote monitoring patient Internet of things is best (IoT) is the latest emerging technology for health care which associated with electronic devices like sensors, and smart phone which become part of daily life. The Internet of Things uses sensors and wireless sensor networks to connect with the patient to recognize medical problems and communicate with them.Sensors collect the large set of data which is connected physically to patient. With the help of Software Defined Networks (SDN) incorporate the data in cloud.SDN controls the confidential data and maintain security among the medical reports. It will help not only patient and also health care staff to secure the individual patient data. SDN not only secure data it will avoid the traffic to flow the data from source to destination. This paper aims to provide smart health care system with SDN by using IoT application to collect the data through sensors and incorporate in cloud.

*Keywords*— IOT, SDN, Healthcare, WSN, Sensors.

Pid-43

# Energy Harvesting Using Piezoelectric Devices

Tripti Sharma[1], Deepak B Kuttan[2] and Satwinder Kaur[2]

[1]*Professor, ECE Department, Chandigarh University*
[2]*M.E. Scholar, ECE Department, Chandigarh university*

**ABSTRACT.**

Piezoelectric sensors/devices nowadays becoming an important aspect of the energy harvesting process. Piezoelectric sensors use vibrations to convert mechanical energy to electric energy which can be used for a wide range of applications. In this paper or review article, we will get to know about piezoelectric devices, their working, some analysis based on frequency change.

**Keywords**: Energy harvesting, cantilever, cymbal, shell, stack, PZT, MFC, QP, WSN.

Pid-106

# A New Hybrid Boost Converter with Cuckoo search MPPT for High Gain Enhancement of Solar PV System

CH. Siva Kumar,  G. Mallesham

1 Department of Electrical Engineering
University College of Engineering OU
Hyderabad, TS, India-500007
2 Department of Electrical Engineering
University College of Engineering OU
Hyderabad, TS, India-500007

**ABSTRACT.**

Technological advisement's and potentiality of the solar photovoltaic system to improve the economical condition, dispute of cost and the weather dependency, helping the globe to increase generation of electrical energy contribution, reducing the percentage of greenhouse gases emission of electrical energy systems to improve the economical condition. But, the system cannot directly connected to the applications and to the grid. As it need to depend on the more e_cient buck-boost converters to change the voltage levels of the system. The main objective of the work is to built a new hybrid boos converter for high gain system and its equivalent system with cuckoos search algorithm based maximum power point tracking control mechanism to extract maximum power from the Solar PV system. Three case studies have been carried to check the e_ectiveness of the new hybrid boos converter using Matlab/Simulink.

**Keywords:** non-conventional energy sources · solar photostatic system · boost converters · cuckoo search algorithm · hybrid boost converters.

Pid-90

# Malware and Communication Network in Cyber Security:

Shruti Aggarwal
Dept. of CSE
*Chandigarh University*
Mohali, Punjab India

Afroj Jahan Badhon
*Dept. of CSE*
*Chandigarh University*
Mohali, Punjab India

ABSTRACT

 A computer lets one's complete additional errors quicker than any development in social history - with the conceivable exclusions of firearms and liquids. Malware is the cooperative term for an amount of malevolent software program alternatives, with computer viruses, spyware and ransomware. Networking, also acknowledged as computer networking, is the preparation of conveying and trading information among nodes over a communal intermediate in a data structure. This comprises resolving the algorithms behindhand malware which are threads for user information, data and the Internet's structure and threads for computer network. This paper concludes with an outline of malware and communication network in cyber security (MCNCS) and avenues for future research.

*Keywords— Malware, Networking, Communication network, Cyber threads, Internet.*

Pid-100

# Study of Sound Waves on Triazinothiocarbamides in Dioxide Water Mixture

Asst. Prof. Kshirsagar Ashwini

DepartmentofChemistry
AlamuriRatnamalaInstituteofE
ngineeringand Technology,
Thane, India

ABSTRACT:

The Interferometric measurements of recently synthesized drug have been carried out for solutions of 1-(4-hydroxy-6-methyl)-S-triazino-3-phenylthiocarbamide (L1) at various concentrations. The result obtained during this investigation directly through light on the dipole association of compound, intermolecular attraction between solute and solvent, dielectric constant of medium, polarizability and mutual compensation of dipoles,various acoustic/ thermodynamic parameters and useful for drug absorption, transmission, stability, activity and effect of these on drugs which is base of pharmacokinetics and pharmacodynamics of any drug.

**Keywords**—Acoustic parameters, 1-(4-hydroxy-6-methyl)-S-triazino-3-phenylthiocarbamide, Interferometric measurements.

Pid-50

# Destination Sequenced Distance Vector Implementation Using NS-2

Nitin Sharma
Department of Electronics and Communication Engineering
Chandigarh University

Reema Lalit
Department of Computer Applications
Panipat Institute of Engineering and Technology

**ABSTRACT:**

Ad-hoc networking is very significant idea of computer networking that means users can communicate with one another using a temporary network, with no centralized administration. For forward packets to another node it requires a network protocol. An ad-hoc network has many important applications and characteristics. Due to node mobility adhoc network follows dynamic topology. Nodes regularly shift their position that leads to the requirement of adaptive protocol. The nodes can be laptops and PDAs that have limited resources like Bandwidth, memory, CPU efficiency, battery backup etc. This paper implements, DSDV routing protocol using network simulator. Many implementations of the Ad-hoc routing protocol are there for the Linux platform. Due to lack of system services development of ad-hoc routing protocols is very slow. This paper presents DSDV routing protocols performance. I have used ns-2 simulator for practical implementation of Ad-hoc routing protocol installed over cygwin.

**Pid-86**

# Design and Performance Analysis of DWDM Optical Link for High Speed Optical Communication

## Harpreet Kaur[1], Ahsanullah Umary[2]

[1]Department of Computer Science Engineering, Chandigarh University, Punjab, India

[2]Department of Electronic and Communication Engineering, Chandigarh University, Punjab, India

**Abstract:**

Developing requests of the net clients is one of the motives which superiority utilizing dense wavelength division multiplexing (DWDM) systems to broadcast optical information. This proposed method have the ability that can transmit numerous wavelengths thru a single optical fiber.In this paper execution analysis of Dense Wavelength Multiplexing Network (DWDM) system has been suggested to evaluate the performance of the suggested network using BER analysis over long distance.DWDM is the advanced type optical network that provide high bandwidth compare to available optical networks that accomplish the need for greater bandwidth. In DWDM single optical fibre is utilized for to transmission of different wavelength. The suggested network model system is implemented by using Optisystem software and output of the simulation model is analysed in term o Q factor and minimum BER, in general capacity of the system is improved.

**Key words**: Q factor, DWDM, BER Analyzer, Optical Amplifier, NRZ

**Pid-56**

# The effect of Chaotic Mapping on Naked mole-rat algorithm for numerical optimization and engineering design problems

Supreet Singh, Urvinder Singh

aDept. of ECE, Thapar Institute of Engineering & Technology, Patiala, India
bDept. of ECE, Chandigarh University, Mohali, India

Abstract:

Naked mole-rat algorithm (NMRA) is a recently introduced swarm intelligent algorithm based on the matting pattern of naked mole-rats. Though the algorithm is competitive but still shows poor exploration properties and slow convergence. In the present work, chaos theory has been introduced to enhance the exploration properties of NMRA. Apart from that, parametric adaptation has been added to analyze the e_ect of various parameters on NMRA. Based on this, ten variants of NMRA are proposed, and their performance is evaluated for CEC 2005 test suite subjected to di_erent population and dimension sets. Further, the best variant among the proposed variants is evaluated for CEC 2014 benchmark functions, 100-digit challenge problems (CEC 2019) and three engineering design problems. The results of best proposed variant are compared with other state-of-the-art algorithms namely di_erential evolution with adaptive properties (JADE), whale optimization algorithm with opposition and exponential properties (OEWOA), sine cosine crow search algorithm (SCCSA), self-adaptive di_erential evolution (SaDE), success-history based di_erential evolution along with parameter adaption (SHADE), equilibrium optimizer (EO), ower pollination algorithm based on fractional order calculus (FA-FPO), Gaussian-salp swarm algorithm (GSSA), variable neighbourhood bat algorithm (VNBA), blended biogeography-based optimization (B-BBO), improved elephant herding optimization (IMEHO), original NMRA and others. Experimental and statistical results validate the performance of the proposed NMRA with Chebyshev map (CNMRA) as the best, concerning other algorithms used for comparison.

**Keywords:** Naked mole-rat algorithm, chaotic maps, optimization, swarm intelligence, benchmark functions.

Pid-59

# Optimisation in routing techniques to obtain maximum network life time in WSN

Kritika Raj Sharma

Assistant Professor

Department of Electronics and Communication Engineering

Chandigarh University, Gharuan, Mohali Punjab

**Abstract:**

The wireless sensor networks is facilitating the human comfort and satisfying the inquisitive attitude of human race towards nature and its natural indeterministic phenomena's and slowly and gradually is progressing to make them deterministic or predictable so that day to day activities can be planned in more risk free environment .The aim of this paper is to introduce various works done in the field of WSN to make it more proficient and live longer by using suitable deployment technique such as divide and conquer and to compare the two routing algorithms such as Bat algorithm and Firefly algorithm for longevity in life time of established WSN

***Key words:*** *Wireless sensor networks, Clustering, Divide and conquer, Network lifetime, Bat algorithm, Firefly algorithm*

**Pid-107**

# Self-consistent Non-linear Physics based predictive model for the computation of THz-signal attenuation in Fog with varying visibility in tropical climatic zone

Debraj Chakraborty[1]. Moumita Mukherjee[2] *

[1]*DRDO Sponsored Research Fellow, Department of Physics, Adamas University, Kolkata, West Bengal, India,*
debrajchakraborty13@gmail.com
[2]*Department of Physics, Adamas University, Kolkata 700126, India*, drmmukherjee07@gmail.com

**ABSTRACT**

Absorptive and dispersive effects in atmosphere, affect the propagation of millimetre-wave and submillimeter wave signal. In adverse weather condition, the ensuing attenuation and temporal group delay increase. The effects of airborne water droplets on the propagation of electromagnetic radiation in submillimeter waves are investigated thoroughly in this paper. By indigenously developing the Non Linear Terahertz Attenuation Model(NLTAM), the frequency-dependent characteristics have been analysed to enumerate the signal attenuation. The Mie-scattering principle along with aerosol size distribution statistics have been taken into account to develop the total absorption model based on suspended water droplets. In fog, the extinction parameters and attenuation rate of the Terahertz wave have been estimated using newly developed computer programmes under NLTAM. For different visibility conditions under radiation fog-scenario in tropical climatic area, the attenuation-rate variations of THz signal have been simulated and it has also been presented in this paper. The results reveal that when visibility improves, the extinction parameters drop dramatically; the lower the frequency of Terahertz waves, the smaller the extinction coefficients would be. The amount of the absorption of THz signal in foggy atmosphere, obtained from this analysis, is in close agreement with the similar results obtained for near THz or IR signal propagation in adverse weather scenario. The authors, for the first time have adopted a novel approach to develop the fog attenuation model with focus on fog based attenuation of THz signal in tropical climate.

Keywords: Terahertz, Mie-Scattering, Extinction Coefficient, Radiation-Fog, Absorption

Pid-64

# Thermal Imaging or Thermography: A Review

[1]Inderpreet Singh, [2]Gurmeet Singh, [3]Pulkit Jain,
[4]Harjot Singh Gill, [5]Rakesh Kumar

[1,2,3,4,5]*Department of Mechatronics Engineering, Chandigarh University, Mohali, Punjab, India*

**Abstract:**

Thermography or Thermal Imaging refers to the Infrared imaging science which detects radiation of long infrared radiation by the camera. The range of infrared electromagnetic spectrum varies between 9000 nm to 14000 nm and the result image referred as Thermogram. It provides temperature distribution of skin images in two-dimensional. In year 1960, it was developed or launched. Direct touch or contact with body is not required in this. At present it is widely used in bio medical applications to produce image and detect the disease. Since very early, temperature of body measurement estimates the time death of person .Now a day's its application is found in psychology, diagnosis, cancer, forensic medicine, skin disease, plastic surgery, etc. Digital infrared thermal imaging (DITI) is highly used in clinical and research purpose in pregnant woman too. In this review, we see the application, advantages and its successful use in the bio medical field.

*Keywords-* thermal imaging, covid-19, PPE

**Pid-66**

# Applications of Nano Particles in Bio Medical: A Review

[1(a)]Vinay Shah, [2(b)]Pulkit Jain, [3(c)]Gurmeet Singh, [4(d)]Harjot Singh Gill, [5(e)]Rakesh Kumar

[1,2,3,4,5]*Department of Mechatronics Engineering, Chandigarh University, Mohali, Punjab, India*

ABSTRACT:

In the last 10 to 20 years the development and modified nano structure in the field of biomedical sectors increased the interest of research in this field. Its application in bio medical and medicine has spread  very fast areas in tissue ,implant ,therapy ,diagnosis ,etc .The present demands is development of nano tool for solving problems of bio medical .The nano scale tools are very useful for treatment of disease by separating cells and targeting cells for disease detection and diagnosis . While studying nano particles, there must be controllable affect and desired delivery with minimum side effect. Nanoparticles are useful in various biomedical applications like magnetic resonance imaging (MRI), detection of bacteria, viruses, proteins, etc. Nano particles are made of many sub constituents like metals, their alloys and oxides, semiconductors, etc. In this we will see the recent development and advancement of nanotechnology and its successful use in the field of bio medical.

Keywords- Nanoparticles, cytotoxicity, diagnosis, superparamagnetic, biomedical applications, M.R.I, cancer therapy.

Invited Talk

# Splitting codes for incremental ARQ retransmission

Dr. Dragana Bajic

Department of Communications and Signal Processing, Trg Dositeja Obradovića 6, 21000
Novi Sad, Serbia; active
Institute Mihajlo Pupin, Volgina 15, 11000 Beograd, Serbia

**Abstract:**

This paper proposes a code defined over a finite ring $\mathbb{Z}_{p_M}$, where $p_M = 2^m - 1$ is a Mersenne prime, and $m$ is a binary size of ring elements. The code is based on a splitting sequence (splitting set) $\mathcal{S}$ defined for the given multiplier set $\mathcal{E} = \{\pm 2^0, \pm 2^1, \ldots, \pm 2^{m-1}\}$. The elements of $\mathcal{E}$ correspond to the weights of binary error patterns that can be corrected, with the bidirectional single-bit error as the most occurring representative. The splitting set splits the code-word into the sub-words, which inspired the name Splitting code. Each sub-word, provided with auxiliary control symbols that are a byproduct of the coding procedure, corrects a single symbol error. The code can be defined, with some constraints, for general Mersenne numbers as well, while the multiplier set can be adjusted for adjacent binary errors correction. The application proposed for this code is a hybrid three-stage incremental ARQ procedure that transmits the code-word in the first stage, auxiliary control symbols in the second stage, and retransmits the sub-words detected as incorrect in the third stage. At each stage error correction can be turned on or off, keeping both the retransmission rate and residual error rate at a low level. Such a scheme is simple and low power consuming.

**Keywords:** Splitting sequences, Mersenne primes, Splitting code, Fragmented retransmission, Hybrid incremental redundancy automatic repeat request.

Pid-113

# Energy efficient algorithms for enhancing lifetime in wireless sensor networks

Sanjoy Mondal1, Saurav Ghosh1, Sunirmal Khatua2, Utpal Biswas3, and Rajib K Das2

1A.K.Choudhury School of Information Technology, University of Calcutta, India
2Department of Computer Science and Engineering, University of Calcutta, India
3Department of Computer Science and Engineering, Kalyani University, India

ABSTRACT

One approach to maximize the lifetime of wireless sensor networks is to group the nodes in clusters or chains where a cluster head (CH) or chain leader (CL) collects data from the other sensors in its group and sends them to the Base Station (BS). As the energy spent per round is comparatively higher for a cluster head(CH)/chain leader (CL), one can increase the network lifetime by rotating the role of CH/CL. In this paper, we have proposed several algorithms to select CH/CL at different ounds. We have used an Integer Linear Program and its relaxation to solve the problem of maximizing FND (First Node Die). We have also given algorithms to optimize the lifetimes measured LND (The last node dies). Simulation results indicate signifcant improvement in the performance of our proposed algorithms compared to BP-DCA, NEECP, and Naive Bayesian-based algorithms.

Keywords: Network lifetime , First Node Die, Last Node Die, Cluster Head, Chain Leader, Integer Linear Program

# Advertisement

## Our next conferences:

## <span style="color:red">ESDA2021</span>

4<sup>th</sup> international conference on 'Energy Systems, Drives and Automations', ESDA2021

During 25<sup>th</sup> and 26<sup>th</sup> of December 2021 as mixed mode

Venue: any Hotel, Kolkata, West Bengal, India

Contact: info@actsoft.org, Mob: +91-8420582707(whatsapp)

---

And

## <span style="color:red">Cancer-2022</span>

1<sup>st</sup> International Congress on Cancer2022

During 12<sup>th</sup> and 13<sup>th</sup> of February 2022

Venue: any Hotel, Kolkata, West Bengal, India.

Contact: info@actsoft.org, Mob: +91-8420582707(whatsapp)

---

Pid-111

# Assessing the electricity energy efficiency of university campus exterior lighting system and proposing energy-saving strategies for carbon emission reduction

Alper Kerem[a*]

[a]Kahramanmaraş Sütçü İmam University, Faculty of Engineering and Architecture, Department of Electrical Electronics Engineering, 46100, Kahramanmaraş, Turkey

**Abstract**

This paper presents efficiencies research and energy-saving strategies for carbon emission reduction of the exterior lighting system of Avşar Campus of Kahramanmaraş Sütçü İmam University, Turkey. Once the campus's average energy consumption for the previous five years was calculated, it was found to be 18.802 MWh/year, with 6.203 $CO_2$ tons/year emissions. Also, the annual electrical energy consumption for exterior lighting was calculated as 670,395 MWh/year, with annual emissions of 221,170 $CO_2$ tons/year. Inefficient lamp choices in exterior lighting systems and longer than necessary operating times have been identified as the causes of these high values. That's because High-Pressure Sodium (HPS) lamps with an installed power of 109,050 kW, which have a low efficiency however a high energy consumption, provide for 70% of exterior lighting. Thus, seven unique energy-saving strategies have been developed with the aim of decreasing total energy consumption and achieve more cost savings as well as less harmful emissions released into the atmosphere. All of the strategies were designed under the following three headings: dimming method, optimization of lamps' operation times, and retrofitting lamps with new and technological ones. Once all of the proposed strategies are compared to the current system, it has been discovered that strategy-7 saves 81,656% energy consumption (547,418 MWh/year), 180,599 $CO_2$ tons/year saving, and € 49.268 cost-saving. Such a low energy consumption is vital for a rapidly growing and expanding campus in terms of carbon emissions, cost savings, and environmental quality.

**Keywords:** Electricity energy efficiency, energy-saving strategies, exterior lighting, carbon emission reduction, campus sustainability

Pid-112

# A Hybrid Neuro-Fuzzy Prediction System with Buttery Optimization for Air Quality Forecasting

Samit Bhanja[a,e], Santanu Metia[b,c,d], Abhishek Das[e]

[a]Department of Computer Science, Government General Degree College, Singur, Hooghly, India
[b]Environmental Quality, Atmospheric Science & Climate Change Research Group, Ton Duc Thang University, Ho Chi Minh City, Vietnam
[c] Faculty of Environment & Labour Safety, Ton Duc Thang University, Ho Chi Minh City, Vietnam
[d] Faculty of Engineering & IT University of Technology, University of Technology Sydney, Australia
[e]Department of Computer Science & Engineering, Aliah University, Kolkata, India

ABSTRACT:

With the rapid increase of urbanization and industrialization, particulate matter (PM2.5) concentration has increased signi_cantly. PM2.5 profile forecasting has become one of the critical research areas in environmental control and protection. The early detection of PM2.5 as a pollutant is vital because PM2.5 has a significant impact on human health than other pollutants. Recently the machine learning and deep learning methods are widely used for forecasting air quality. Both of these methods have limitations. The machine learning methods can not extract the features from the pollutant time series profile. Whereas the success of the deep learning model heavily depends on the size and quality of the dataset, and it has high computational time (training time). This paper proposes a deep neuro-fuzzy prediction system (DNFPS) by amalgamating the deep learning and the fuzzy time series algorithm to forecast the PM2.5 concentration. The proposed predictive model consists of three phases; a data preprocessing algorithm to generate a high-quality dataset, a denoising autoencoder using fully convolutional neural networks(FCNNs) to extract the features from the pollutant time series pro_le as well as reduce the dimension of the time series dataset, and the type-2 fuzzy time series forecasting (FTSF) method to forecast PM2.5 concentration. The buttery optimization algorithm (BOA) is integrated with the type-2 FTSF method to improve the prediction accuracy of the pro-

Preprint submitted to October 15, 2021 posed method. FTSF-BOA is implemented to fine-tune the length of type-2 fuzzy intervals. Experiments employing Sydney data sets to analyze the performance of DNFPS. DNFPS shows that the proposed model achieves an excellent performance than other standard baseline models. It has lower computational time (training time) than the other traditional baseline deep learning models.

Keywords: Air quality, Deep learning, Denoising autoencoder, Fuzzy time series, Buttery ptimization algorithm, PM2.5

Pid-114

# Energy efficient participant selection algorithms for Mobile Crowd Sensing Environment

Sanjoy Mondal[1], Anirban Mukherjee[2], Sukanta Mitra[2], Saurav Ghosh[1], Sunirmal Khatua[2], Rajib K Das[2], and Abhishek Das[3]

[1]A.K.Choudhury School of Information Technology, University of Calcutta, India
[2]Department of Computer Science and Engineering, University of Calcutta, India
[3]Department of Computer Science and Engineering, Aliah University, Kolkata, India

**ABSTRACT**

In the recent advancment of embedded sensing technologies, mobile crowd sensing (MCS) have becomes an emerging sensing paradigm for large scale sensing based applications. In this paper we consider a MCS appplication consisting of a set of point of interest (known as targets) and a set of mobile user (called participants). The key challenge for this application is to select minimum subset of participants from the large user-pool to cover all the targets. In this paper we propose several algorithms to select minimum number of participants which covers all the targets. We consider two different cases, in the case one, only a single participant is allowed to upload data packet for a particular target whereas for the other case, we allow multiple participants (provided that the target is covered by more than one participants) for data uploading for a particular target . Optimal solution to the problem can be found by solving integer linear programmings (ILP's). But due to the exponential complexity of ILP, for the large problem size it is infeasible from the point of execution time as well as the requirement of having the necessary information about all the participants in one place. We also propose a distributed participant selection algorithm considering both the cases, which is dynamic in nature and run at each participant. Each participant exchanges their messages with its neighbor and decide to remain active or idle. We have shown that, those participants which selects themselves as active suffice to cover all the desired targets. We have run a series of experiments to measure the performance of the proposed algorithm where we measure along with number of participants selected also the total energy consumption. Simulation results reveals the close prox-Address(es) of author(s) should be given

imity of proposed distributed algorithm compared to the optimal one providing the same coverage.

**Keywords** Mobile Crowd Sensing,  Participant Selection, ILP, Distributed Algorithm, Mobile Sensors.

## Technical Presentation Schedule:

**02/10/2021: 17:00-19:30: Technical Session-1:**

**02/10/2021:** 17:00-17:45PM: Keynote Speech:

Prof. Marcin PAPRZYCKI, Ph.D & D.Sc. Systems Research Institute Polish Academy of Sciences, Vice Chair of IEEE Poland.

Paper presentation: Paper IDs: 13, 18, 24, 70, 35, 102
## Session Chairs:

Dr. Avishek Das, Associate Professor, Dept. of CSE, Aliah University, Kolkata.
Dr.Ankita Pramanik, dept. of ECE, Indian Institute of Engg Sc. and Technology, WB.
Dr. Madhubala , HOD, CSE, Institute of Aeronautical Engineering, hyderabad
Dr.Anirban Karmakar, department of ECE, Tripura University, Tripura.

## Session Expert:
Prof. Zoran Jaksic, Professor, Institute of Chemistry, University of Belgrade, Belgrade, Serbia, Europe.
Prof. Debashis De, Professor, CSE, MAKAUT, West Bengal, India.
Prof. Jerzy Szymanski, Kazimierz Pulaski University of Technology and Humanities, Radom, POLAND
Dr.Abhishek Majumdar, Dept. of CSE, Tripura University, Tripura.
Session Coordinator: Dr. Nitin Sharma, dept. of ECE, MAIT, Delhi, India.
----------------------------------------------------------------------

**02/10/2021: 19:30 - 21:30PM: Technical Session-2:**

19:30-20:15PM: Invited Talk:

**Paper presentation: Paper IDs: 46, 6, 67, 17, 19,45, 52, 60**

Session Chairs:
Prof. Sunil Pathak, dept of CSE, Amity University, Rajasthan, Jaipur, India.
Dr.Nibedita Adhikari(ex Dpty Director-exam, bput), Professor, Dept. of CSE, HCE, Bhubaneswar, Odisha.
Prof. Aminul Islam, dept of ECE, BIT, Mesra, Jharkhand.

Session Experts:
Dr.Kamrul Alam Khan, Professor, dept. of Physics, Jagannath University, Dhaka, Bangladesh.
Prof. Moumita Mukherjee, Dean(R & D), Adamas University, Kolkata, India.
Dr. Olga Jaksic, Professor, Institute of Chemistry, University of Belgrade, Serbia, Europe.
Dr.S K Ratha, Deputy Registrar, Biju Patnaik University of Technology(BPUT), Rourkela, Odisha.

Session Coordinator: Prof.Avijit Bose, Dept. of CSE, MCKV, Liluah,Howrah,WB.

--------------------END OF 1st DAY PROGRAM------------------

==========================================

**03/10/2021, Sunday, dd/mm/yyyy (all date/time as per Indian Standard Time).**

==========================================

**03/10/2021: 11:00-1:00: Technical Session-3:**

**11:00-11:45PM: Invited Speech:**

**Prof. C K Jayasankar , Professor, Department of Physics, Sri Venkteswara University, Tirupati, Andhra Pradesh, India.**

**Paper presentation: Paper IDs: 49, 21, 25, 34, 44**

**Session Chairs:**

Nikola Zogovic, Ph.D, Senior Research Associate, Institute MIHAJLO PUPIN, Serbia, Europe

Prof. Jibitesh Mishra, Dept. of CSE-IT, CET, Bhubaneswar, Odisha.

Dr. Sataupa Biswas, Dept. of Physics, Adamas University, Kolkata.

**Session Experts:**

Dr.Rakesh Tripathi, NIT, Raygarh, Chattisgarh, India.

Dr.Swarup Neogi, Adamas University, Barasat, Kolkata, WB.

-----------------------------------------------------------------------------

**03/10/2021: 1:00-3:00PM: Technical Session-: 4**
1:00-1:45PM: Invited Speech:

Dr.Moumita Mukherjee Professor and Dean(R & D), Adamas University, Barasat,Kolkata,India.

Paper presentation: Paper IDs: 15,57, 26, 87, 31, 101, 82

Session Chairs:
Dr.Afzal Sikandar, NIT, Jalandhar, Punjab.
Dr.Prabir Saha, NIT, Meghalaya, India.
Dr.Harsupreet Kaur, dept. of ECE, University of Delhi, New Delhi.

Session Experts:
Dr.Manisha Guduri, Dean, KGRIT, Hyderabad, Telengana.
Dr. Suraj K Saw, Dept.of ECE, Pune, Maharastra.
Prof.Singam Jayanthu,Professor,NIT, Rourkela, Odisha.
-----------------------------------------------------------------------------

**03/10/2021: 3:00-5:00PM: Technical Session-: 5**

3:00-3:45PM: Keynote Speech:

Prof. Piotr Bilski, Ph.D & D.Sc. Professor, Faculty of Electronics and Information Technology, Vice-Director in charge of science, Warsaw University of Technology, Poland.

Paper presentation: Paper IDs: 58, 20, M2, 30, 63,72

Session Chairs:
Dr.Rudra Dhar, HoD, Department of ECE, NIT Mizoram, Aizawl, Mizoram, India
Dr.Guntha Karthik, ECE,Stanley College of Engineering and Technology for Women, Hyderabad.
Dr.Abhishek Das, Associate Professor, CSE,Aliah University, Kolkata, West Bengal.

Session Experts:
Dr. Chandramuleswar Roy, Dept. of ECE, MITS, Andhra Pradesh.
Prof.Jerzy Szymanski, Professor, UTH Radom, Poland.
Dr.Nibedita Adhikari(ex Dpty Director-exam, bput), Professor, Dept. of CSE, HCE, Bhubaneswar, Odisha.
-------------------------------------------------------------------------------

**03/10/2021: 5:00-7:00PM: Technical Session-: 6**


5:00-5:45PM: Invited Speech:


Paper presentation: Paper IDs: 22, 83 29, 16,84

Session Chairs:
Dr. Sandip Chanda, GaniKhan Inst of Tech, Maldah, West Bengal.
Dr. Kamarul Ariffin Bin Noordin, Associate Professor. EE, University of Malaya, Malaysia.
Dr. Ms. Marta Zurek , Specialist, Department of Control Systems, Lukasiewicz Research Network-Institute for Sustainable Technologies, Radom, Poland, Europe.

Session Experts:
Prof.Chandan K Chanda, Professor, EE, IIEST,Shibpur,Howrah,West Bengal.
Dr.Joy Samaddar, Brainware University, Barasat, Kolkata,West Bengal.
Dr.Ashutosh Tripathi,Dept. of ECE, Chandigarh University, Punjab.
-------------------------------------------------------------------------------

**03/10/2021: 7:00-9:00PM: Technical Session-: 7**


7:00-7:45PM: Invited Speech:

Dragana Bajic, Ph.D
Professor and Head, Department of Communications and Signal Processing, University of Novi Sad, Serbia, Europe.
Talk Title: Splitting codes for incremental ARQ retransmission


Paper presentation: Paper IDs: 32, 37,69, 42,51,76

Session Chairs:
Dr.Rakesh Tripathi, NIT, Raipur, Chattisgarh, India.
Nikola Zogovic, Ph.D, Senior Research Associate, Institute MIHAJLO PUPIN, Serbia, Europe
Dr.Basant Agarwal, Dept. of CSE, IIIT Kota, Rajsthan.
Prof.Suchismita Chinara, Associate Professor, CSE,NIT,Rourkela, Odisha.

Session Experts:
Dr.Olga Jaksic, Research Scientist, University of Belgrade, Servia,Europe.
Prof.(Dr.) Kamrul Alam Khan, Professor, dept.of Physics,Jagannath University,Dhaka,BD.
Dr. Niraj Sharma, HOD, CSE, Amity University, Kolkata, WB

=======================END of 2nd DAY=======================
Date: 04/10/2021 dd/mm/yyyy


**04/10/2021: 11:00-1:00PM: Technical Session-: 8**

11:00-11:45PM: Invited Speech:

Dr. Ankita Pramanik, department of ECE, Indian Institute of Engineering Science and Technology, Shibpur,Howrah, West Bengal, India.

Paper presentation: Paper IDs: 54,33, 97,48, 71, 75

Session Chairs:
Dr.Yogesh Meena, CSE, NIT, Jaipur, Rajsthan.
Prof. Madhubala, HOD, CSE, Institute of Aeronautical Engineering, Hyderabad.
Dr. K R Subhashini,Asst Professor,Department of EE, NIT, Rourkela, Odisha.

Session Experts:

-------------------------------------------------------------------------
Date: 04/10/2021 dd/mm/yyyy


**04/10/2021: 1:00-3:00PM: Technical Session-: 9**

1:00-1:45PM: Invited Speech:

Prof.P M Khilar,Professor, Department of CSE, NIT, Rourkela, Odisha.

Paper presentation: Paper IDs: 12,65, 36, 43,106, 90

Session Chairs:

Dr. Mohd Faizul Bin Mohd Sabri,Associate Professor,Dept. of Mechanical Engineering,University of Malaya, Kuala Lumpur,Malaysia.
Dr.Jagannath Samanta,ECE, Haldia Institute of Technology, Haldia, Purba Midnapur, West Bengal.
Dr.S K Ratha, Deputy Registrar, Biju Patnaik University of Technology(BPUT), Rourkela, Odisha.
Dr.S K Chaulya, Scientist, Central Institute of Mining and Fuel research, Dhanbad,Jharkhand.

Session Experts:
Dr.Afzal Sikander, NIT, Jalandhar, Punjab.
Dr. K R Subhashini, Asst Prof, Dept.of EE, NIT, Rourkela, Odisha.
Dr.D P Pattnaik, Dean, Trident Academy of Technology, Bhubaneswar.

-------------------------------------------------------------------------




Date: 04/10/2021 dd/mm/yyyy
**04/10/2021: 3:00-5:00PM: Technical Session-: 10**

3:00-3:45PM: Invited Speech:

Paper presentation: Paper IDs: 100, 50, 86, 56, 59, 107, 64,66

Session Chairs:
Dr.Abhishek Majumdar,CSE, Tripura University, Tripura.
Prof.Punyaban Patel, Professor,CSE, CMR Technical Campus,UGC Autonomous, Kandlakoya(V),Hyderabad,
Dr. Abhaya Kumar Samal, Professor, CSE, Dean (Project & Consultancy),Trident Academy of

Technology,Bhubaneswar

Session Experts:
Prof.Singam Jayanthu, NIT, Rourkela, Odisha.
Dr.S K Ratha, Deputy Registrar, Biju Patnaik University of Technology(BPUT), Rourkela, Odisha.
Prof.D Acharjee, Director, Applied Computer Technology, Kolkata, WB.
-------------------------------------------------------------------------------

**21/10/2021: 8:00-9:00PM: Technical Session-: 11**

 Link of session: meet.google.com/uwc-tctf-wnc
**(a special session who could not present in conference in due date/time).**

8:00-8:15: introduction of CCSN2021 by Prof. Singam Jayanthu, General Chair of CCSN2021 and Professor, dept of Mining Engineering, NIT, Rourkela, Odisha.

Paper presentation: Paper IDs: 113, 105, 111, 112, 114,

PID    NAME/INSTITUTE
113 : Sanjoy Mondal, Dept of CSE, University of Calcutta, Kolkata.
105 : Harsh Jindal, dept of ECE, Chandigarh University, Mohali, Punjab.
111 : Dr.Alper Kerem, dept of EE, Kahramanmaraş Sütçü İmam University, Kahramanmaraş, Turkey
112 : Samit Bhanja, Government General Degree College, Hooghly, WB, India.
114 : Sanjoy Mondal, Dept of CSE, University of Calcutta.

Session Chairs:

Dr.Abhishek Das,CSE, Associate Professor, Aliah University, New Town, Kolkata, WB.
Prof.Punyaban Patel, Professor,CSE, CMR Technical Campus,UGC Autonomous, Kandlakoya(V), Hyderabad,
Prof. Abhaya Kumar Samal, Professor, CSE, Dean (Project & Consultancy),Trident Academy of Technology, Bhubaneswar, Odisha.
Dr.Rakesh Tripathi, dept of CSE-IT, NIT Raipur, Chattisgarh.

Session Experts:
Prof.Singam Jayanthu, NIT, Rourkela, Odisha.
Prof.Dulal Acharjee, Chairman of CCSN2021 and Director, Applied Computer Technology, Kolkata, WB.

Conclusion talk (on publication of special issue of the Journal of Microsystem Technologies, Springer, SCI indexed ) by: Prof. Abhishek Das, CSE, Associate Professor, Aliah University, New Town, Kolkata, WB.

*** END OF SESSION ***

# VALEDICTORY SESSION

(4/10/2021-dd-mm-yyyy) Time: 5:00-6:30PM :Minutes of Valedictory session:
 Program conductor: Dr. Sulagna Chatterjee/ Dr.Nibedita Adhikary
 Panel discussion: Parallem computing for Communication Engineering, Quantum computing and TeraHertz band applications.
 Members of Panel discussion:

☐ Prof. Pierluigi Siano, Professor and Scientific Director, Smart Grids and Smart Cities Laboratory, Department of Management & Innovation Systems, University of Salerno, Salerno, ITALY.

☐ Prof. J K Mandal, Professor, University of Kalyani, West Bengal,India

☐ Prof. Debashis De, Professor, CSE, Maulana Abul Kalam Azad University of Technology, Kolkata,India

☐ Prof.Suchismita Chinara, Associate Professor, CSE,NIT,Rourkela, Odisha.

☐ Prof. Singam Jayanthu, General Chair, and Professor, NIT, Rourkela, Odisha.

☐ Prof. Zeev Zalevsky,Professor and the Dean of the faculty of engineering in Bar-Ilan University, Israel.

☐ Prof. Dulal Acharjee ( regarding publication options, role of new committee ): regarding quality of paper.

☐ Feed back from audiences:

☐ Declaration of Best Paper Award by: Dr. Suraj K Saw, Pune

☐ Talk by Best paper awardee(1st)

☐ ....... Declare committee members of CCSN2021

☐ Cultural Program:

☐ Dance by: Dr. Ankita Pramanik, IIEST, Shibpur, Howrah

☐ Recitation by: Ms.Seema Banerjee-Ray, Dallas, Texas, USA

☐ Song: national antheme by: Ms. Debjani Bhattacharya(Acharya), Kolkata

☐ Vote of thanks by: Dr. Olga Jaksic, University of Bengrade, Serbia, Europe.

********Declaration of END of CCSN2021**********

*********************************************************************************

# CCSN2021

## 10th International Conference on Computing Communication and Sensor Networks.
## 2nd – 4th October, 2021, Venue: Online, India.
### List of  Invited Speakers/ Session Chairs

| | |
|---|---|
|  | **Keynote Speaker:**<br><br>**Prof. Dr. Marcin PAPRZYCKI**<br>Systems Research Institute Polish Academy of Sciences<br>Vice Chair of IEEE Poland Section |
|  | **Dragana Bajic**<br>Department of Communications and Signal Processing,<br>University of Novi Sad, Serbia, Europe.<br><br>Professor at the University of Novi Sad,<br>head of the department for Digital Processing of Biomedical Signals,<br><br>Talk Title: Splitting codes for incremental ARQ retransmission" |
|  | **Prof.(Dr.) Singam Jayanthu, FIE, C Engr**<br>Ph.D, M Tech, BE (Mining) , MS(Counselling & Psychotherapy)<br>Professor, Dept of Mining Engineering, (*Former Scientist of CMRI & NIRM*)<br>National Institute of Technology, Rourkela-769 008, Orissa,<br>Website-www.nitrkl.ac.in<br>*Talk Title :* Scope for Applications of Transdisciplinary research on computing, communications and sensor network for mining industries |
|  | KEYNOTE SPEAKER:<br><br><br>**Prof. Piotr Bilski, Ph.D & D.Sc.**<br>Professor, Faculty of Electronics and Information Technology, Vice-Director in charge of science, Warsaw University of Technology, Poland.<br><br>Talk Title : AI-based methods for the electrical appliances load monitoring |
|  | **Prof. C K Jayasankar,**<br>Professor, Department of Physics,<br>Sri Venkteswara University,<br>Tirupati, Andhra Pradesh, India. |
|  | **Prof. Zoran Jaksic**<br>Professor, Institute of Chemistry<br>National Institute of the Republic to Serbia<br>University of Belgrade, Serbia, Europe. |

| | |
|---|---|
| | **Prof. Jerzy Szymanski**<br>Kazimierz Pulaski University of Technology and Humanities,<br>Radom, POLAND |
| | Dr. Ankita Pramanik,<br>Assistant Professor<br>Department of Electronics and Telecommunication Engineering,<br>Indian Institute of Engineering Science and Technology (IIEST),<br>Shibpur, Howrah-711103, West Bengal, India.<br>Talk Tile: Wireless Communication Technology In Underground Coal Mine. |
| | **Prof. Dulal Acharjee**<br>Chairman, CCSN2021 and<br>Director, Applied Computer Technology, Kolkata<br>http://actsoft.org,<br>dulal@actsoft.org, dulalacharjee@gmail.com<br>and<br>President, International Association of Science, Technology and Management<br>Mobile: 8240120380, 8420582707 |
| | **Prof.(Dr.) Md. Kamrul Alam Khan**<br>Professor, Department of Physics, &<br>Ex-Chairman (Department of Physics), &<br>Ex - Dean (Faculty of Science)<br>Jagannath University, Dhaka-1100, Bangladesh. |
| | Session Chair<br><br>**Nikola Zogović, PhD**<br> Senior Research Associate<br> Institute MIHAJLO PUPIN<br>Serbia, Europe. |
| | Session Chair:<br><br>**Dr. Abhishek Das**<br>Associate Professor<br>Department of CSE<br>Aliah University, New Town, Kolkata<br>West Bengal, India. |

# Advertisement:

# ESDA-2021

**4th** International Conference on

## Energy Systems, Drives and Automation

Venue: Kolkata, West Bengal, India

**Conference Website:** https://actsoft.org/esda2021

Paper uploading site: https://cmt3.research.microsoft.com/esda2021

Conference date: 25th - 26th of December, 2021

Abstract Proceeding of CCSN2021

# Editors:

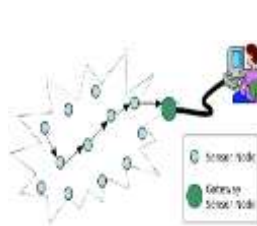# Prof. Manisha Guduri

# Prof. Punyaban Patel

# Dr. Sunil Pathak

# Dr.Ashutosh Tripathi

# Prof. Dulal Acharjee
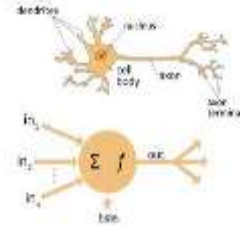


Applied Computer Technology
Kolkata, India.
02/10/2021