2023 9th International Conference on Signal Processing and **Communication (ICSC 2023)**

Noida, India 21 – 23 December 2023



IEEE Catalog Number: CFP23VAB-POD **ISBN:**

979-8-3503-8321-8

Copyright © 2023 by the Institute of Electrical and Electronics Engineers, Inc. All Rights Reserved

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

*** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.

| IEEE Catalog Number: | CFP23VAB-POD |
|-------------------------|-------------------|
| ISBN (Print-On-Demand): | 979-8-3503-8321-8 |
| ISBN (Online): | 979-8-3503-8320-1 |
| ISSN: | 2643-4458 |

Additional Copies of This Publication Are Available From:

Curran Associates, Inc 57 Morehouse Lane Red Hook, NY 12571 USA Phone: (845) 758-0400 Fax: (845) 758-2633 E-mail: curran@proceedings.com Web: www.proceedings.com



TABLE OF CONTENTS

| TRA | CK: COMMUNICATION | |
|-----|--|----|
| 1. | A Blockchain Application for Secure Collaboration Akash Kumar, P. Raghu Vamsi, Yashi Agarwal and Siddhant Jain | 1 |
| 2. | A Compact Wideband Circularly Polarized Planar Monopole Antenna for Wireless and X-Band Applications Rajavel V, Potnuru Sravya, Arpan Saha and Dibyendu Ghoshal | 7 |
| 3. | A Dual Band Circularly Polarized RFID Reader Antenna for Internet of Things Application Deepak Kumar and Naveen Jaglan | 13 |
| 4. | A High Efficiency Class-E Power Amplifier with Tuned Output Network Evan Court and Vipin Balyan | 17 |
| 5. | A Miniaturized Multiband Coplanar Waveguide Fed Frequency Reconfigurable Antenna for 5G Sub 6GHz and UWB Applications Rajavel V, Dibyendu Ghoshal, Voonna Charan Kumar, Souramita Debnath, Vellanki Avinash Venkat and Abhinav Pratap Singh | 22 |
| 6. | A Novel Pattern for Searching Motion Vector in Interframe Coding Rahul Bhandari, Hemant Kumar Saini and Sanjay Singla | 28 |
| 7. | A Smart NIDS Design for SDN-based Cloud IoT Network using Optimal Path Selection and RNN Narendra Kumar, Ishaan Dawar, Anurag Aeron and Santosh Kumar | 33 |
| 8. | A Trust-based Framework for the Detection and Avoidance of Blackhole Nodes in Opportunistic Networks <i>Protyasha Kundu, Swarnadeep Saha, Smritikona Barai and Anindita Kundu</i> | 42 |
| 9. | An Angle Independent Cross Arrow Shaped Resistor Loaded Metamaterial Absorber for Wideband EMC/EMI Applications Raghvenda Kumar Singh, Ashish Gupta and Joysmita Chatterjee | 49 |

| 10. | An Array of Fibonacci Hexagon based Printed Radiators for Vehicular Communications Kalyan Sundar Kola, Anirban Chatterjee and Sandip Bhattacharjee | 54 |
|-----|--|-----|
| 11. | An IoT-Based On-Cloud Accident Detection and Reverse Geocoding Equipped Reporting System Debapriyo Paul, Anirban Pal and Raja Karmakar | 61 |
| 12. | Asymmetric Dual-Hop NOMA based Communication System with Practical Constraints: Imperfect CSI, HWI and ISIC Isha Khirwar, Akash Gupta, Bharat Verma and Parul Garg | 67 |
| 13. | Cluster-Head Selection Protocol for Improving the Network Lifetime of Wireless Sensor Network Bhagwati Sharan and Manjula R | 72 |
| 14. | Design a UWB Antenna with Band Notch Characteristics for MIMO Applications Hemant Kumar Varshney, Sachin Agrawal and Dharmendra Kumar Jhariya | 78 |
| 15. | Design and Analysis of UWB Fractal Array Antenna for 5G and Millimeter Wave Communication Diksha Verma, Arun Raj and Durbadal Mandal | 84 |
| 16. | Design of SIW based Hexagonal Patch Filtering Antenna for n-77 and n-78 Applications Ravi PrakashVerma, Ashish Gupta and Bhagirath Sahu | 89 |
| 17. | Design of Slotted Microstrip Antenna using Regression based Approach Karanam Venkata Sai, Nallagatla Bhanu Prakash, Inti Kavya and A. Sudhakar | 93 |
| 18. | Development of a LiFi System for Under Water Communications Yash Raj Lata, Raj Gusain, Sushant Shekhar, Anurag Vidyarthi, Rishi Prakash and R. Gowri | 99 |
| 19. | Effect of Air Pollution on OFDM based RoFSO Transmission for Different Dust Conditions Ankur Sood and Rahul Kaushik | 103 |
| 20. | Gain and Directivity Enhancement of mm-wave MIMO Array for 5G Networks Poonam Koundal, Simranjit Singh and Rajbir Kaur | 108 |
| 21. | Heart Disease Prediction using Machine Learning Amrit Raj, Saurabh Kumar, Ayush Kumar and Sourabh Budhiraja | 113 |

| 22. | LoRaWAN based Environmental Monitoring for Smart Campus Paidikondala Vinay, Amarlapudi Sanjaybhargav, Uppala Sakhitha and K. Shri Ramtej | 120 |
|-----|--|-----|
| 23. | Orbital Angular Momentum Beam Antenna Systems for Wireless Communications – A Brief Review Aakash Bansal and William G. Whittow | 125 |
| 24. | Outage Analysis of Single-Stage Relay NOMA Over Power Line Communication Under Impulsive Noise Roopesh Ramesh, R. Muralishankar and Sanjeev Gurugopinath | 129 |
| 25. | Performance Analysis of UAV Communication System in the Vicinity of Multiple Interferers <i>Abhijeet Upadhya and Anu Goel</i> | 135 |
| 26. | Performance Evaluation on Various Routing Strategies in IoT Sunita Rani, Ritu Beniwal, Kirti Saini and Rashmi Saini | 139 |
| 27. | Security Analysis of a Mixed RF-FSO-VLC Triple Hop Cooperative Network Vishal Narain Saxena and Dipti R. Pattanayak | 145 |
| 28. | Security Framework for Electronic Health Record in the Cloud Based on Public key Encryption <i>A. Aruna and V. Sellam</i> | 150 |
| 29. | Single and Dual Horn SIW Radiators for High Speed Vehicular Communication Mantar Singh Mandloi and Leeladhar Malviya | 156 |
| 30. | Single Photon Emission Possibility in a Quantum State of light Anjali Jatwani and Amit Verma | 162 |
| 31. | Software-Defined Networking's Adaptive Load Optimisation Technique for Multimedia Applications with Multi-Controller Utilisation Pardeep Singh Tiwana and Jaspreet Singh | 167 |
| 32. | SSADV-Hop: Node Localization Approach in WSNs using a SSA based DV-Hop Range Free Method <i>Shilpi and Arvind Kumar</i> | 173 |
| 33. | State Modeling and Verification of Solar Energy Harvesting System for IoT Applications <i>Prathyusha M R and Biswajit Bhowmik</i> | 178 |

| 34. | Statistical Physical Model for Rise and Fall Time Analysis of DMNC System Urvashi Chugh, Saket Mishra, S. Pratap Singh and Ghanshyam Singh | 185 |
|-----|--|-----|
| 35. | WiCare: Accidental Fall Detection for Elderly Care Using Passive Wi-Fi Sensing Sontu Akshath Rishi, Govindula Srinith, Ummadisetty Dheeraj and Debanjan Das | 190 |
| TRA | CK: INTELLIGENT COMPUTING AND MACHINE LEARNING | |
| 1. | 5G Network Slice Prediction using Hybrid Neural Network and Random Forest Model Ramya V, Rimjhim, Padam Singh, Manoj Kumar Panda and Priyanka Kumar | 196 |
| 2. | A Comprehensive Review on Recent Advances in Observation and Estimation of Nitrogen Oxide (NOx) Emissions <i>Charu Bhardwaj and Thomas Lauvaux</i> | 202 |
| 3. | A Deep Dive into Accurate Garbage Classification using Transfer Learning Techniques for Environmental Sustainability Silky Goel, Akanksha Gupta and Snigdha Markanday | 209 |
| 4. | An AI Decision System to Predict Lung Nodules through Localization from Chest X-ray Images Shiva prasad Koyyada and Thipendra P Singh | 214 |
| 5. | An Effective Path Convergence Approach Founded on Recurrent Ant Colony Optimization (RECACO) in Mobile Ad Hoc Networks <i>M. Vishnuvardhan Reddy, Shahnaz K. V, Potu Narayana, Sanjay Kumar Suman and A. Ashaand</i> <i>Arvind Balamurali</i> | 221 |
| 6. | Analyzing Social Media texts for Suicidal Risk Identification using Natural Language Processing Shanskar Rai, Sumiran Bhattarai, Premjyoti Dhar, Biraj Upadhyaya, Kalpana Sharma and Sandeep Gurung | 227 |
| 7. | Assessment of Different Approaches used for Image Enhancement in Underwater Scenarios Vidhi and Rajesh Rohilla | 232 |

| 8. | Attention-based Transfer Learning Approach using Spatial Pyramid Pooling for | 238 |
|-----|---|-----|
| | Diagnosis of Polycystic Ovary Syndrome | |
| | Geet Sahu, Mohan Karnati, Ayush Singh Rajput, Mayank Chaudhary, Ritesh Maurya and Malay Kishore Dutta | |
| 9. | Automatic Crop Irrigation System using Internet of Things and Machine Learning | 244 |
| | Geetika Sharma, Sushil Chandra Dimri, Harendra Singh Negi, Moksh Maheshwari and Mithilesh Kumar Sharma | |
| 10. | Case Study of Image Feature Extraction using Conventional and Deep Learning | 249 |
| | Methods: Autoencoder and U-Net | |
| | Usha Rawat and C.S. Rai | |
| 11. | CFD Algorithms for Magnesium Based Implant System for Smooth Pursuit Eye | 258 |
| | Movements | |
| | Jeya Prabha A, Sameera Fathimal M, Nithiyanantham K K and Angeline Kirubha S P | |
| 12. | Classification of NFR based Importance Level of User Story in Agile Software | 264 |
| | Development | |
| | Bhawnesh Kumar, Umesh K. Tiwari and Dinesh C. Dobhal | |
| 13. | Convolutional Neural Network Architectures for Modulation Scheme | 269 |
| | Classification in RF Signals within Cognitive Radio Systems | |
| | MWP Maduranga, H.K.I.S. Lakmal and Valmik Tilwari | |
| 14. | Data Analytics Technique of Different IP Address Utilized for Cloud Services | 274 |
| | Arpita Wani, Shahuraj Mohite, Sudhanshu Gonge, Rahul Joshi, Deepali Vora and Ketan Kotecha | |
| 15. | Deep Learning Enabled Dual-hop NOMA Relaying System | 279 |
| | Shweta Mittal, Pankaj K. Yadav and Vivek K. Dwivedi | |
| 16. | Deep Learning-Based Epileptic Seizure Classification using Empirical Mode | 284 |
| | Decomposition Algorithm | |
| | Durga R, Maansi J, Vijay Niranjan, Jeya Prabha A, Sameera Fathimal M and Angeline Kirubha | |
| | SP | |
| 17. | Deep Transfer Learning for Tomato Leaf Diseases Detection and Classification | 290 |
| | using Pre-trained Models | |
| | Ashish Mishra, Ashutosh Mishra, A. K Tewari and Jayesh Gangrade | |
| 18. | Detection of Counterfeit Currency Through SURF and Haar Cascade Classifier | 296 |
| | Abhishek Kashyap, B. Suresh and Kapil Dev Tyagi | |
| | | |

| 19. | Driving into the Future: A Comparative Analysis of the Hough Transform and | 302 |
|-----|---|-----|
| | Convolutional Neural Network for Autonomous Vehicles | |
| | Bhawna Gupta, Ruby Beniwal, Shruti Kalra and Prateek Sharma | |
| 20. | Drowsy Driving Detection System using Image Processing Techniques | 309 |
| | Md Kaif Ansari, Rupashri Barik, Khushi Kumari, Rahul Jha and Manjit Singh | |
| 21. | ECG Dimensionality Reduction using PCA and Feature Abstraction Expending | 314 |
| | ICA Built with Power Spectral Estimation | |
| | B. Ganga Bhavani, Satyanand Singh, Sanjay Kumar Suman, Nagaraj Bhat, D. Sasirekha and K. R. Bharath | |
| 22. | Efficient e-KYC Authentication System: Redefining Customer Verification in | 319 |
| | Digital Banking Kawan Verma, Bainish Kuman Amanana Buchhahana Bao and Bahash Banian | |
| | Kavery Verma, Rajnish Kumar, Amarana Prabhakara Rao and Rakesh Ranjan | |
| 23. | Efficient Image Feature Extraction through Simultaneous Training of Nested U- | 325 |
| | Nets | |
| | Sujeet Kumar Mishra and Dieter W. Heermann | |
| 24. | Enhancing Trojan Detection using Machine Learning: Comparative Analysis of | 331 |
| | Classifier Performance on Embedded Hardware | |
| | Roshani Parmar and Nagendra Gajjar | |
| 25. | Heart Guardian: A Model for Predicting Cardiovascular Diseases | 339 |
| | Nishu Bansaland and Deepanshu Garg | |
| 26. | Improved Ensemble based Transfer Learning Approach for Indian Sign Language | 345 |
| | Recognition | |
| | Sneha Sharma, Anshul Agarwal, Siddhant Kumar, Avaneesh Pandey and Malay Kishore Dutta | |
| 27. | Incorporating Requirement Engineering into Agile Methodologies: Challenges and | 351 |
| | Proposed Solutions | |
| | Prateek Srivastava, Nidhi Srivastava, Rashi Agarwal and Pawan Singh | |
| 28. | In-Hospital Mortality Prognosis: Unmasking Patterns using Data Science and | 356 |
| | Explainable AI | |
| | B Uma Maheswari, Ashik F, Angelina George and Alphonsa Jose | |
| 29. | Insect Localization and Detection using Object Detection Techniques | 362 |
| | Parveen malik, Manoj Kumar Parida and Ganaraj P.S. | |
| | | |

| 30. | IOT Based Soldier Tracking and Health Indication System Gurmeet Singh, Aamir Hashmi, Varun Gaur and Varsha Gupta | 368 |
|-----|---|-----|
| 31. | MineralNet: A Composite Deep Learning Model for Accurate Classification and Identification of Minerals Using CNN-SVM Fusion <i>Raj Gaurang Tiwari and Anurag Kumar</i> | 374 |
| 32. | Monitoring of Grid-Connected Photovoltaic Systems using Multilayer Neural Networks Parveen Kumar, Manish Kumar and Ajay Kumar Bansal | 380 |
| 33. | Multimodal Biometric Authentication based on Score Level Fusion of Palmprint and Iris Parul Arora and Gopal Chaudhary | 387 |
| 34. | Optimum Feature Selection for the Analysis of Effects of Electroencephalography on Applied Pressure Physiotherapy <i>Kumar Avinash Chandra and Prabhat Kumar Upadhyay</i> | 392 |
| 35. | Performance Evaluation of Cuffless Blood Pressure Estimation Methods Using Linear and Non-Linear Models with PTT and PR Parameters Shilpa N S, Jomole Varghese V, Sivaranjini P N, Asit Kumar Panda, M. Sabarimalai Manikandan and Ram Bilas Pachori | 397 |
| 36. | Precision Agriculture using Internet of Things and Machine Learning Siddha Mehta, Tirth Shah, Nikhil Thakkar, Utkrisht Trivedi, Shubhangi Deokar and Deepali Vora | 403 |
| 37. | Prediction of Handwritten Classification using CNN Techniques Kumar Sanu and Rahul Bhandari | 411 |
| 38. | Prediction of Protein Biomarkers for Mycobacterium fortuitum using Machine Learning Technique Prajjwal Jagwan, Shan Ghai, Rahul Shrivastava and Shruti Jain | 416 |
| 39. | Quantum Prototype Clustering: Advancing AI Enhanced Machine Learning Ishan Shivansh Bangroo and Ravi Kumar | 422 |
| 40. | Real Time Cloud-Based Weather Monitoring System using Node MCU Saurav Kumar, Shubham Dabral, Ayush Negi, Vandana Rawat, Sudhanshu Maurya and Kamal Alaskar | 428 |

| 41. | Real-Time Crowd-Counting and Management in Sacred places using Computer | 434 |
|-----|--|-----|
| | Vision & ESP32 cameras | |
| | Mohammed Mahmood Ali, M.S. Qaseem, Mohd Zeeshan, Abrar Ahmed Quraishi and Ateeq ur | |
| | Rahman | |
| 42. | Real-Time Image Super-Resolution using Drone through GFPGAN and Nvidia | 440 |
| | Jetson Nano | |
| | Reetika Dubey and Ruchi Gajjar | |
| 43. | Road Detection from Remote Sensing Images using Machine Learning | 445 |
| | Pruthvirajsinh A. Kathiya, Kashyap Sindhav and Ruchi Gajjar | |
| 44. | SACF: An Innovative and Secure Architectural Approach for Cybersecurity using | 450 |
| | Fog Computing Environments | |
| | Mandeep Kaur, Rajni Aron, Shriya Seth and Pratham | |
| 45. | Sentiment Analysis for Better User Experience in Tourism Chatbot using LSTM | 456 |
| | and LLM | |
| | Ommi Balamurali, A.M. Abhishek Sai, Moturi Karthikeya and Sruthy Anand | |
| 46. | Ship Detection in Satellite Images using You Only Look Once-Neural | 463 |
| | Architecture Search | |
| | Anand R N, Rimjhim Padam Singh, Deepa Gupta and Kannappan Palaniappan | |
| 47. | Solar Powered IoT based Environment Monitoring System | 469 |
| | Nischitha M and B.S Rajeshwari | |
| 48. | SZ-RAN: A Residual Attention Network for Early Detection of Schizophrenia | 473 |
| | using EEG Signals | |
| | Sunidhi Singh, Srishti Singh, Geet Sahu, Jitendra Jadon and Malay Kishore Dutta | |
| 49. | The Next Frontier: Futuristic Home Control Systems for Modern Living | 479 |
| | Ankita Sahoo, Vansh Warathe, Aashima Katoch and Navpreet Kaur Walia | |
| 50. | Tomato Leaf Disease Classification with Lightweight Federated Learning using | 485 |
| | Identically Distributed Images | |
| | Naresh Kumar Trivedi, Himani Maheshwari, Raj Gaurang Tiwari, Ambuj Kumar Agarwal and | |
| | Vinay Gautam | |
| 51. | Wind Power Prediction using Transformers: A Federated Learning Approach | 491 |
| | Shivkumar S, Rimjhim Padam Singh and Priyanka Kumar | |
| | | |

| 52. | Zérosdetect: Phishing URL Detection with Quantum-Driven Zero-shot Learning Ishan Shivansh Bangroo and Ravi Kumar | 498 |
|-----|---|-----|
| TRA | CK: SIGNAL PROCESSING | 1 |
| 1. | A Fine-Tuned MobileNetv2 based Approach for Weed Classification Shalini G, Rimjhim Padam Singh, Manju Khanna and Priyanka Kumar | 504 |
| 2. | An ECG Signal Compression Technique based on DCT and Evolutionary Algorithms Paridhi Singhai, Hardev Singh Pal, A Kumar and Kuldeep Baderia | 510 |
| 3. | Compressed ECG Sensing Based RR Interval Measurement for Fast Entropy Analysis of Heart Rate Variability <i>Himanshu Singh, M. Sabarimalai Manikandan and Ram Bilas Pachori</i> | 516 |
| 4. | Contactless HR Measurement from Facial Videos using Alternative Color Spaces with CEEMDAN <i>Arpita Panigrahi, Amita Kumari Sharma, Hemant Sharma and Atin Mukherjee</i> | 522 |
| 5. | Deep Learning Based Enhanced Handwritten Devanagari Character Recognition using Image Augmentation <i>Khushi Sinha, Eshan Marwah and Richa Gupta</i> | 528 |
| 6. | Deep Spectrogram Feature Based ECG Signal Quality Assessment for False Alarm Reduction Achinta Mondal, M. Sabarimalai Manikandan and Ram Bilas Pachori | 532 |
| 7. | Detection of Epileptic Seizures by Analysis of Electroencephalogram based on Wavelet Transform Sebastian Urbina Fredes, Ali DehghanFiroozabadi, Pablo Adasme, David Zabala-Blanco, Pablo Palacios Jativa and Cesar A. Azurdia-Meza | 538 |
| 8. | Development of Acoustic Scene Classification Model using Neural Networks Applied on Reduced Dataset of DCASE Vikash Kumar Singh, Kalpana Sharma and Samarendra Nath Sur | 544 |
| 9. | DiaMOS Plant Leaves Disease Classification using Vision Transformer Sugunadevi C, Rimjhim Padam Singh, B. Uma Maheswari and Priyanka Kumar | 551 |

| 10. | Eight-Element Low-Profile MIMO System for Thin 5G Smartphone Applications Vishakha Thakur and Naveen Jaglan | 557 |
|-----|---|-----|
| 11. | Emotion Identification Based on EEG Rhythms Separated using Improved Eigenvalue Decomposition of Hankel Matrix Aditya Nalwaya, Vivek Kumar Singh and Ram Bilas Pachori | 562 |
| 12. | Improving Diabetes Management with Support Vector Machine-Based Fundus Image Analysis P. Raghu Vamsi and Pawan Kumar Upadhyay | 568 |
| 13. | Instantaneous Fundamental Frequency Estimation based on FBSE-FAWT Amishi Vijay, Ram Bilas Pachori, Balasubramanyam Appina and Nitya Tiwari | 575 |
| 14. | Magnetic Resonance Image Fusion using Bilateral Filter and PCA K. Kannan and K. Sakthibala | 581 |
| 15. | MFAAN: Unveiling Audio Deepfakes with a Multi-Feature Authenticity Network Karthik Sivarama Krishnan and Koushik Sivarama Krishnan | 585 |
| 16. | Parkinson Disease Classification using Hybrid Deep Learning Approach Bindhu Mol, Rimjhim Padam Singh and Priyanka Kumar | 591 |
| 17. | Power Quality Improvement in Electric Vehicle Charging Station using PI Controller Abhinav Srivastava, Munish Manas and Rajesh Kumar Dubey | 597 |
| 18. | Quantum Cascade Lasers in Infra-red Absorption Spectroscopy J. Melvin Jones, Ravi Gorli, S Chithra, S. Lakshmisridevi, Harishchander Anandaram and P Ashok | 604 |
| 19. | Smart Song Recommendation System using Machine Learning Ayushman Singh, Shubham Sharma, Balvendra Singh, Sumit Kumar Jha and Hari Om Shanker Mishra | 609 |
| 20. | Speaker Counting by Scattered Microphone Array Based on DOA and Eigenvalue Estimations in Adverse Environments <i>Ali DehghanFiroozabadi, Pablo Adasme, David Zabala-Blanco, Pablo Palacios-Játiva and Cesar</i> <i>Azurdia-Meza</i> | 615 |
| 21. | Throat microphone Speech Recognition in Hindi Language using Residual Convolutional Neural Network <i>Raj Kumar, Manoj Tripathy, R. S. Anand and Niraj Kumar</i> | 621 |

| 22. | Wavelet-based Alzheimer's Disease Detection using Edge-Weighted Local Binary Pattern | 626 |
|-----|---|-----|
| | Neha Garg, Mahipal Singh Choudhry and Rajesh Mungasaji Bodade | |
| TRA | CK: VLSI TECHNOLOGY AND EMBEDDED SYSTEMS | |
| 1. | An Interactive and Economical Embedded Braille Machine for the Visually Challenged People Deepak Joshi, Aham Gupta, Ashish Kumar, Devansh Chaudhary, Syed Hashir Faheem, Mohd Kaifuddin Khan and Mohd Tausif | 632 |
| 2. | Analysis and Simulation of Angle Effect of L-Shaped Beam Branches on the Performance of Multi-Resonant Piezoelectric Energy Harvester <i>Shradha Saxena</i> | 638 |
| 3. | Assessing the Performance of a Dielectrically Modulated Double-Gate Bilateral TFET Biosensor <i>Kuldeep Dutta, Madhulika Verma, Sachin Agrawal and Manoj Kumar</i> | 642 |
| 4. | Characterization of Radiation-Dependent Dual Channel AlGaN/GaN MOS-HEMT Based Dosimeter Mann Ruby, Sharma Shobha, Rewari Sonam and Gupta R. S. | 646 |
| 5. | Computational Approaches to Optimizing Perovskite Solar Cell Performance Ayushi Sharma, Chandani Dubey, Deepak Kumar Jarwal and Gopal Rawat | 651 |
| 6. | Design and Analysis of Peculiar Piezoresistive Pressure Sensor (PPPS) for Distinct Application Bhumika S B, Chaitra N, Panwala Fenil Chetankumar, Harsha S and Babu Angadi | 657 |
| 7. | Design and Performance Assessment of a Si/GaSb-PC-TFET for Label-Free Bio- Sensing Applications Mukesh Kumar Bind, Sajai Vir Singh and Kaushal Kumar Nigam | 663 |
| 8. | Designing a Customized Communication System using Raspberry Pi Anusha C and H M Kalpana | 669 |
| 9. | Efficient Approximate 8-Bit Binary Parallel Subtractor Circuit: Design, Analysis, and Application in Negative Image Generation <i>Sanjiv Kumar Gupta, Amit Dhawan, Manish Tiwari and Sumit Kumar Jha</i> | 675 |

| 10. | Electrical Noise Analysis of Polarity Gate JLTFET | 679 |
|-----|--|-----|
| | Priyanka Kwatra, Sajai Vir Singh and Kaushal Nigam | |
| 11. | EXCCII-Based Precision Trans-Impedance-Mode Full Wave Rectifier Shafali Jagga, Atul Kumar, Bhartendu Chaturvedi and Jitendra Mohan | 684 |
| 12. | Hardware Software Co-design of k-means Clustering Algorithm Avadh Harkishanka, Amurt Prakash, Nikhil Gupta, Aatib Mohammad and Abhijit Asati | 688 |
| 13. | Home Quarantine Covid-19 Patient's Monitoring and Prediction Healthcare System using Internet of Things and Machine Learning Dushyant Kumar Singh, Reena Chandel and Himani Jerath | 694 |
| 14. | Implementation of 1-bit Full Adder using Various Low Power Techniques on 45nm Technology Nishant Sahay and Akash Mecwan | 701 |
| 15. | Investigating Machine Learning Applications for FDSOI MOS-Based Computer- Aided Design Abhay Pratap Singh, Vimal Kumar Mishra and Shamim Akhter | 708 |
| 16. | Investigation of CeO ₂ /rGO Nanocomposites as Diesel Additives to Enhance Engine Performance and Reduce Exhaust Emissions Pankaj Kumar, Jatinder Kumar Ratan, Neetu Divya, Kavicharan Mummaneni and Gopal Rawat | 714 |
| 17. | Lint, CDC and RDC Analysis for PCIe Subsystem using VC_Spyglass Nischitha A P, Dayananda Y S and H M Kalpana | 720 |
| 18. | Low Power Near-Threshold Schmitt-Trigger Driven 11T CNTFET SRAM Cell with Improved Performance Lokesh Soni, Neeta Pandey | 726 |
| 19. | Metal Strip Layer Approach to Enhance the DC Characteristics and Analog/RF Performance of a Dual Material Control Gate TFET Shreyanshi Maturkar, Dharmender and Kaushal Kumar Nigam | 732 |
| 20. | Modeling and Analysis of Step-down Switched Capacitor DC-DC Converter for SoC Sunita Saini and Davinder Singh Saini | 738 |
| 21. | Optical Analysis of TiO ₂ and MoO ₃ based Optoelectronic Devices using Solcore <i>Varun Goel, Yogesh Kumar and Hemant Kumar</i> | 743 |

| 22. | Performance Comparison of CMOS Based Voltage Reference Circuits in 180nm Technology <i>Krishan Kumar, Manoj Kumar and Mansi Jhamb</i> | 747 |
|-----|--|-----|
| | Krishan Kumar, Manoj Kumar ana Mansi Jhamb | |
| 23. | Photodetector based on Hybrid Perovskite CH ₃ NH ₃ PbI ₃ /TiO ₂ Heterojunction <i>Rishibrind Kumar Upadhyay and Satyabrata Jit</i> | 753 |
| 24. | Power-Efficient FPGA Implementation of SVM for Sleep Apnea Detection Syed Imaduddin, Abdul Haadi, Ashish Kumar and Md ShamShad Alam | 757 |
| 25. | Quantifying NBTI Recovery and Its Impact on Lifetime Estimations in Advanced Semiconductor Technologies <i>Karan Singh, Shruti Kalra and Ruby Beniwal</i> | 763 |
| 26. | Reduction of Subthreshold Leakage Using Metal Strip in SGO Double-Gate MOSFET Arup S. Bhaumik, Satyendra Kumar, Saurabh Chaturvedi, Km. Sucheta Singh, Yogesh Kumar, Kapil Dev Tyagi and Abhishek Kashyap | 769 |
| 27. | Simulation-Based Study of Gaussian-Doped Channel in Stacked Gate Oxide MOS Transistor Amit Kumar, Satyendra Kumar and Saurabh Chaturvedi | 774 |
| 28. | Smart Precision Farming in Substrate Medium – A Practical Analysis Monica Dutta and Deepali Gupta | 778 |
| 29. | Temperature Dependent Analysis of ZnO QDs Photodetectors Tejas Kumar, Yogesh Kumar, Hemant Kumar, Varun Goel and Gopal Rawat | 783 |