

PAPER DETAILS

Track-01: Circuits, Devices and VLSI

1571006674	Integrating Neural Network Models for Advanced Automation in Analog Amplifier Circuit Design
1571014535	A Compact and Low Power Memristor Based 8-Bit Digital to Analog Converter for Hearing Aid Devices
1571016626	Improve Power Control Action During Inverse Temperature Dependency in Hybrid Core Architecture
1571016754	Next-Generation Digital Receiver Platforms for Cosmology/Radio Astronomy Experiments
1571017362	Performance Comparison of ZnO and ZnON Based Optoelectronic Synapses
1571017586	Breakdown Voltage Enhancement Techniques in β -Ga ₂ O ₃ Nanomembrane MESFETs
1571017808	Functional Verification of Arithmetic Logic Unit and Instruction Fetch Unit of a 32-Bit RV32IM ISA Based RISC-V Processor
1571017931	High Speed Area Efficient Floating Level-Shifter for Gate Drivers in Continuous Capacitor Voltage Regulators
1571018020	Metal Fill-Induced Timing Effects: Unraveling Parasitics in Network on Chips
1571018025	Precision in Source Synchronous Design: Strategies for Predictable Physical Implementation
1571018154	Analysis and Modeling of DC-IV and Flicker Noise Characteristics of 180-nm Bulk Planar NFETs at Cryogenic Temperatures
1571018935	Design of Multi-Bit Fault Tolerant Array Multiplier
1571019517	Hardware-Efficient Implementation of Principal Component Analysis Using High-Level Synthesis
1571019592	Hardware Trojan Detection Using Unsupervised Machine Learning Algorithms in the Gate-Level Netlist

1571020043	Ascon-128 With PicoRV32 for Authenticated Encryption at IoT Edge on FPGA
1571020417	Power Amplifier for Front-End WiFi-6E Application
1571020709	Novel Methodology of Reduction in PDP for Digital Designs Using FGMOS and LECTOR Techniques
1571020993	High-Speed Strassen Matrix Multiplication Accelerators for 2D Kalman Filter
1571021035	Charge Pump Based Phase Locked Loop With Transmission Gate Using Combinational Phase Frequency Detector
1571021060	A Comparative Analysis of Asynchronous and Synchronous NoC for Dynamic Traffic Handling Using Trace-Inspired Synthetic Multimedia Data
1571021088	Performance Improvement of HTL-Free Carbon-Based Perovskite Solar Cell Using Gradient Doping
1571021174	Numerical Investigation of the Photovoltaic Performance of Double Perovskite Na ₂ InAgCl ₆ Using DFT and SCAPS-1D Simulation
1571021566	Dynamic Analog Circuit Netlisting for Solving the Boolean Satisfiability Problem
1571021581	On the Synthesis of Channel Codes for NAND Flash Devices in Space Application
1571021913	A Data Flow Scheduler for Multi-Precision SIMD Processing Engine Systolic Array CNN Accelerators
1571022136	Wafer-Scale Micromagnet Fabrication Using RIE and Dry Bonding for MEMS Applications
1571022218	Mixer Design for 5G FR1 Compatible With Software Defined Radio
1571022224	A Low-Energy Refractory Spike Frequency Adaptive LIF Neuron Model
1571022239	Voltage Level Shifting With SAPON and Power Gating Techniques
1571022335	Short Channel Effects Optimized 7nm SI-FinFET for Inverter Analysis

Track-02: Sensors and Internet of Things

Paper ID	Paper Title
<u>1570999702</u>	A Framework for Real-Time Location Awareness in Constrained Devices Connected to the IoT
<u>1571007259</u>	Sand Cat Swarm Intelligent Based Random Forest Approach for DDoS Attack Detection in IoT Network Scenario Using NS3
<u>1571011488</u>	IoT Enabled Cost Effective Solar Powered Sustainable Irrigation System for Rural Communities
<u>1571011807</u>	Drip Monitoring System for Patient Care at Hospitals
<u>1571012376</u>	Dual Micro-Trench Photonic Crystal Fiber Based Surface Plasmon Resonance Sensor for Early Diagnosis of Anemia
<u>1571015806</u>	Machine Learning Based Predictive Analysis of Temperature-Strain Relationship Measured Using Fiber Bragg Grating Sensors
<u>1571016400</u>	Vision in Versatility: Dual CCD-CMOS Imaging With Compressed Sensing for Sustainable IoT Surveillance Drones
<u>1571016763</u>	Efficient Implementation of Firmware Over-The-Air Update Using Raspberry Pi 4 and STM32F103C8T6
<u>1571017392</u>	AQI Hotspot Effects on Residential Neighborhoods - A Hybrid Model for Smart Urban Planning
<u>1571018754</u>	Load Balancing of Smart Agriculture Data Using Edge Computing and SDN
<u>1571019162</u>	Smart-Sec: DL-Based Cyber Threat Detection for Autonomous Smart Home System to Enhance Human Life Expectancy
<u>1571020317</u>	Real-Time Radar Imaging With Time Domain Correlation and Doppler Beam Sharpening
<u>1571021625</u>	An Experimental Study of Relay-Assisted LoRa Communication Using UAVs for IoT Applications

<u>1571021835</u>	Stiffness Assessment in Tissue Grasping Using Surgical Tool Integrated With Fiber Bragg Grating Sensor
<u>1571022016</u>	An Efficient 3-Dimensional Node Localization Using Recurrent Neural Networks in Unmanned Aerial Vehicle Assisted Wireless Networks
<u>1571022083</u>	Strengthening Industrial IoT Security: Device Fingerprinting and ML-Based Node Authentication at Gateway
<u>1571022155</u>	NB-AirStream: Advancing Air Quality Monitoring With LoRa and NB-IoT Integration
<u>1571022242</u>	Development of Paper-Fabric Based Hybrid Microfluidic Channels
<u>1571022258</u>	Adult and Child Classification Using Automotive Radar for In-Cabin Monitoring
<u>1571022263</u>	SensAKitchen: Contextualizing Kitchen Activities With IoT-Enabled Event Identification
<u>1571022369</u>	Design and Development of a Data Acquisition System for a Pressure Sensor-Mounted Orbital Retractor Prototype

Track-03: Signal and Image Processing

Paper ID	Paper Title
<u>1571005548</u>	Unsupervised Machine Learning Approach for Stress Level Classification Using Electrodermal Activity Signals
<u>1571005646</u>	Km-IFC: A Framework for Road Course Estimation Using Radar Detections
<u>1571006812</u>	Compressive Sensing for IMU-Based Gait Activity Assessment Using Discrete Wavelet Transform
<u>1571007025</u>	Jumping Behavior Analysis After the Identification of Daycare Children's Activities Utilizing YOLOv8 Algorithms
<u>1571007066</u>	Lossless DNA Sequence Compression: Exploring Spatial and Sequential Redundancies of DNA Sequence With 2-D CNN Autoencoder
<u>1571007070</u>	HFD-CCA for SSVEP Classification in Mobile Environment
<u>1571007075</u>	Modified Dual Domain Network for SAR Change Detection
<u>1571007354</u>	Object Detection Using Thermal Imaging
<u>1571008007</u>	MRI Fusion Based Classification of Gliomas
<u>1571008215</u>	Classification of Skin Lesions Using Five Modulus Method for Image Compression
<u>1571011536</u>	IoT Based Soyabean Pest Classification Using Transfer Learning and Explainable AI
<u>1571011794</u>	FASE Module Enabled Recognition of Individuals Using Distinct Gait Patterns
<u>1571013449</u>	Unveiling Toxic Tendencies of Small Language Models in Unconstrained Generation Tasks
<u>1571013459</u>	Sample-Efficient Blockage Prediction and Handover Using Causal Reinforcement Learning
<u>1571014005</u>	Flight Testing of Drone Robot With KK2.1.5 Flight Controller for Auto-Stability
<u>1571014329</u>	A Novel Self Learning Activation Function-LogCosh Minimization Based Object Detection Model
<u>1571014718</u>	Laya Estimation for Hindustani Classical Vocals, Devoid of Rhythmic Indicators

<u>1571015967</u>	Gaussian Approximation-Based, Deep Neural Network-Assisted Precise Indoor Localization
<u>1571017056</u>	EEG Functional Connectivity Feature-Based Diagnosis of ADHD Using Deep Learning on Raspberry Pi
<u>1571017093</u>	Deep Learning Based Early Diagnostic System for Metastatic Breast Cancer Mutation Using MATLAB
<u>1571017125</u>	Remote Photoplethysmography (rPPG) for Contactless Blood Oxygen Saturation Monitoring
<u>1571017360</u>	Automated Brain Extraction in Multi-Sequence MR Images Across Multiple Centres and Pathologies
<u>1571017383</u>	CardioSync: Real-Time ECG Monitoring System With FPGA-Based Signal Processing and Analysis
<u>1571017529</u>	SecureDrop Navigator: Image Based Delivery Classifier
<u>1571017560</u>	Detection and Segmentation of Anomalous Traffic Signs Using Yolov8 and Segment Anything Model (SAM) for Indian Specific Conditions
<u>1571017569</u>	An Investigation of Stress and Temperature Analysis at the Rail-Wheel Contact Using an Optical Simulation Study
<u>1571017652</u>	Adaptive Filter Based System Identification Using Quantum PSO With Optimum Characteristics Length
<u>1571017677</u>	Geophone Ground Coupling Techniques for Improved Seismic Signal Feature Extraction With Wavelet Transforms
<u>1571017752</u>	Dual Encoder-Decoder U-Net Architecture for Polyp Segmentation in Colonoscopy Images With Shuffle Attention and Conditional Random Fields
<u>1571018016</u>	Anomaly Detection in Satellite Power System Using Deep Learning
<u>1571018024</u>	Quasi-Synchronization of Delayed Discrete-Time Inertial Neural Networks Under Saturation Controller
<u>1571018122</u>	SSD Framework in Raspberry Pi for Real-Time Object Detection in Autonomous Vehicles
<u>1571018132</u>	Classification of Motor Imagery Signals Using Neural Networks for Applications in Brain-Computer Interface
<u>1571018343</u>	ResNet50-Based Automated Method for Monocular Depth Estimation Using Video

<u>1571018857</u>	Transfer Learning Strategies for Detecting Passive and GAN-Generated Image Forgeries With Pretrained Neural Networks
<u>1571019916</u>	A Colour-Focused Visible and Infrared Image Fusion Framework for Aiding Human Perception
<u>1571020117</u>	UWB Radar-Based Human Vital Signal and Range Detection Beyond Obstacles
<u>1571020262</u>	Upper Limb Motor Imagery Task Classification for EEG-Based Brain Computer Interface Development
<u>1571020266</u>	Leveraging LLM GPT-3.5 for Sentiment Analysis: A Comparative Study Across PC and Google Colab
<u>1571020586</u>	A Hybrid Clustering-Based Approach for Segmentation of Optic Disc and Optic Cup
<u>1571020895</u>	PyramidNet: Image Segmentation Model for Autonomous Vehicle for Indian Condition
<u>1571021519</u>	Urdu and MNIST Datasets Digit Recognition Using CNN Encoder With K-Means Clustering
<u>1571021523</u>	Human Interaction in Virtual and Mixed Reality Through Hand Tracking
<u>1571021702</u>	AI in Cultural Painting Classification
<u>1571021748</u>	Hierarchical AI-Powered Digital White Blood Cell and Platelet Morphology Analysis Using Multi-Class Classification
<u>1571021771</u>	Digital Red Blood Cell Morphology Analysis and Multi-Class Classification Powered by Hierarchical AI
<u>1571021780</u>	Virtual Embodiment: Revolutionizing Motor Imagery in VR-Enabled BCI With Digital Twins
<u>1571021834</u>	Potassium Detection in Blood Serum by Image Processing
<u>1571021957</u>	Enhancing Brain and Kidney Tumor Detection Using YOLOv8: An Advanced Deep Learning Technique

<u>1571022000</u>	Evaluating Music Embeddings for Song Genre Classification
<u>1571022070</u>	Deep Learning Based Fine-Tuned Unet for Polyp Segmentation
<u>1571022098</u>	Segmentation of Palmprint Regions From Diversified Hand Videos
<u>1571022132</u>	SOUNDNet: Leveraging Deep Learning for the Severity Classification of Chronic Obstructive Pulmonary Disease Based on Lung Sound Analysis
<u>1571022139</u>	ECHO: Environmental Sound Classification With Hierarchical Ontology-Guided Semi-Supervised Learning
<u>1571022176</u>	Boarding Alighting Counting in Different Transit Vehicles Under Crowded Conditions
<u>1571022216</u>	Music Genre and Melody Classification Using Embedding Based Topic Model
<u>1571022266</u>	Transforming Lung Cancer Diagnosis With Twin Vision Transformers
<u>1571022277</u>	U-Net Framework for Simultaneous Segmentation of Foveal Avascular Zone and Retinal Vessels Across Different Retinal Plexuses
<u>1571022347</u>	Analysis of Frequencies and Pitches for Vocal Cord Paralysis Classification Through Transfer Learning

Track-04: Antenna, Communication & Networking

Paper ID	Paper Title
<u>1571004543</u>	Improved Statistical-Based Spectrum Prediction Method for Cognitive Radio Systems
<u>1571004724</u>	Enabling Support for TLS and TLS Fingerprinting in Network Stack Tester
<u>1571005292</u>	Sum Rate Maximization for NOMA-Enabled Underlay Backscatter Communication Networks
<u>1571006651</u>	A Strategic Development of an Optical Inter Satellite Link Network in the IRNSS Constellation
<u>1571007024</u>	Generalized Dual-Mode Index Modulation Based on OTFS
<u>1571007254</u>	Improving Absorption and Negative Refractive Index Range of a Metamaterial Unit Cell Through Layering
<u>1571011222</u>	Modified Y Shaped 2-Port Antenna for Sub-6 GHz 5G n79 Band
<u>1571012233</u>	Energy Harvesting Enabled Overlay CR-NOMA System: Throughput and Outage Analysis
<u>1571017541</u>	Autonomous Air Traffic Management Scheduling System
<u>1571017566</u>	SURAKSIT: A Secure Resource Allocation Scheme Using Whale Optimization for D2D Communication
<u>1571017667</u>	Design and Demonstration of a Fiber Fault Monitoring Scheme for Co-Located ONUs in PONs
<u>1571017762</u>	Stability and Causality Enforced Macromodeling Technique for Coaxial-Microstrip Transitions
<u>1571017784</u>	Multi-Line Based Efficient and Wideband Doherty Power Amplifier: An Analytical Study
<u>1571017804</u>	On the Path Loss Characteristics of Sub-6 GHz 6G Indoor Channels Enabled With Coded Metasurface Based Anomalous Reflectors
<u>1571017854</u>	Optimizing Latency in Secure Reliable Transport (SRT) Protocol Through Machine Learning for Video Streaming Applications
<u>1571020682</u>	SAR TRiM Level Radiated Output Verification at Compact Antenna Test Facility

<u>1571021226</u>	A Non-Data-Aided Carrier Frequency Offset Estimation Technique for High Mobility OTFS Systems
<u>1571021457</u>	Regulus: Programmable, High Performance Network Data Plane Inferencing on FPGA
<u>1571021591</u>	THz or VLC for Indoor Communication Scenario: Performance and Trade-Offs in the Presence of Human Blockages
<u>1571021601</u>	Joint CFO and Channel Estimation for OTFS Based High Mobility Wireless Communication Systems
<u>1571021837</u>	Design and Development of Ground Station Receiver for CubeSat Using LoRa Module
<u>1571021946</u>	Increased Secret Key Throughput in Twin Field Quantum Key Distribution Using 4x4 Beam Splitter Detection Network
<u>1571021971</u>	Compact CDSRR Based Antenna for Sensing Applications
<u>1571022042</u>	An Implantable Antenna for Biotelemetry Applications Incorporating Dielectric Resonator
<u>1571022157</u>	Enhancing Sum Rate Performance in Multi-User NOMA Systems: Mitigating Channel Estimation Errors Through Advanced Signal Processing
<u>1571022169</u>	Neural Network Approach to Channel Estimation in Wireless Communication
<u>1571022177</u>	Machine Learning Assisted Microwave Probing System for Comprehensive Human Tibial Fracture Detection
<u>1571022187</u>	Design and Development of an Emulation Model for VPN and VPN Bonding
<u>1571022249</u>	Outage Analysis of an EH Relay Aided Network With Ambient-Backscattering
<u>1571022310</u>	Experimental Validation of Photonics Based Dechirping Approach for FMCW Radar Receivers
<u>1571022319</u>	Circular and Linearly Polarized High Gain Scalar Holographic Metasurface Antenna for mm-Wave Applications
<u>1571022359</u>	Autonomous Intersection Management Using Gated Recurrent Units
<u>1571022365</u>	Polarization Diversified Multi Beam Holographic Metasurface Antenna for Ku Band Applications

Track-05: Computer Engineering & Artificial Intelligence

Paper ID	Paper Title
<u>1571006550</u>	JATAYU: A Large-Scale Indian UAV Dataset for Vehicle Detection and Tracking
<u>1571006688</u>	Preserving History With Synthetic DNA: An Innovative Data Storage Solution
<u>1571006931</u>	Large Language Models for Indian Legal Text Summarisation
<u>1571006974</u>	Fuzzy Time Series Forecasting Based on Overlapping Partitions
<u>1571007099</u>	AeroQuery RAG and LLM for Aerospace Query in Designs, Development, Standards, Certifications
<u>1571007158</u>	Enhancing ICU Admission Prediction for COVID-19 Patients Using Decision Trees
<u>1571007262</u>	Synthetic Data Generation and Detection of Barcode QRcode for Mobile Screenshots
<u>1571008246</u>	Optimizing Fresh Food Supply Chains: Leveraging 3PL for Carbon Reduction and Profit Maximization - A Game-Theoretic Analysis
<u>1571010093</u>	Warehouse Inventory Management: Drone-Powered Semi-Automation With Raspberry Pi and Network Integration
<u>1571010861</u>	Developing Robust Crypto-Currency Trading Strategies: A Fusion of Machine Learning and Hidden Markov Modelling for Enhanced Performance
<u>1571010907</u>	Multi Criteria Based Container Management in a Geo-Distributed Cluster
<u>1571011817</u>	Multi-Modal AI-Based Framework for PCOD Detection and Risk Assessment: Addressing a Growing Health Crisis in India
<u>1571012337</u>	Methodological Insights Into Protein Clustering Using BERT & RoBERTa
<u>1571012606</u>	Heart Failure Patients In-Hospital Mortality Risk Prediction Models Based on Regularization Techniques-Comprehensive Analysis
<u>1571013349</u>	Feature Selection on Deep Learning-Based Survival Prediction in Liver Transplantation With Deceased Donor Grafts
<u>1571015922</u>	Extraction of Skill Sets From Unstructured Documents

<u>1571016103</u>	Unfair Advantage Aware Spinlock: A Novel and Efficient Way to Counter Spinlock Starvation
<u>1571016550</u>	Neural Harmony: Advancing Polyphonic Music Generation and Genre Classification Through LSTM-Based Networks
<u>1571017102</u>	A Hybrid Approach for Table Information Extraction: Combining Google Document AI With Custom Object Detection Models
<u>1571017289</u>	Intelligent Water Quality Assessment of Vartur Lake Through Fuzzy Based Expert System
<u>1571017413</u>	Enhancing Network Resilience for Flood Response and Rehabilitation Using SDN
<u>1571017416</u>	A Deep Learning and Image Content Analysis Enabled Approach for Sustainable Transportation
<u>1571017443</u>	Implementing the Chess Engine Using NNUE With Nega-Max Algorithm
<u>1571017448</u>	Transverse Plane Reconstruction and Visualization of Fetal Brain Ventricles
<u>1571017470</u>	Refining LLMs With Reinforcement Learning for Human-Like Text Generation
<u>1571017550</u>	A Deep Learning Framework for Single-Person Activity Recognition in Multi-Person Indoor Environments
<u>1571017741</u>	Refining Abstractive Text Summarization: Towards an Optimizing Approach Based on PTLM Selection and Fine-Tuning
<u>1571017921</u>	Autoencoder-Assisted Feature-Type Distributed Clustering for Clinical and Biomedical Data Analysis
<u>1571017935</u>	Image Captioning Using Visual Attention and Detection Transformer Model
<u>1571017941</u>	Change Point Detection in Non-Stationary, Multivariate IoT Time Series Data for Prescriptive Analytical Models
<u>1571017983</u>	Emotion Detection in Multimodal Communication Through Audio-Visual Gesture Analysis
<u>1571018023</u>	A Novel Approach for Machine Reading Comprehension Using BERT-Based Large Language Models
<u>1571018048</u>	DexChat - A Chat Application With Built in LaTeX Support

<u>1571018051</u>	Pediatric Pneumonia Detection in Chest X-Ray Images: A Deep Feature Analysis Approach Enhanced With LightGBM
<u>1571018174</u>	Integrating Link Prediction and Comment Analysis for Enhanced Cyberbullying Detection in Online Social Interactions
<u>1571018200</u>	Enhancing Ensemble Models Through Diversity Using K-Means for Effective Diabetes Classification
<u>1571019085</u>	Multiclass Bird Species Identification Using Deep Learning Techniques
<u>1571019283</u>	Investigating the Impact of Technical Indicators on Option Price Prediction Through Deep Learning Models
<u>1571019583</u>	Breast Cancer Detection Using Transfer Learning With DCGAN for Dataset Imbalance
<u>1571019994</u>	One Stop Disease Prediction System
<u>1571020009</u>	CTRNN-Transformer: Adding Continuous Time Neural Models to Transformers
<u>1571020035</u>	Advancing Cricket Narratives: AI-Enhanced Advanced Journaling in the IPL Using Language Models
<u>1571020380</u>	Utilizing H/A/Alpha Decomposition on Simulated NISAR Data for Water Body Mapping
<u>1571020500</u>	Explainable Artificial Intelligence for Prediction of Diabetes Using Stacking Classifier
<u>1571020539</u>	Brace A Pairing Algorithm for Mentorship Using Compatibility Score
<u>1571020781</u>	SchemaVerse: Game-Based Learning of NoSQL Queries
<u>1571021061</u>	Multi-Stage Packet Loss Concealment Using ADMM-GLA Phase Reconstruction
<u>1571021114</u>	Object Distance Estimation From a Single Moving Camera for Advanced Driver Assistance System
<u>1571021118</u>	Efficient Packet Processing and Load Balancing Solution for Multi-Core Processor RAN Systems
<u>1571021170</u>	Deep Q-Networks and 5G Technology for Flight Analysis and Trajectory Prediction
<u>1571021343</u>	Comparative Analysis of Bias in LLMs Through Indian Lenses

<u>1571021492</u>	Performance Evaluation of Cloud Database in Terms of Using Tenancy Model and In-Memory Database
<u>1571021547</u>	Prediction of Blood Glucose Levels in Diabetic and Non-Diabetic Patients Using Bi-RNN Transformers
<u>1571021637</u>	Performance Comparison of Transformers and Convolutional Neural Networks (CNNs) Based Architecture on Endoscopy Images
<u>1571021642</u>	Enhancing 3D Avatar Realism With Indian Clothing and Motion Capture Data
<u>1571021713</u>	Citation Worthiness Assessment Using Deep Learning Techniques
<u>1571021842</u>	NLP-Based Auto Generation of Graph Database From Textual Requirements
<u>1571021910</u>	HYP-PSO-XGB: Efficient Hyperparameter Tuning of XGBoost for EEG-Based Hand Gesture Classification Using Particle Swarm Optimization
<u>1571021916</u>	Benchmarking LLM for Zero-Day Vulnerabilities
<u>1571021960</u>	E-Commerce Application in Metaverse: Requirements, Integration, Economics and Future Trends
<u>1571021970</u>	Efficient Real-Time Okra Stage Identification Using YOLOV8
<u>1571022010</u>	A Study of the Impact of Athlete Age on Team Success Across the Top Five International Football Leagues
<u>1571022084</u>	Predicting the Depression Based on Motor Activity of Individuals Using Time Series Forest Classifier
<u>1571022138</u>	Embodied Reasoning With Self-Feedback
<u>1571022206</u>	EHR Breakthroughs: Illuminating Dysthymic Disorder in the Healthcare Odyssey
<u>1571022223</u>	Ensemble Machine Learning Framework for Accurate Flood Prediction
<u>1571022235</u>	PIPS: Personality Insights and Prediction Using Smartphone Non-Private Content
<u>1571022294</u>	Cloud Computing I/O Thread Performance Optimization With VirtIO and Queue Size Tuning
<u>1571022316</u>	Cross-Modal Retriever: Unsupervised Image Retrieval With Text and Reference Images

1571022328

Design and Development of Neural Network Based Gesture Recognition of Mini Drone Control

Track-06: Controls, Robotics & Automation

Paper ID	Paper Title
<u>1571001333</u>	Cognitive Swarm Drones Attack Model: A Grey Wolf Optimization Approach
<u>1571007147</u>	Swimming Performance of a Ribbon Fin Inspired Biomimetic Underwater Propulsor Actuated by IPMC
<u>1571007346</u>	Performance Analysis of Three-Dimensional Impact Angle Control Guidance Laws
<u>1571011474</u>	Digital Twin of a 7-DOF Bionic Arm
<u>1571014361</u>	An Intelligent Consensus Control of Multiagent System Based on Adaptive Active Disturbance Rejection Control
<u>1571020684</u>	Development of Pneumatic In-Plane Soft and Reinforced Finger Actuators: FE Modeling, Experimental Validation and Gripping Application
<u>1571020919</u>	Exploration and Coverage Path Planning of Unknown Environment Using Multi-Robot System
<u>1571021213</u>	Intelligent Navigation Tactics for Differential Drive Robots: Expanding Boundaries
<u>1571021611</u>	Development of Agricultural Drone for Crop Monitoring and Disease Detection
<u>1571021614</u>	Development of a Platform Independent Hydroponic System Controller
<u>1571021661</u>	Comparative Study of Bidirectional A*, D* and D* Lite for Path Planning
<u>1571021740</u>	Modelling and Simulation of an Interval Type-2 Mamdani Fuzzy PID Controllers
<u>1571021938</u>	Digital Shadow Enabled Integrated Multi-Platform Automation System for Industrial Assembly
<u>1571021977</u>	OA-PINN: Efficient Obstacle Avoidance for Autonomous Vehicle Safety With Physics-Informed Neural Networks
<u>1571021978</u>	Manipulator Control Using Federated Deep Reinforcement Learning
<u>1571022352</u>	A Comparative Analysis Between Sliding Mode Control and Super Twisting Sliding Mode Control

Track-07: Power, Energy & Electric Vehicles

Paper ID	Paper Title
<u>1571006574</u>	Wide Area Power System Network Protection Using Wavelet-Machine Learning Approach
<u>1571006719</u>	Wavelet Based Microgrid Protection in Presence of UPFC Using Machine Learning Approach
<u>1571006971</u>	Performance Assessment of FRP Rods of 400 kV Field-Aged Composite Insulators
<u>1571007312</u>	Biodiesel From Direct Transesterification of High FFA Oils Through Binary Feedstock Blending: Synthesis and Testing
<u>1571007402</u>	Phase-Shifted Dual Active Bridge Converter Based EV Charger Architecture With G2V and V2G Modes
<u>1571011181</u>	EMI Filter Design and Comparative Analysis of Control Approaches for DC- DC Boost Converter Based LED Drivers
<u>1571015042</u>	Innovative Design & Realization of Compact Power Cable Harnesses for Long Range Radars Operating in Naval Environment
<u>1571015791</u>	Consumer Behaviour and Factors Affecting Purchase of Electric Vehicles in Indian Market
<u>1571017631</u>	Power Quality and Energy Audit Analysis - A Case Study
<u>1571017659</u>	Simulation Study of 4 kV, 5A Modular Multilevel Converter as a Rectifier for Neutral Beam Injectors
<u>1571017771</u>	Modelling and Analysis of a Fuel Cell Emulator for Integration in a Hybrid Photovoltaic System Using MATLAB-Simulink
<u>1571017838</u>	Parameter Estimation With PI Controller for Motor Control in Interplanetary Rover
<u>1571018007</u>	Validation of P Class Synchrophasors Under Dynamic Conditions
<u>1571018074</u>	Analysis of Indirect Matrix Converter With Space Vector Modulation for Different Input/Output Conditions
<u>1571018182</u>	Addressing AI Risks in Critical Infrastructure: Formalising the AI Incident Reporting Process

<u>1571018211</u>	Techno-Economic Analysis of Hybrid Solar Photovoltaic and Microhydro Systems for Rural Areas of Tambrauw, Indonesia
<u>1571018233</u>	Temperature on Metallic Parts of Power Transformer Due to GIC Using FEM Based 3D Non-Linear Magnetic Transient Solver
<u>1571018236</u>	Dielectric Design Analysis of Transformers Filled With FR3 Oil and Mineral Oil
<u>1571018348</u>	Sizing of DGs for Minimization of Power Losses in Distribution System Using Particle Swarm Optimization
<u>1571019090</u>	ZCS Switched-Capacitor Cell Balancing Circuit With Bidirectional Buck-Boost Charging
<u>1571019247</u>	Field Oriented Control of Synchronous Reluctance Motor Using Finite Element Co-Simulation
<u>1571019297</u>	Hybrid Renewable Energy Systems Through SAM Software: A Comprehensive Approach
<u>1571019949</u>	Simulation Analysis of Solar Powered BLDC Motor Drive at Different Operating Conditions
<u>1571020502</u>	An Investigation on Optimal Distance Between Various Shapes of Coils in Wireless Power Transfer Systems for Electric Vehicles
<u>1571020862</u>	Koopman Theory Inspired Neural Network for State of Charge Estimation
<u>1571020915</u>	Low Voltage Ride-Through Feature in Single Phase Two Stage Grid Tied PV Inverter
<u>1571020928</u>	Methods of Improving Saliency in FSCW Synchronous Reluctance Machines
<u>1571021039</u>	STAGE: Optimal Energy Trading Strategy for Electric Vehicles Using Two-Player Game Theory
<u>1571021040</u>	Comparative Analysis of Permanent Magnet Synchronous Motor Drive Controllers for Electric Vehicles
<u>1571021576</u>	Real-Time Transition From Continuous PWM to Discontinuous PWM Technique
<u>1571021650</u>	Cooling System for HV Arc Flash Suit Wearer
<u>1571021745</u>	AI Applications of Clean Energy Innovations

<u>1571021828</u>	Enhancing Cold-Weather Performance of Electric Vehicles Through Innovative Thermal Management Strategies
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Compressive Sensing for IMU-based Gait Activity Assessment Using Discrete Wavelet Transform

Publisher: IEEE

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Subhrangshu Adhikary ; Arindam Ghosh ; Subrata Nandi All Authors

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Abstract

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Abstract:

Rapid increase in the volume of data generated from the embedded devices and sensors must be compressed with optimum compression ratio without losing information for sharing the resources utilizing low bandwidth and storing in low spaces. Specialized signal compression mechanisms exist for many biomedical signals like electrocardiograms. However, studies rarely exist in the state of the art to compress gait signals captured using Inertial Measurement Units. Among the works that exist, the average compression ratio is about 5.5. We propose a wavelet decomposition-based gait signal compression method for inertial measurement units. We experimented with gait activity data obtained from 10 human subjects with informed consent. From this experiment, we have achieved a state-of-the-art compression ratio of up to 7.4 with a percentage root mean square difference of 0.22. This signal compression method can be of immense importance in edge and fog computing environments as data transmission can be performed with minimal bandwidth consumption and can work in resource-constrained environments.

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I. Introduction

Compressive sensing is the new merger of IoT and data compression. According to a report published by the International Data Corporation, an estimated 175 zettabytes of data is likely to be produced only by IoT devices [1]. Therefore, to save storage space, we require better compression methods. The most commercially available compressions are tarball, gzip, and more. Which generally have a compression ratio of around 2-4.7 with no data loss. However, we can afford a slight information loss with a better compression ratio for several sensor data use cases. Therefore, incorporating some information loss, several algorithms have been developed in the state-of-the-art to have an optimal compression ratio for different data types, giving rise to compressive sensing. Among biomedical signals, electrocardiogram (ECG) patterns to compress the signal with the highest compression ratio [2]. However, in the state of the art, a limited study has been performed for compressing gait signals with a high compression ratio. Gait is the study of walking patterns, which, in this case, have been studied using smartphone-embedded IMU sensors. The effect of compressive sensing can be studied on different types of gait activities to identify its capabilities best. The gait signals can be decomposed into several components by wavelet transform, and unnecessary information can be nullified to compress the data with the

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