2025 2nd International Conference on Trends in Engineering Systems and Technologies (ICTEST 2025)

Ernakulam, India
3-5 April 2025

Pages 1-572

IEEE Catalog Number: CFP25UG5-POD
ISBN: 979-8-3315-0538-7

Copyright © 2025 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:	CFP25UG5-POD
ISBN (Print-On-Demand):	979-8-3315-0538-7
ISBN (Online):	979-8-3315-0537-0

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

Title Index

Sl No	Paper ID	Paper Title	Page No
1	8	*Hybridized Efficiency: A Combined Approach of Parallel Prefix and Hybrid Adders for High-Performance Arithmetic Circuit*	1
2	17	*Identity-Based Access Control Using Facial Recognition and OTP*	7
3	33	*ETEDPOF Gain Optimization for Cuk Converter Fed Induction Motor Coupled with DC Motor for Smart EV*	11
4	39	*ParkIt : An ANPR based Automated Parking Registry Using YOLO And EasyOCR*	17
5	40	*Dwell - A Smart Building Management Application*	23
6	42	*Advancing Through the Integration of Deep Neural Networks and EEG Analysis: A Data-Driven Approach*	27
7	65	*Skin Disease Identification Using CNN*	33
8	68	*Deepfake Image Detection using a Unified Inception-V3-Xception Net Framework*	39
9	72	*Optimizing Acute Myeloid Leukemia Subtype Classification Through Data Balancing Techniques*	44
10	79	*PrecisionCare: A Personalized Medical Recommendation System Using Artificial Intelligence and Machine Learning*	48
11	83	*Advanced Resource Allocation Techniques for Efficient Cloud Computing*	55
12	91	*A Comprehensive IoT-Enabled LoRa Tracking System for Enhancing Adventurer Safety and Situational Awareness*	61
13	92	*Leveraging Convolutional Block Attention Module in Transfer Learning for Scalable Multi-class Classification of Knee Osteoarthritis*	67
14	93	*Leveraging Augmented Samples as an Auxiliary Task for Enhancing Spoken Language Identification in Indian Languages*	73
15	97	*Smart Healthcare: IoT driven Environmental Integration in EMR systems for Real Time Healthcare Monitoring*	79
16	98	*Prediction of sarcopenia on diabetic Indian Adults using Gait Video Analytics System*	85
17	104	*An InC-based Double Integral Sliding Mode Controlled Synchronous Boost Converter for Grid-Connected Solar EV Charging System with Surplus Power Export*	91
18	106	*Design and development of console-based gaming for balance training in Autism Spectrum Disorder Children*	99
19	108	*Secured Information Hiding principle for Concealing 448-Bit Key of Blowfish Algorithm on Digital Images using Chess game-based Queen placement strategy*	104

20	114	*Dual Approach for Video Summarization: Key Frame Captioning and Audio Summarization*	111
21	116	*An Improved Multi Classification of Milk Quality Using Machine Learning*	117
22	117	*Effect of active layers on solar device structure*	123
23	118	*K-means Clustering for Image Segmentation Using Approximate Booth Multiplier*	129
24	119	*A Custom 1D ResNet-GRU Model for Accurate Pork Adulteration Classification in Beef*	135
25	127	*Real-Time Weapon Detection and Alerting System Using YOLOv7*	141
26	132	*FairHire: AI-driven Resume Profiling and Technical Interview Automation*	147
27	137	*Enhancing Energy Balance and Energy Saving in EH-Wireless Sensor Networks*	154
28	139	*Comparative Analysis of gem5 and ChampSim: Essential Simulators for Microarchitecture Research*	160
29	141	*EMG and EEG Sensor-Based Exoskeleton for Knee Injury Rehabilitation*	166
30	152	*Rectilinear Hybrid Belief Classifier for Cyber-Physical Attack Detection in Water Distribution Systems*	173
31	155	*Sphere Decoding with BER Enhancement in MIMO Systems: A Radius Prediction Approach with Wiener Filtering*	179
32	158	*A new hybrid model for prediction of drug target interaction using deep learning techniques*	185
33	159	*Recognition and Analysis of Colours Using Generative AI And Brain Computer Interface*	189
34	163	*Genemate: A Real-Time Animation of a 3D Human Model*	194
35	164	*SignMate: Real-Time Speech to Sign Language Translation*	200
36	165	*A Data Efficient Segmentation to Localization Framework for Effective Copy Move Image Forgery Localization*	205
37	167	*Optimal Defect Testing of Radiation-Tolerant SRAM for Spacecraft Avionics*	211
38	171	*Automated Vision-Based System for Real-Time Detection and Classification of Rice Diseases using YOLO - NAS*	217
39	174	*Development of Configurable Controller ASIC for Spacecraft Power Systems*	223
40	182	*Design & Verification of Reconfigurable SRAM Controller with AMBA AXI Protocol Interface for Automobile Application*	230
41	189	*Analysis of HHO gas production based on the types of Electrodes for Electrolyzer*	235
42	190	*MEDVEND:Automated Medicine Vending Machine*	240

43	192	*Development and Analysis of a High-Resolution Aerosol Optical Depth Dataset for Long-Term Atmospheric Study over India -2000-2024.*	245
44	194	*The Roadmap to Digital Transformation in Banking: Advancing Credit Card Fraud Detection with Hybrid Deep Learning Model*	250
45	206	*SafeDrive: Intelligent Pothole Detection and Mapping System*	256
46	208	*From Theory To Practice: Unsupervised, Weakly Supervised, And Reinforcement Learning Approaches to Video Summarization*	262
47	216	*Enhancing Military Surveillance: Applying State-of-the-Art Deep Learning Techniques for Improved Aviation Identification*	268
48	217	*SecureNest - Smart Home Security System*	274
49	219	*Automated Approaches for Detecting and Classifying Colon Cancer: A Comprehensive Study*	282
50	227	*Generative AI-based Interpretation of Human Ultrametrics and Analysis*	289
51	230	*Securing Tomorrow: AI-Driven Threat Detection and Response in Banking Applications*	294
52	233	*Comparator Design using Carbon Nanotube Field-Effect Transistors*	300
53	236	*Performance Improvement of 9T SRAM Cell by Efficient Memory Design*	305
54	240	*An Enhanced Crack Detection System Using YOLOv11 Model for Underwater Marine Structures*	309
55	241	*A Holistic Approach to Wheeled Robot Design: Mechanical Structure and Control Strategies*	315
56	242	*AI-Powered Real-Time Accident Detection Through Integration of Driver Health and Vehicle Dynamics*	321
57	245	*Development of a Wearable Biosensor System for Remote Monitoring of Physiological Parameters to Aid Prognosis and Diagnosis in Indigenous Medicine*	327
58	246	*Leveraging FETs in Robotic Biosensors for Biomedical Applications*	333
59	248	*CPW-Fed Monopole Antenna Employing Sierpinski Triangle Fractal Designs for Compact Wireless Systems*	339
60	250	*Towards Robust Media Integrity: Semi-Supervised Image Forgery Localization with DeepLabv3 and ELA*	344
61	251	*AI-Enhanced 2.45 GHz Microstrip Patch Sensor for Milk Adulteration Detection*	350
62	255	*Design and Comparison of LCL Filters in STATCOM*	356

63	260	*Exploring the Distinguishable Characteristics of EEG Signals of Visually impaired Persons (VIPs): Cognitive Load Perspective*	363
64	261	*Implementation of PV fed QZSI using F28379D TI controller*	369
65	264	*Deep Learning Models for Classification of Lung Cancer Types from Histopathology Images*	375
66	266	*Design and Testing of Circular Patch Antenna at 2.45GHz for Wireless Power Transfer Applications with DGS*	381
67	267	*Design and Development of a Novel Volume-Gated Syringe for Precise Dosage Control and Data Logging*	386
68	273	*Enhanced Design of Rocker-Bogie Mechanism for All-Terrain Military Surveillance Rover*	391
69	274	*Comparative study of DenseNet Convolutional Neural Network Variants for Enhanced Brain Cancer Diagnosis*	N/A
70	276	*MediLoc:Navigating Healthcare with GIS Precision*	403
71	277	*A Deep Learning Approach to Schizophrenia Diagnosis: Leveraging GRU and Attention Mechanisms for Improved EEG Analysis*	411
72	279	*Breaking Barriers in Brain Tumor Detection with UWB Circular Monopole Antenna and Inception ResNet V2 in Microwave Imaging*	418
73	280	*EduChain: A Blockchain-Based System for Efficient and Secure Certificate Verification*	425
74	288	*Autonomous Wheeled Robot for Intelligent Supermarket Restocking*	431
75	291	*Automatic Number Plate Recognition Powered by Deep Learning*	436
76	295	*Automatic Detection of Craters and Boulders from Orbiter High-Resolution Camera (OHRC) Images Using YOLO Models*	442
77	296	*Enhanced Surface Fault Detection in 3D Printed Objects: Leveraging Neural Networks and Transfer Learning*	448
78	299	*Design of Majority Carry Save Adder Using Approximation Method for Error-Tolerant Computation*	453
79	301	*AI-Driven Financial Advisory Systems: Optimizing Investment Strategies with Sentiment Analysis and Predictive Modeling*	459
80	306	*Advancing Brain Tumor Diagnosis: A Machine Learning Approach for Accurate Detection and Classification*	465
81	310	*FaceFinder: Advanced Facial Enhancement Reconstruction System for Multi-Modal Visual Intelligence*	471

82	314	*A Comparative Analysis of Medical Image Segmentation utilizing U-Net Architectures: EfficientNet-B7, Half U-Net, and Nested U-Net*	477
83	332	*IoT-Enabled Smart Nebulizer with Adaptive Flow Control for Efficient Drug Delivery*	482
84	337	*Enhancing predictability and response times in real-time systems*	488
85	339	*FarmFog: The Implementation of Fog Computing and Biometric System in IoT-based Smart Agriculture*	493
86	342	*Modular Multilevel Converter based Grid connected DC Microgrid Integrating Wind Energy*	498
87	348	*Traffix: Dapp for traffic violation reporting*	504
88	350	*Initial Setup and Calibration of Direction Control Using Magnetic Field Sensors*	510
89	351	*Performance Evaluation of various Image Enhancement Techniques for Gastric Polyp Detection in the Kvasir Dataset*	515
90	352	*AI-Powered Transformation in Healthcare: Innovations, Implementation Challenges, and Future Perspectives*	520
91	354	*A Smart Drug Inventory and Supply Chain Tracking System Using IoT*	527
92	361	*A High-Capacity Reversible Data Hiding on Grayscale Images Using Threshold-Based Clustering*	533
93	365	*SkinViTL: Vision Transformer-Based Multi-Class Skin Disease Classification*	539
94	368	*Bayesian Neural Network Uncertainty Estimation for Detecting Adversarial Attacks on Network Intrusion Detection Systems*	545
95	377	*Heartland: A Kidney, Liver, Heart Disease Patient Assistance Smartphone Application with Disease Detection, Treatment, Physician Suggestion Features*	550
96	379	*Classification of Partial Discharge Signals Through Acoustic Sensor on the Basis of Propagation Paths*	556
97	382	*Healthcare-SignNet: Advanced Medical Sign Language Recognition using CNN+LSTM model*	560
98	391	*KPI-Based Analysis and Prediction of Supplier Performance Using Machine Learning*	567
99	392	*AI-Powered GST Analytics: Detecting Fraud Using Machine Learning Approach*	573
100	393	*Architecting Test-Friendly Multi-Mode Scan Flip- Flops for Modern Low-Power Digital Systems*	578
101	398	*Reliability Assessment in Distribution System Integrated with Distributed Generation*	583
102	399	*Audio-Based Emotion Analysis Using Deep Learning Techniques*	587

103	401	*Performance Evaluation of a Predesigned Compact Bow-Tie Slot Antenna in Medical Imaging*	593
104	405	*Analytical Assessment of Prospective Technologies Tailored to Industrial Needs*	598
105	406	*Design of Fire Detection System with Extended Range*	604
106	413	*Blockchain-Powered Platform for Microloans and Lending Solutions*	609
107	419	*Predictive Analytics Application in E-Commerce: An Artificial Intelligence-Driven Approach to Success*	616
108	421	*Pediatric Focal Cortical Dysplasia Classification through SPP ConvNet*	623
109	422	*NOMA-Based Secure Physical Layer Communication in UAV Networks with Artificial Noise Injection*	629
110	423	*Enhanced Canopy Stress Detection In Vertical Farming Using Explainable AI*	634
111	424	*Towards Secure AI: Detection of Prompt Injection Attacks with Explainability*	641
112	425	*Comparative Analysis of Machine Learning Models for Speech Disorder Detection*	647
113	429	*Fault Detection and Monitoring in Microgrids using Intelligent Controllers and Synchrophasor Integration*	653
114	432	*Augmented Reality Multiplayer Game for Interactive Character Control Using Unity*	659
115	434	*Enhancing UAV Reliability and Security: A Machine Learning-Based Framework for Anomaly Detection and Classification*	665
116	437	*TransLip: AI-Driven Video Translation and Synchronization*	671
117	439	*AI and Machine Learning in Software Testing: Bridging the Gap Between Defect Prediction, Test Automation, and Continuous Integration*	677
118	440	*Automated Grocery List Generator*	684
119	442	*Cloud-Enabled UV Disinfection System for Remote Healthcare Sanitization During Pandemics*	690
120	443	*Investigating the BERT Capabilities with GRU Model in Semantic Extraction for Short Answer Grading Tasks: A Regression Problem*	696
121	445	*Unravelling Protein-DNA Interaction Predictions: A State-of-the-Art review*	701
122	447	*A Review of Dynamic Wireless EV Charging*	707
123	448	*Automated Banking Complaint Classification using Stochastic Gradient Descent*	712
124	449	*A Comprehensive Review of the Short-Term Load Forecasting Techniques Using Different Models*	718

125	450	*Reading Assistance and Obstacle Detection Device for the Visually Impaired*	724
126	451	*Learn to Fuse: A Reinforcement Learning Framework for Multi-Focus Image Fusion*	729
127	454	*Fine-Tuning TinyLLaMA and GPT-2 with Proximal Policy Optimization for Sentiment Enhancement and Toxicity Reduction*	737
128	458	*Cyberbullying Detection Using Fine-Tuned BERT*	743
129	463	*Leveraging Machine Learning for Localized Disease Prediction and Alert System: A Comprehensive Approach to Public Health Monitoring and Outbreak Response*	749
130	464	*Explainable AI for Disease Detection and Body Constitution Analysis Using Tongue Imaging: A Deep Learning Approach for Non-Invasive Diagnostics*	755
131	469	*Spectrally Efficient High-Speed MDM-FSO Using Higher-Order Modes*	761
132	470	*Blind Assist System for Currency Recognition Using Sequential Convolutional Neural Networks*	766
133	473	*Real-Time Traffic Intensity Estimation and Management*	772
134	474	*Federated learning based crop disease detection in precision agriculture*	780
135	477	*A Robust Fuzzy Ensemble Model for Cervical Cytology Image Classification.*	786
136	478	*Smart glove for sign language interpretation and vocalization*	791
137	479	*AI-Driven Diabetic Retinopathy Detection: IoT and Deep Learning for Retinal Fundus Image Analysis*	797
138	483	*3D-Printed Bionic Arm with Flex Sensor Control*	803
139	484	*Real-Time Wildlife Tracking with Fine-Tuned YOLOv11*	808
140	486	*Exam Guard: Enhanced Academic Integrity Surveillance System for Real-Time Behavioral Analysis in Examination Settings*	814
141	487	*Optimization and Fabrication of Chitosan Lactate Nanofibrous Membrane*	820
142	492	*Impact of Advanced Image Preprocessing Techniques on Automated Chromosome Metaphase Detection with Deep Learning Models*	825
143	494	*Development of an IoT-Based Smart System for Toxic Gas Detection and Monitoring of Manholes and Workers*	832
144	495	*Microstrip antenna for non-destructive metal crack detection*	838
145	496	*A Compression Technique for NoC Packets to Enhance Compression Time*	844
146	497	*Efficacy of Topological Data Analysis for Contextual Plagiarism Detection: A Literature Analysis.*	850

147	499	*AI Ethics and Fairness in Machine Learning: Promoting Fairness in Critical Engineering Systems*	856
148	500	*Comparative Study of Signal Processing Algorithms for Noise Reduction and Sonar Signal Reconstruction*	865
149	501	*Smart Solar Flower*	870
150	502	*FPGA-based Adaptive Noise Cancellation System for Audio Systems*	876
151	506	*Autonomous UAVs and Cable-Fusion Technology for Real-Time Coral Reef Health Assessment*	880
152	508	*Smart Glove Based Sign Language Recognition System of Malayalam Alphabets*	886
153	510	*Multiple Apex Frame Detection and Emotion Analysis in Micro Expression Videos*	892
154	511	*Fake News Detection using BERT Model*	898
155	512	*Digital Cultural Heritage Preservation:A Literature Analysis*	903
156	513	*Networked Decision-Making for Startups: Integrating Big Data with Artificial Intelligence*	910
157	514	*A Biomechanical Approach for Assessing Rheumatoid Arthritis Progression*	915
158	517	*Underwater ROV with SONAR tracking*	920
159	522	*UAV-Assisted AR Visualization for Real-Time Agricultural Field Monitoring Using Multispectral Data and U-Net Segmentation*	926
160	523	*Neural Indicators of Deception: EEG Data Analysis for Lie Detection*	932
161	524	*Explainable AI for Diabetes Risk Stratification Using Severity Index Indicators*	938
162	526	*Review on mmWave Radar Sensor for 3-D Mapping*	945
163	527	*Analysing Facial Dynamics - Navarasas in Kathakali Videos Using Deep Learning*	953
164	528	*An AI-Powered Web Application for Automating Brain Tumor Identification*	961
165	529	*A Comprehensive Review of Active Cell Balancing Techniques in EV Battery Management Systems*	967
166	532	*Brainchild: An Election and Voter Assistant Smart Mobile Application with Election Fraud Detection, Voter Registration, Nomination Submission Features*	973
167	533	*Predictive Modeling of Thyroid Disease Recurrence Employing Machine Learning Methodologies*	979
168	538	*Deep Learning Insights for MRI-Based Brain Disease Classification and Paralysis Prediction*	985
169	540	*ARoma: Revolutionizing Dining Experiences with Augmented Reality Interactive Menus*	991

170	542	*Smart Farming: Improving Disease Detection in Pepper Leaves Using AI and Image Processing*	998
171	548	*A Correlative Analysis between CoVID-19 Severity Patient Blood Report and Lung Conditions*	1004
172	550	*Machine Learning Integrated Driver Drowsiness Detection System Using Facial Features*	1009
173	551	*Development of Novel Chronic Kidney Stone and Tumor Detection using Deep Sequential CNN*	1015
174	552	*Differential Amplifier Optimization using Black Widow Algorithm*	1020
175	554	*Advancements in Software Assisted Speech Recognition for Individuals with Speech Impairments – A Comprehensive Review*	1025
176	555	*Deep Convolutional Neural Network-Based Sarcasm Detection and Sentiment Analysis on Social Media*	1030
177	558	*Automating XPath Query Generation Using NLP for Streamlined Web Crawling and GUI Testing*	1035
178	559	*HER SHIELD: Speech Emotion Recognition for Women's Safety*	1041
179	566	*Methodology for Identifying the Cancerous Cells in 3D Visualization of Gastric Histopathology Images using CNN LSTM Algorithm*	1047
180	567	*Ensemble Deep Learning Framework for Oral Squamous Cell Carcinoma (OSCC) Classification Using Modified VGG and CNN Features with XGBoost*	1053
181	568	*Deep Learning for Oral Cancer Detection: AFF-U-Net Performance Analysis*	1059
182	570	*Attention Based Feature Fusion with External Attention Transformers for Ovarian Cancer Histopathology Analysis*	1065
183	571	*Methodology for Automatic diagnosing Colon and Lung Carcinoma using TSA- PSODL Algorithm*	1071
184	575	*Machine Unlearning In Recommendation Systems*	1077
185	576	*Evaluation of Kalman and Unscented Kalman Filters for Multiple Object Tracking in ADAS Applications using the KITTI Dataset*	1081
186	577	*Women Stress Detection System using Neural Networks*	1089
187	578	*Leveraging Machine Learning for Automated Categorization in Construction Management: A Patent Classification Approach*	1094
188	583	*Deep Learning Based Object Classification for Waste Management in Smart Cities*	1101
189	584	*Enhancing Medical Image Segmentation with 3D U-Net and Explainable AI for Trustworthy Healthcare*	1107
190	585	*Deep Learning-Based Seasonal Forecasting of Oceanographic Parameters Using LSTM Networks*	1113

191	586	*Novel FPGA based Systolic Array Design for Dynamic Workflows*	1120
192	589	*A Topological Deep Knowledge Graph Approach for Protein Interaction: Sheaf Neural Networks in Drug Discovery*	1125
193	590	*Ankle foot orthosis for foot drop*	1131
194	592	*Modeling and Evaluation of Photonics Radar-LiDAR Configuration for Enhanced Target Detection*	1137
195	593	*Reconfigured System on Chip (SoC) design for Gradient Descent Acceleration via Hardware-Software Co-design*	1142