

2025 IEEE International Conference on Signal Processing, Information, Communication and Systems (SPICSCON 2025)

**Rajshahi, Bangladesh
21-22 November 2025**

Pages 1–443

IEEE Catalog Number: CFP25V53-POD
ISBN: 979-8-3315-7317-1



Copyright © 2025, IEEE

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:	CFP25V53-POD
ISBN (Print-On-Demand):	979-8-3315-7317-1
ISBN (Online):	979-8-3315-7316-4

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

Deep Autoencoder-Based Protection for Malware Detection Models from Adversarially Perturbed Data	1
<i>Shaikh Nahian, Mohammed Moshiul Hoque</i>	
Cavum Septum Pellucidum Instance Segmentation By Brain Point Detection	7
<i>Shudipta Banik, Israt Jahan, Md. Samiul Islam, Saikat Sarkar, Kamrul Islam, Nafiuzzaman Udoy Pronobesh Barua</i>	
A Vision Transformer Adaptation of SimCLRv2 for Self-Supervised Galaxy Detection	13
<i>Ujan Biswas, Azizul Abedin Azmi, Modan Mohan Sarker, Tanzila Afrin, Faysal Ahmed, Md. Samiul Islam</i>	
Capsule Endoscopy Image Classification using ResNeXt & VCS-Optimized KNN with XAI	19
<i>Avijeet Dey Sarker, Saif Mostasir Rohan, Md. Fahim Kabir Chowdhury, Sadman Samir Rafith, Nafis Fahim Md. Sayem Kabir</i>	
Ensemble Deep Learning for Brain Tumor Detection: Integrating InceptionV3 and MobileNetV3 Models on MRI Scans	25
<i>Md Amzad Sadik Abid, Maryam Nasir Suleman, Puspita Chowdhury, Rafshan Bin Razzak, Tanzila Afrin</i>	
Interpretable Brain Tumor Classification with a Hybrid ViT-GRU-LSTM Model and Explainable AI	31
<i>Faisal Ahmmed, Md Emamul Hossen, S M Mahim, Md. Shahariar Hasan Sakib, Md. Sabayan Shedad Khan Md. Khairul Islam, Md Sipon Miah</i>	
Multi-sensor Data Fusion for Fault Detection in Medical Imaging Power Supply and Filament Systems	37
<i>Md Mahamudur Rahaman Shamim, Md. Nuruzzaman, Md. Sabbir Hossain, M Muklasur Rahman Opu Mohammad Mostafijur Rahman</i>	
Design and Development of a Low-Cost Scalable GSM-IoT Smart Pet Feeder with a Remote Mobile Application	42
<i>Md. Rakibul Hasan Nishat, S. M. Khalid Bin Zahid, Abdul Hasib, T. M. Mehrab Hasan, Mohammad Arman</i>	
Predicting the Unpredictable: A Big Data Approach to Airline Delay Analysis	48
<i>Linta Islam, Syada Tasmia Alvi, Nazim Uddin, Chowdhury Abida Anjum Era</i>	
Real-Time Face Recognition System for Age and Gender Prediction: A Robust CNN-Ensemble Approach with IMDB-WIKI and UTKFace Datasets	54
<i>Subrata Kumer Paul, Mahi Akter, Md. Parves Islam, Kaushik Ahamed, Rakhi Rani Paul Dewan Nafiul Islam Noor, Md. Ekramul Hamid, A. F. M. Mirza Rashidul Hasan</i>	
Metamaterial-Wall-Assisted Benzene-Shaped CSRR Tri-Band MIMO Antenna with Parallel Aligned Slots for Isolation and Gain Enhancement	60
<i>Showrajit Saha, Roktim Barua, Debprosad Das, Muhammad Asad Rahman, Md.Azad Hossain</i>	
A Comparative Study of Machine Learning, Deep Learning, and Transformer Approaches for Sentiment Analysis on YouTube Comments with Model Explainability	64
<i>Sakib Imtiaz, Md. Ashikuzzaman Ashik, Zahara Tasnim</i>	
Dual-Layer Bandstop Metamaterial For Frequency Filtering Applications in X, K and Ka-Band	68
<i>Mosrur Hossain, Nazimul Mowla Chowdhury, Md.Azad Hossain, Md.Tanvir Hayat</i>	
A Compact Dual-Band Metamaterial Absorber for EMI Shielding in K-Band and Energy Harvesting	74
<i>Md. Murad Kabir Nipun, Md. Jahedul Islam</i>	

Reduced THD Seven Level Switched Capacitor inverter with Self Capacitor Balancing Capability	80
<i>Md Mehedi Hasan, Md Ahsanul Alam, Md Mominur Rahman Sheikh, Meherun Nesa</i>	
A Wavelet-Statistical Method for EEG Signal Classification of Mental Stress in Cognitive Tasks	86
<i>Md Obaydullah Khan, Jahid Hassan, Md Robiul Islam, Nazmul Haque Anik, Syed Uday Ahmed</i>	
<i>Md Al Emran</i>	
Design, Structural Analysis, and Challenges of High-Voltage Underground Cables in Sindh, Pakistan: A Comprehensive Study	92
<i>Md Obaydullah Khan, Jahid Hassan, Syed Uday Ahmed, Nazmul Haque Anik, Md Robiul Islam</i>	
<i>Md Al Emran</i>	
Detection of Rice Leaf Diseases Using Transfer Learning Architectures: A Comparative Analysis	98
<i>Syed Uday Ahmed, Md Obaydullah Khan, Md Al Emran, Kayab Khandakar, Jahid Hassan</i>	
<i>Nazmul Haque Anik</i>	
Hybrid Transformer-Detection-Prompt Pipeline for HighPrecision Segmentation of Renal Microvasculature in Histopathology Imaging	104
<i>Sakhawat Hossen, Imrul Hasan Rahat, M Waqif Ul Huq, Md. Arafath Yeasin Nihan, Md. Abdullah Sumon</i>	
Deep Learning Based Mango Disease Detection	110
<i>Anomik Kumar, Md. Omar Faruk, Dibakor Das, Md. Ashikur Rahman, Mirza A.F.M. Rashidul Hasan</i>	
<i>Alamin</i>	
Explaining Household Access to Heavy Rail Services Using Interpretable Machine Learning: Evidence from the 2022 U.S. National Household Travel Survey	116
<i>Sayed Shahriar Islam Lamun, Syeda Tamzida Akter, Jeba Tahsin, Sanupa Sarkar</i>	
Multi-Architectural Deep-Learning and Hybrid Ensemble Approaches for Early Alzheimer's Classification	122
<i>Zarin Rafah Chowdhury, Jannatul Mawa, Nurul Momin Resat, Abir Hasan Imran, Ilham Bari Chowdhury</i>	
<i>Abhishek Sushil</i>	
A Blockchain-Based ECDSA Framework for Drug Authentication and Traceability in Bangladeshi Healthcare	128
<i>Sri Apurbo Saha, Mst Shimla Sinthia, Shamim Ahmad, Istiaque Ahmed</i>	
Disaster-Proof File Management Using Blockchain and IPFS for Data Security	134
<i>Shakil Ahmed, Md. Farhan Yousuf, Shamim Ahmad, Istiaque Ahmed</i>	
A Comparative Assessment of Synchrophasor Estimation Techniques Under Steady-State Off-Nominal Grid Conditions	140
<i>Md. Maidul Islam, Md. Shamim Reza, Md. Aynal Haque, Md. Obayed Islam, Most. Ayesha Khatun</i>	
<i>Kawsar Ahammad</i>	
A Portable Assistive Device for Deaf and Mute Communication and Safety Using Gesture and Sound Recognition	146
<i>Md. Akhtarujjaman Siddiquee, Md. Kowsar Islam, Farzana Akter</i>	
Explainable Intrusion Detection and Prevention Framework for Next-Generation Networks	152
<i>Abdullah Al Siam, Sadequzzaman Shohan, Nuruzzaman Faruqui, Moutaz Alazab</i>	
Development of a Non-Invasive Glucose Monitoring System Using Phototransistor Sensor and Regression Models for Glucose Prediction	157
<i>Dip Muhuri, Sifat Chowdhury, Dip Paul</i>	

A Novel Modified Triangular Shaped Microstrip Patch Antenna for C-band Applications in Wireless and Satellite Communication	162
<i>Sayed Shifat Ahmed, Shah Md Toufik Ahmed, Md Arafath Hossain Rafi, Md. Mehedi Hassan Md. Saffat Hossain, Sadia Tabassum</i>	
Performance Analysis of PMCW-based Radar System for Cohesive Sensing and Communication	167
<i>Md. Mominul Hasan Shawon, Md. Selim Hossain, Md. Farhan Shahriar</i>	
An Explainable Ensemble of Transfer Learning Models for Plant Leaf Disease Detection in Bangladeshi Crops	172
<i>Saima Khan, Sumaya Ibrahim, Md. JobayerAhmed, S.M. Tanvir Anjum Fahim</i>	
Slice-Specific Intrusion Detection Decision Support System in 5G Networks with Interpretable Ensemble Learning	178
<i>Mst. FatematuJ Johora, Md. Abid Hasan Rafi, Mohima Binte Rasel, Pankaj Bhowmik, Md. Dulal Haque</i>	
An effective approach to classification of multiclass fruits and vegetables based on modified ResNet-18 model from combined dataset	184
<i>Aktaruzzaman Siddiquei, Md Atikur Rahman, Sadia Islam Tonni, Md Anam Rayad Doha Md Ashraful Alam Khan, Zannatul Mawya Priya</i>	
From Classification to Localization: A Weakly Supervised Deep Framework for Interpretable Chest X-ray Analysis	190
<i>Shahad Bin Alamgir, Hafizur Rahman, Abhishek Sushil, Nilkantha Sushil Pranta, Pritom Sen Gupta Zarin Rafah Chowdhury, Jannatul Mawa, Nurul Momin Resat, Arafat Uddin</i>	
Balancing Accuracy and Interpretability: Machine Learning Approaches to Predict Heart Failure Readmissions	196
<i>Abhishek Sushil, Shahad Bin Alamgir, Hafizur Rahman, Pritom Sen Gupta, Nilkantha Sushil Pranta Zarin Rafah Chowdhury, Jannatul Mawa, Nurul Momin Resat, Arafat Uddin</i>	
A Systematic Benchmark and Comparative Analysis of Pre-processing Techniques for Deep Learning-Based Plant Disease Classification	202
<i>Md. Ashikuzzaman Ashik, Sakib Imtiaz, Zahara Tasnim</i>	
A Comprehensive Benchmark and Comparative Analysis of Pre-processing Methods for Deep Learning-Based Skin Lesion Detection	208
<i>Sakib Imtiaz, Emrana Kabir Hashi, Md. Ashikuzzaman Ashik, Zahara Tasnim</i>	
LeafLife: An Explainable Deep Learning Framework with Robustness for Grape Leaf Disease Recognition	214
<i>B. M. ShahriaAlam, Md. Nasim Ahmed</i>	
Multimodal Physiological Signal Classification from Wearables: Towards Interpretable Stress and Exercise Recognition	218
<i>Khondakar Ashik Shahriar</i>	
BanglaMM-Disaster: A Multimodal Transformer-Based Deep Learning Framework for Multiclass Disaster Classification in Bangla	224
<i>Ariful Islam, Md Rifat Hossen, Md. Mahmudul Arif, Abdullah Al Noman, Md Arifur Rahman</i>	
A Comprehensive Analysis and Rainfall Forecasting in Cox's Bazar using Seasonal ARIMA Model	230
<i>Panna Shil, Md. Istihad Bhuiyan, Md. Eyakub Ali, Md. Shadman Shakib, Badhan Dey, Md. Hasibul Hoque Fazlul Karim</i>	

Design and Evaluation of a Vertical-Axis Turbine for Renewable Electricity Generation in Water Distribution Systems	236
<i>Abdul Ahad Mahmud Rafi, Md. Anawar Ibrahim, Istiaq Ahmad, Tasfia Tasnim Hrishita, Debashis Roy Abu Saleh Mohammad Nasrullah</i>	
Advanced SOC-Based Dual Battery Switching System with Intelligent Energy Management for All-Wheel Drive Powertrains: A Sustainable Range Extension Technology for Electric Vehicles	242
<i>Md. Anawar Ibrahim, Shihab-Al-Rashid, Abdul Ahad Mahmud Rafi, Muhammad Jobayed Ibna Bashar Asif Raihan, Md. Zahid Hasan, A.B.M. Noushad Bhuiyan</i>	
Benchmarking Multimodal Approaches for Retail Price Estimation Using Deep Learning	248
<i>Md. Rafsan Jany, Md. Rakibul Islam Khan, Sameen Khan, Md. Taufiqur Rahman, Md. Al-Amin Najla Alam Navana</i>	
Balanced Deep Neural Network (BDNN) for Scalable, Real-Time Phishing URL Detection Using Hybrid Machine Learning and Deep Learning Ensembles	254
<i>Ahsan Ullah, Hm Alvee Hasan, Mohammad Anwar Hossain, Noshin Un Noor, Kazi Hassan Robin Mst. Nishita Aktar</i>	
Increasing Power Generation and Value Creation by Diverting Captive Gas to Combined Cycle Power Plants (CCPP)	260
<i>Maju Ahmed Shipon, Masud Rana, Afridi Joy, Hasan Monir</i>	
A High Precision Instrumentation Amplifier in 45 nm CMOS Technology	266
<i>Abu Yousuf Md. Eftekhar Sadiq, Md. Shahin Ferdous, Iftekhar Sadat Siyam, Fahmida Binte Towhid</i>	
Detection of Corn Plant Diseases Using Advanced Deep Learning Architectures	272
<i>Ahmed Wakil Muttaki, Mohammed Sowket Ali, S.M. Khaladuzzaman, Tahmina Sultana Md. Shafikul Alam Chowdhury, Md Zahim Hassan</i>	
PotatoLeafNet: Deep Learning Approach for Potato Leaf Disease Identification	278
<i>Khalilur Rahman, Syme Al-Azad Shuvo, Md Nuruzzaman, Atikur Rahman, Geerbani Pal Shashi</i>	
A Convolutional Neural Network with Bidirectional Gated Recurrent Units Architecture for Enhanced Stress Monitoring from Wearable Signals	284
<i>Md Rokonzaman Mim, Md Santo Ali, Mohammad Abdul Motin</i>	
Time-Series Forecasting for Forex: A Comparative Study on GBP/USD, AUD/USD, and AUD/NZD	288
<i>Ratul Barua, Md Zahidul Kabir Khan, Mohammad Imtiaz Hossen, Meharaj Hasnain, Farzana Rashid</i>	
A Deep Learning Approach to Multi-Label Toxicity Detection - Classifying Harmful Online Speech	294
<i>Mustahidul Islam Ferdous, Md. Fakrul Islam Rafsan, Ahmed Shafkat, Samin Yasar, Bijon Mallik Md Saifur Rahman</i>	
Enhancing Product Recommendations with Transformer-Based Sentiment Analysis	300
<i>Jarin Tasnim Lamia, Bijon Mallik, Ahmed Shafkat, Asir Saadat, Fatema Tasnim Mimia Md Mahabubur Rahman</i>	
ARMEN: Adversarially Resilient Network for Emotion Recognition from Music	306
<i>Renu Akter Suity, Niamul Hassan Samin, Bijon Mallik, Ahmed Shafkat, Md. Mahbubur Rahman Kohinur Parvin</i>	
WasteBelt: A CNN-Based Smart Waste Sorting System with Conveyor Automation and ESP32-CAM Integration	312
<i>Hanif Mia, Ali Hasan Pappu, Md Yusuf Hossain, Mohamamd Sakib</i>	

OptiGait-LGBM: An Efficient Ensemble Learning Approach of Gait-based Person Re-identification in Non-Overlapping Regions	318
<i>Md. Sakib Hassan Chowdhury, Md. Hafiz Ahamed, Bishowjit Paul, Abu Bakar Siddique</i>	
Sparse Transformer Variants with Provable Expressivity: Theoretical Limits and Scalable Architectures	324
<i>Md. Awinul Hoque Utsha, Farshid Rafiq, Fabiha Nawal Aurna, Mynuddin Patwary, Soheli Tangila Richi Ezaz Mahmud Jim</i>	
Analyzing Genetic Diabetes Trends in the U.S. Using Data Mining-Driven Prediction Models	330
<i>Ekramul Hasan, Dipta Paul</i>	
Central Control Automation System of Grid Substation Using High-Speed Communication	336
<i>Md. Manir Hossain, Abdulla Al Mamun, Partho Singh, Asm Shihavuddin, Md Faysal Miah Md. Ashaduzzaman Niloy</i>	
Machine Learning Models for Credit Risk Assessment	342
<i>Afzalul Abid Nazir, Islam Saiful, Md. Faruk Abdullah Al Sohan</i>	
Centralized Optimization of Transmit Power and Spectral Efficiency in QoS-Constrained MC-CDMA Cognitive Radio Networks	348
<i>Nudrat Kabir, Safwan Ahmad Chowdhury, Md Abu Talha</i>	
Information Security Management for Securing Large Intelligent Networked Infrastructures in Banks and Financial Institutions	354
<i>Prakash Chandra Mondal, Pritu Parna Sarkar, Md. Nasim Adnan</i>	
Analysis of Concentric Circular Antenna Array Based Radar for Conformable Search and Multiobject Hunting	360
<i>Md. Farhan Shahriar, Md. Selim Hossain, Md. Mominul Hasan Shawon</i>	
Bridging Code and Comprehension: A Comparative Analysis of Transformer Models for Java Source Code Summarization	365
<i>Shahriar Sadman Dihan, Mohammad Asif Khan Tonay, Farid Ishraqe Zarif, Korobi Sarker Md. Sakibur Rahman</i>	
MultiKAN-Nash: Strategic Multi-Agent Disaster Response using MultiKAN and Nash Equilibriums	371
<i>Sohel Ahmed Joni, Nishat Tasnin, Sorna Das, Ahmed Shafkat, Samin Yasar, Bijon Mallik</i>	
AirSense: ML-Driven Platform for Real-Time Air Quality Prediction Using a Low-Cost IoT Device	377
<i>Md. Shahduzzaman, Md. Jahidul Hossain Mekat, Mustaqueem Alam, Md. Tashfiq Islam, Jubaer Ahmed Noor-E Sadman</i>	
Automatic Detection of Total Sleep Time using Slope Changing Rate of Overnight EEG Signals	383
<i>Afifa Halim Prapti, Maysha Rahman Trisha, Effat Mahajabin Ahona, Md. Bashir Uddin</i>	
Designing a Deep Learning Model for Brain Tumor Classification from MRI Scans: A Privacy-Conscious Approach	388
<i>Maryam Nasir Suleman, Muhammad Hasham Kashif</i>	
Composite Organic Dyes as Green Sensitizers for Dye-Sensitized Solar Cells	394
<i>Arman Arafat, Sumaiya Kabir</i>	
Predicting Thyroid Disorders with Multi-Model Machine Learning Techniques	398
<i>Najla Alam Navana, Md Habib Ul Alam, Nihal Zaman Nafi, Md. Rakibul Islam Khan, Nusaibah Tasnim Md. Al-Amin</i>	

Deep Learning Framework for Automated Numismatic Classification and Brahmi Inscription Segmentation of Gupta Archer Coins	404
<i>Md. Farhan Alam Arnob, Nusrat Jahan Nijhum, Md. Samiul Alom, Ishtiaq Mamoon</i>	
Design of a Tunable Multi-Band THz Metamaterial Sensor Using GaAs	410
<i>Asif Mohammed Siddiquee, Muhammad Asad Rahman, Rahul Chowdhury</i>	
Contrastive Representation Learning for Acute Lymphoblastic Leukemia: A SimCLR and EfficientNet-B0 Approach	415
<i>Mohammad Mehedi Hasan Munna, Nakib Aman, Saiful Bari, Md Shabbir Mia, Acramul Haque Kabir Reefka Fabliha Tulona, Iftekhhar Iqbal Enan</i>	
Feature-Optimized Blood Glucose Level Prediction with Explainable AI (XAI)	421
<i>Aditya Das Gupta, Md. Nahin Irtiza, Shihab-Al-Rashid</i>	
The Dual-core Simple-12: Design and Development of the World's Smallest Multi-core Processor	427
<i>Mohammad Abdul Qayum, Rasin Mohammed Ihtemam, Riasat Khan</i>	
Deep Learning Analysis of Public Sentiment on the Padma Bridge Through YouTube Comments	433
<i>Tanjim Taharat Aurpa, Samiha Maisha Jeba, Rajib Khan, Md Shoaib Ahmed, Satya Ranjan Dash</i>	
Design of a Multiband Microstrip Patch Antenna for WLAN and WiMAX Applications	439
<i>Md. Nasrulla Khan, Sk. Shariful Alam</i>	
Low Cost Hardware Integrated Flight Simulation in FlightGear with Novel Safety Mechanism for Flap Deployment	444
<i>Md. Rifatuddin Romel, Mohammad Hesham, Rafid Lazim, Sabbir Hossain Pritom</i>	
Cha-Tong Optimization: A Novel Metaheuristic Algorithm for Civil Engineering Operations	449
<i>Md. Jobayer Parvez Ratul, Usmi Akter, Syed Effti Rezvi, Saad Kaiyum Kishor</i>	
A Compact Modified Inverted F Antenna with Enhanced Performance for IoT Devices in 2.45 GHz ISM Band	455
<i>Md. Arifuzzaman, Md. Masud Rana</i>	
Speaker Identification from Bone-Conducted Speech via Dual Attention-Transformer Model: A Study with EmoBone Dataset	460
<i>Md. Ibne ShihabShad, Sayeeda Khan, Md. Sarwar Hosain, Akif Mahdi</i>	
An Explainable and Clinically Generalizable Deep Learning Framework for Interpretable Ovarian Cancer Subtype Detection in Histopathological Images	465
<i>Samiha Muntaha Mahin, Nowrin Jahan, Jahur Ahmed, Tahmina Hasan, Shafwat Mahiya, Sara Karim</i>	
Robust Breast Lesion Segmentation in Ultrasound Using a Lightweight U-Net: End-To-End Study and Deployable App	471
<i>Fahim Ahsan, Kulsum Ara Lipi, Abeda Sultana Mimma, Shantanu Rahman, Arnob Paul</i>	
Enhancing Network Intrusion Detection System Using Optimized Deep Learning	477
<i>Abdur Rahman, Mohammad Delowar Hossain Gazi, Md Mahmudul Hasan, Md Mahashetab Hassan Fabiha Tazri Okita</i>	
Mobile SkinDoc:A Compact Transfer Learning Approach Combining MobileNet and EfficientNet for On-Device Skin Disease Detection	482
<i>Efti Shiraz, Ajoy Shutra Dhar, Mahmuda Khatun</i>	

ConvWGAN: A Novel Conditional GAN Model for Digit-Evoked Stimuli-based EEG Generation	488
<i>Tanzeem Tahmeed Reza, Arif Istiaque</i>	
An Explainable Federated EfficientNet–Transformer Model for Lung Cancer Classification from Histopathological CT Images	493
<i>Sinithiya Tabashoum, Aysha Anis Roza, Md. Abdul Masud, Arjon Golder, Rakibul Hasan Sezan</i>	
Ensemble-Based Detection of Cyberbullying in Bangla-English Mixed Social Media Comments	499
<i>Muradul Islam, Md. Abdullah Ibne Aziz, Ferdaus Anam Jibon, Marisa Parvez Oishy Md Shaiful Islam Bapin</i>	
A 2.4-GHz Common-Emitter RF Amplifier: Design, Simulation, and Performance Results in Cadence Virtuoso	505
<i>Md Al Saif Hossain Anay, Md. Mostafizur Rahman, Golam An-Noor Siddique, Sheikh Tariful Islam</i>	
FTWERF: A Federated Temporal Weighted SelfEvolving Forest Framework Under Concept Drift	511
<i>Shishir Bhuiya, Md. Samsuzzaman, Md Abdul Masud</i>	
Enhanced Wind Speed Prediction Using Flower Fertilization Optimization and CEEMDAN Signal Decomposition	517
<i>Md. Jobayer Parvez Ratul, Syed Effti Rezvi, Usmi Akter, Saad Kaiyum Kishor</i>	
StroQ-Net: An Efficient Hybrid Architecture Integrating Multi-Scale Context and Query-Attention for Stroke Pattern Recognition	523
<i>Md Emamul Hossen, S M Mahim, Md. Shahariar Hasan Sakib, Faisal Ahmmed, Md. Khairul Islam Md Sipon Miah</i>	
Robust Unknown Parameter Identification in Double Diode PV Model Using Artificial Lemming Algorithm	529
<i>Krishnapada Mondal, Md. Abu Salman, Md. Parvej, Disha Hasan, Md. Akter Hossen, Md. Shariful Islam</i>	
A Vision Transformer–GAN Framework for Robust Gait Recognition under Multi-Gait Conditions	535
<i>Shuvo Pramanik, Anonno Singha Ray, Sarafat Hussain Abhi</i>	
B-RAG: A Retrieval Augmented Generation Based AI System for Educational Question Answering from Bangla Textbook in Bangla	540
<i>Md. Shoaib Abdullah Khan, Md. Saif Ahammod Khan</i>	
Semi-HAR: A Semi-supervised Approach for Human Activity Recognition by Machine Learning Models	544
<i>Rahat Kibria Bhuiyan, Shahid Uddin Ahmed, A.A.M. Shah Sadman, Md Hossam-E-Haider</i>	
Digital Twin–enabled Predictive Maintenance for High Voltage Generators and CT Tubes in Medical Imaging Manufacturing	549
<i>Md Mahamudur Rahaman Shamim, Md. Nuruzzaman, Md Amzad Sadik Abid, Md. Sabbir Hossain</i>	
Blockchain-Based Hajj Pilgrim Registration System: Enhancing Transparency and Security	555
<i>Md. Mahin Khan, Md. Awinul Hoque Utsha, Yeasir Ramim, Md. Asaduzzaman, Fabiha Nawal Aurna Farshid Rafiq</i>	
Automated Classification of Atrial Fibrillation from ECG Signals Using Machine Learning Techniques	561
<i>Md. Ali Hasan, Mohammad Abdul Motin</i>	
Estimating Competing TCP Flows and Bandwidth in Multi-Link Paths: An Indirect Probing Approach	565
<i>Ihtesham Ibn Malek</i>	

Authorship Attribution in Bangla Literature: A Comparative Study of Word Embedding and Deep Learning Models	571
<i>Abdullah Md. Omar, Maliha Kaisar, Ashraful Islam</i>	
Predicting Decision-Making Quality During Prolonged Cognitive Activity Using EEG Signals: A Novel Residual Network Approach with Cross-Subject Generalization	577
<i>Naimur Rahaman Tusher, Md Mazharul Islam, Md Al Emran, Md. Omar Faruk, Lutfullahil Majid Md. Khurshid-Al-Mamun</i>	
Accurate and Robust Estimation of Single-Diode PV Model Parameters Using the Artificial Lemming Algorithm	583
<i>Krishnapada Mondal, Md. Abu Salman, Md. Ferdus Mahmud Fahim, Md. Khabirul Islam, Shahed Ahmed Mehadi Hasan Emon</i>	
Leveraging Vision Transformer to Classify Cancer Stages from Breast Ultrasound Images	589
<i>Muhammad Junayed, Tanzeem Tahmeed Reza</i>	
A Comparative Analysis of Transformer and Transfer Learning Models for Multi-Class Land Use and Land Cover Image Classification with Explainable AI	593
<i>Tahmina Hasan, Samiha Muntaha Mahin, Farjana Kabir, Shamima Sharif Omi, Jahur Ahmed, Sara Karim</i>	
Leveraging Power Spectrum-based Features and Machine Learning for Resource-Efficient Cough Classification in Respiratory Disease Monitoring	599
<i>Sadman Rahman, Irtiza Mohtasim, Saquib Farhan, Kazi Newaj Faisal</i>	
HybridCCT-TB: A Dual-Stream Attention Augmented Hybrid Architecture with Explainable AI for Tuberculosis Screening in Chest Radiographs	604
<i>Md Emamul Hossen, S M Mahim, Tareq Aziz, Faisal Ahmmed, Md. Khairul Islam, Md Sipon Miah</i>	
Smart IoT-Based Water Tank Automation System Using Ultrasonic and Temperature Sensors with Remote Monitoring	610
<i>Hassan Jubair, Mithela Mehenaz, Md. Nurunnabi Mollah, Abid Ahasan, Md. Merajul Islam</i>	
IncepVGGNet: A Hybrid Deep Learning Model for Alzheimer's Disease Classification Using MRI With Cross-Dataset Validation and Enhanced Interpretability	616
<i>Md. Samiul Islam, Rifat Nawaz, Md Mehraz Hosen, Md Amzad Sadik Abid, Fatiha Mahbub Mim Abdullah Al Prince, Pristly Turjo Mazumder</i>	
The Impact of ADASYN on Distance-Based, Tree-Based, Ensemble, and Boosting Models in Breast Cancer Prediction	622
<i>Khaled Mahmud Sujon, Md Monirul Islam Molla, Aminul Islam Miraz, Md Muzahidul Islam Md. Tahmid Farabe Shehun, Adnan Shafi</i>	
Miniaturized Dual-Port THz MIMO Antenna with Enhanced Isolation and Diversity for 6G Networks	628
<i>Arafat Uddin, Nirzar Barua, Shanchayan Barua, Sakhawat Hossen Sun, Mirajul Islam, Md. Ashadul Islam Riadul Hoque</i>	
Developing a Smart Solar-Powered Street Lighting System with On-Grid Integration	634
<i>Md. Estiak Ahmed, Airin Akter, Shafiun Nahin Shourav, Md. Al-Amin, Riajul Karim Adil Intiaz Uddin Ahmed</i>	
An Explainable Framework for Multiclass Student Performance Prediction: Integrating SMOTE and Correlation-Based Feature Selection	640
<i>Khaled Mahmud Sujon, Md. Tahmid Farabe Shehun, Md Muzahidul Islam, Tahmedur Rahman, Adnan Shafi Aminul Islam Miraz, Md Monirul Islam Molla</i>	

Multimodal approach for PCOS Detection: Integrating Clinical Data and Ovarian Ultrasound with Grad-CAM Interpretability	646
<i>Samiha Muntaha Mahin, Tahmina Hasan, Shamima Sharif Omi, Farjana Kabir, Jahur Ahmed Shafwat Mahiya</i>	
Multi-Class Anemia Classification from CBC Profiles Using a Feature-Refined and SHAP-Augmented Machine Learning Pipeline	652
<i>Shafwat Mahiya, Tahmina Hasan, Rezowan Sifat, Samiha Muntaha Mahin, Sumaya Rahman, Sara Karim</i>	
Smart Bio-RF Interface: A Tissue-Integrated Rectenna for Efficient and Safe Wireless Power Harvesting	658
<i>Zarin Nushiba, Arafat Uddin, Mohammed Lokman, Avijith Roy, Parag Das, Shanchayan Barua, Moon Das</i>	
Lightweight Vision Transformer with Cross-Scale Attention Fusion for Field-Deployable Maize Disease Diagnosis	663
<i>Nayeem Hasan, Mostafizur Rahman Shakil, Istiak Kabir, Nusrat Jahan, Kamrun Nahar Bristy Arafath Bin Mohiuddin, Katura Gania Khushbu, Shafiur Rahman</i>	
Cross-Attentive Multimodal Model for Stock Movement Prediction Using Twitter Sentiment and Technical Indicators	669
<i>Mohammed Imam Hossain Tarek, Shayma Sultana, Md Zubair Ahmad, Mehedi Hasan, Md Rashel Miah Md. Redwan Ahmed, Shafiur Rahman</i>	
Capturing Cross-Product Dependencies with a Hybrid Transformer for Supply Chain Demand Forecasting	675
<i>Md Rashel Miah, Mehedi Hasan, Shayma Sultana, Erin Jahan Meem, Mohammed Imam Hossain Tarek Md. Nwoshad Alam Chowdhury, Shafiur Rahman</i>	
Stacking Ensemble Classification Model for Network Intrusion Detection	681
<i>Md. Taukir Ahmed, Md. Showrov Hossen</i>	
AgentBRTA: An LLM and RAG-Based Conversational Agent for Bangladesh Road Transport Authority	687
<i>Md Naimur Rahman Khan Sifat</i>	
A Comparative Analysis of Pre-processing Techniques for Deep Learning-Based Disease Classification in Peach, Bell Pepper, and Strawberry	693
<i>Sakib Imtiaz, Emrana Kabir Hashi, Md. Ashikuzzaman Ashik, Zahara Tasnim</i>	
A Systematic Analysis of Image Pre-processing Pipelines for Deep Learning-Based Grape Leaf Disease Classification	699
<i>Md. Ashikuzzaman Ashik, Sakib Imtiaz, Md. Efat Al Khalid Shahadout, Zahara Tasnim</i>	
Sleep-Wake Estimation using Frequency Analysis of Electroencephalogram Signals	705
<i>Effat Mahajabin Ahona, Afifa Halim Prapti, Maysha Rahman Trisha, Md. Bashir Uddin</i>	
Remote Sensing-Based LULC Classification of Bangladesh Using Google Earth Engine and Machine Learning	710
<i>Anika Tahsin, Muntasir Mohammad Shoeb, Shahriar Hossain, Md. Rashid Awal Chowdhury Jannatul Ferdous, Dil Afroza Karim, Arafat Uddin</i>	
HRECSYS++: A Personalized Hybrid Movie Recommender System with Dynamic Weighting	716
<i>Nahid Karim Emon, Md Nasim Adnan, Md Shojib Hossain, Prakash Chandra Mondal</i>	

Detecting Fetal Health Conditions Using a Federated Learning Approach with an Incentive-Based Reward System	721
<i>Humayra Ahmed, Muhammad Nazrul Islam</i>	
Air Quality Forecasting for Sustainable Urban-Industrial Environments in Bangladesh Using Machine Learning	727
<i>Dil Afroza Karim, Anika Tahsin, Md. Rashid Awal Chowdhury, Shahriar Hossain, Jannatul Ferdous Muntasir Mohammad Shoeb, Arafat Uddin</i>	
MISTY: Multidimensional Identification of Synthetic Text Yield	733
<i>Md. Siam Ansary</i>	
BanglaASTE: A Novel Framework for Aspect-Sentiment-Opinion Extraction in Bangla E-commerce Reviews Using Ensemble Deep Learning	738
<i>Ariful Islam, Md Rifat Hossen, Abir Ahmed, B M Taslimul Haque</i>	
A Shallow Deep Learning Model for Stress Monitoring from Photoplethysmography Signals	744
<i>Md Santo Ali, Mohammad Abdul Motin, Md Rokonzaman Mim, Sumaiya Kabir</i>	
Comparative Performance Analysis of Organic and Inorganic ETLs in CsSnBr ₃ -Based Perovskite Solar Cells	748
<i>Md. Abul Bashar, Md Shahidul Islam, Sk Minhajul Abedin, Md Jannatul Naime, Atowar Rahman Arifuzzaman Rajib</i>	
Miniaturized Multi-Band THz Microstrip Patch Antenna for Next-Generation 6G Mobile Networks and Spectroscopic Applications	754
<i>Mohammed Rakibul Hoque, Nirzar Barua, Mohammad Abid, Most. Tajrima Akter Oishee, Chandan Saha</i>	
A U-Slotted THz MIMO Antenna: A Compact and High-Performance Solution for Future 6G Communication	760
<i>Arafat Uddin, Nirzar Barua</i>	
Towards Annotation-Efficient Kidney CT Scan Classification: Supervised and Semi-Supervised Swin Transformer Frameworks	766
<i>Aritra Das, Karib Shams, Md. Rakibul Hasan, Mohammad Rifat Ahmmad Rashid, Rashedul Amin Tuhin M. Saddam Hossain Khan, Raihan Ul Islam</i>	
Wideband Dual-Resonant Microstrip Antenna for Next-Generation 5G mmWave Systems	772
<i>Joyotu Debnath, Nirzar Barua, Mohammad Sultan Mahmud Julshan, Arafat Uddin</i>	
Comparative Performance Analysis of Dual-Band GPS Phased Array Configurations with MVDR Beamforming	778
<i>Md Shaikat Hossain, Md Aminul Islam</i>	
Machine Learning Based Prediction of Circular Microstrip Patch Antenna Dimensions from Fundamental Parameters	784
<i>Md Emtiaz Emon, Proxima Roy Chowdhury, Md. Firoz Ahmed, M Hasnat Kabir</i>	
ECG Signal Acquisition Module: Innovative Solutions for Cardiac Monitoring	789
<i>Asif Ahmed Rafi, Rahul Biswas, Md Moznuzzaman</i>	
RCGA-UNet-DS: Residual Cross-Gated Deeply-Supervised U-Net for Thyroid Nodule Segmentation on TN3K	793
<i>Saimum Islam Jeem, Tarsheed Zaman Radif, Zia Md Galib Ul Alim, Saiba Aabira</i>	

Square Labyrinth Shaped Rotationally Symmetric Metamaterial Absorber for Organic Solvent Sensing	797
<i>Sayed Mahmud, Md. Jahedul Islam</i>	
ClimaCare: Explainable IoT-ML Framework for Microclimate Forecasting	803
<i>Avik Halder, Akibul Hasan Anik, Hrithik Das, Saurav Chandra Das</i>	
Towards 6G: A Compact High-Efficiency Triple-Band Microstrip Antenna for mmWave Applications	809
<i>Nirzar Barua, Saikat Barua, Md Nazmul Islam Sajib, Md Rakibul Islam Rony, Md. Akter Hossain Chandan Saha</i>	
Dual-Band CSRR-Based Microstrip Antenna Design for Next-Generation 6G Terahertz Networks	815
<i>Nirzar Barua, Md. Akter Hossain, Md Rakibul Islam Rony, Md Nazmul Islam Sajib, Saikat Barua Chandan Saha</i>	
Deep Learning-Based Soil Quality Prediction Framework for Sustainable Agriculture in Bangladesh	821
<i>Sadikul Hasan Mridha Atul, Abdullah Al Zabir, S M Monirul Islam, Humayun Kabir Forhad Hai S M Nawshed, Md. Isthiakul Hasan</i>	
Design and Performance Analysis of Slotted Patch Antenna for Sub-6 GHz 5G Communications	827
<i>Md. Najmul Hossain, Sayed Shifat Ahmed, Md. Sarwar Hosain, Tetsuya Shimamura</i>	
A Study on Transfer Learning and CNN Ensemble Models for Automated Classification of Jackfruit Leaf Health and Growth Stages	831
<i>Bishwa Das, Dewan Mamun Raza</i>	
DV-mBERT: A Reproducible and Transparent Framework for Code-Mixed Bangla Smishing Detection with Meta-Feature Fusion and FGM Robustness	837
<i>Md Intishar Ahmed, Ahammad Hossen Eazaz, Golam Md. Muradul Bashir</i>	
Multilingual Speech Emotion Recognition Using End-to-End Multilingual Pre-trained Model	843
<i>Auditi Das, Mohammad Ariful Haque</i>	
Detecting Hate Speech in Social Media Using Classical Machine Learning and Transformer Models: A Comparative Study	849
<i>Tashdid Ahmed Shitab, Md. Emam Hossain Emon</i>	
Fine-Tuning Multilingual Transformers for Multi-Label Discrimination Detection in Bangla Social Media Text	853
<i>Fahim Mahmud Bhuiyan, Muhammad Foysal Hossain, Md. Shafayet Hossain Rizon, Salima Farha</i>	
Towards a Humanized Social-Media Ecosystem: AI-Augmented HCI Design Patterns for Safety, Agency & Well-being	859
<i>Mohd Ruhul Ameen, Akif Islam</i>	
Performance Evaluation of a High-Efficiency Wideband Dual-Port MIMO Antenna for 5G mmWave Networks	865
<i>Chandan Saha, Proshanto Das, Joyotu Debnath, Nirzar Barua</i>	
SeqEmbedX: Combining LSTM and Transfer Learning for Cross-Domain Sequence Classification with K-mer and Word2vec	871
<i>Nishat Taaha, Sheikh Md. Rabiul Islam</i>	
Load Forecasting of Electric Vehicle Charging Station Using Combined Features Data: Machine Learning Approach	877
<i>Md. Tohidul Islam Khan, Simanta Saha, Sancoy Barua, Sadman Sakib Hossain, Md. Arik Mubashir</i>	

Maternal Health Risk Assessment with Interpretable Machine Learning: Evidence from Bangladesh	883
<i>Ahsanur Parul, Sajid Ahmed, Md Miskat Hossain, Karib Shams, Mohammad Rifat Ahmmad Rashid</i>	
<i>Raihan Ul Islam</i>	