2026 11th International Symposium on Advances in Electrical, Electronics and Computer Engineering (ISAEECE 2026)

Shenzhen, China
12-14 June 2026

Pages 1–478

IEEE Catalog Number: CFP260J9-POD
ISBN: 979-8-3195-4257-1

IEEE Advancing Technology for Humanity

Copyright © 2026, 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:	CFP260J9-POD
ISBN (Print-On-Demand):	979-8-3195-4257-1
ISBN (Online):	979-8-3195-4256-4

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

Energy Transfer Efficiency Optimization for Undersea DC-DC Power Converter 1
Lei Yang, Shihao Guo, Xin Dai, Xuena Chen

Simulation-Based Design Optimization of Bidirectional DC/DC Converters for Efficiency Improvement and Thermal Management in Micro-grid Applications 6
Zhenxin Dai

Comparative Analysis on State of Charge Estimation Based on Coulomb Counting Method and Kalman Filter Algorithm for Lithium Batteries 11
Rui Liu, Tinglun Song, Deli Sun, Wei Li, Xianke Gu, Nian Li

SOH Estimation for Lithium Metal Batteries Across Different Charging Rates Based on Transfer Learning and Channel Attention Mechanism 19
Sichen Li, Liyong Yin

Analysis of the Impact of Offshore Wind Power Integration into Power Grids via VSG-Controlled PMSG-Based Wind Turbines 25
Hengwang Zhou, Xin Lin, Yue Wu, Yizhuo Ma, Hui Qin, Zhilan Tao

Research on Short-term Bus Load Forecasting Model Based on Spatio-Temporal Graph Attention Network 33
Xin Zhou, Quan Yuan, Zhaoshen Huang, Xu Du, Xinyi Yang, Liang Xiao

Blockchain-Based Distributed Optimization for Coordinated EV Charging 38
Wenbin Sun, Changli Wu, Chenglin Zhang, Xiao Tan, Jianxiang Fu, Jiajia Xiang, Zhewei Wang, Luwen Zou Yanjun Yi

Multiphase Thermophysical Parameters for C_4F_7N High-Voltage Circuit Breaker Simulation 42
Dongwei Sun, Guanyu Wang, Nian Tang

Fault Detection, Classification and Kilometer-Based Localization Using a Sequential Dual Stage Framework Integrating Random Forest and ANN 46
Ian Gabriel D. Libranda, Lhio Lanz B. Honrado, Glenn V. Magwili

Statistical Monitoring and Variability Control for Reliability Enhancement in High-Throughput Lithium-Ion Battery Manufacturing 52
Ginzu Fung Guan, Xindi Liu, Chia-Yuan Chen

Intelligent perception of illegal behavior risk of power climbing operators 57
Zhijia Wu, Tiesen Chen, Yongyuan Wang, Lin Li, Jinke Han

Hybrid energy storage frequency regulation capacity configuration of GSWOA-VMD decomposition and SOC power zoning 65
Zulong Chen, Feng Xue, Xiaobo Tang

A Study on Dynamic Load Coordination Control in Smart Grids Based on Deep Learning-Driven Load Forecasting 71
Guigang Gao

Key Technology Analysis for Coordinated Operation of Source-Grid-Load-Storage in New-Type Power Systems 75
Ruibo Wang

WindCAST: Condition-Aware Spatio-Temporal Forecasting for Wind Power Prediction 79
Shuyu Liu, Yuting Zou, Cheng Peng

Research and Application of Unified Security Control Technology for Host Peripheral Interface of Power Plant 84
Ning Ma, Guiping Zeng, Jiliang Zeng

Practical Research on PLC Technology in Electrical Engineering Automation Control System 88
Wenhui Guo

Adaptive Transformer Partial Discharge Acquisition System Based on Bayesian-Fisher Hybrid Decision and FPGA 92
Zhijie Wang, Hongyi Liu, Xiangwei Jiang, Youhua Jiang

Two-stage robust optimization scheduling of integrated energy systems considering the carbon trading mechanism 97
Yuge Chen, Zhicheng Li, Shuling Zhang, Weijun Zhang, Wenbin Lin, Jianping Li

Design of a Natural Gas Self-Generation Plant to Improve Industrial Competitiveness in Lima, Peru 105
Jorge Luis Escobar Rojas, Dennis Raul Garay Aquino

Anomaly Detection for Power Telemetry Traffic Based on the IGWO-WT-LSTM Model 114
Tianshun Liu, Guoshuai Zhou, Yiman Xie, Liben Nan, Yan Zhou, Chunju Zhou

A Hybrid Algorithm-Based Selective Harmonic Elimination Pulse Width Modulation (SHE-PWM) Technique for Power Quality Improvement in a 7-Level Cascaded H-Bridge Inverter 118
Ken Johnrell A. Agustin, Michael C. Pacis

Predictive torque control based on the PMSM model with dynamic asymmetric Nash bargaining 124
Bangwei Wang, Wenshao Bu, Zihao Wang, Binzhe Xi

Multi-Parameter Identification of Permanent Magnet Synchronous Motors Based on an Improved Harris Hawks Optimization-Simulated Annealing Algorithm 128
Binzhe Xi, Wenshao Bu, Zihao Wang, Bangwei Wang

Design of a Low-Cost and Compact Uncontrolled Rectifier Converter Valve at ±5kV 134
Zijing Zhang, Lei Liu, Jun Duan, Taixun Fang, Niaolong Xie

Rapidity and Stability Control Strategy of PMSM Based on a Novel B-ADRC 138
Guodong Sun, Shan Lu, Kaitai Xiao, Shunfei Wang, Jingwu Qin, Zhoutao Cao

Transmission Line Equipment Defect Detection Based on an Improved RT-DETR 144
Zhangqi Wu, Lunming Qin, Houqin Bian, Xi Wang

Research on the Influence of Nozzle Structure on the Breaking Performance of Environmentally Friendly Gas Circuit Breakers 153
Ke Wang, Bochen Li, Suoyun Yang, Daoyuan Chen

Simulation Comparison of Interruption Performance Between 550 kV/63 kA Eco-Friendly Gas Puffer-Type and Self-Blast Circuit Breakers 158
Nian Tang, Hanyue Zhao, Dongwei Sun

Research on Behavioral Clustering and Guidance Strategies for High-Frequency Electric Vehicle Charging Users in Vehicle-to-Grid Interaction Scenarios 163
Ruixin Xu, Yang Du, Chen Ju, Chuang Li, Xiaodong Tang, Lingyu Guo, Zhongguang Yang

Electricity Price Forecasting Method Based on Transformer Encoder and Multi-Scale Deep Convolutional Multi-Task Learning 169
Weihua Zhao, Junwei Bao, Jiabei Zhang, Xian Zou, Wei Huang

A Multi-Scale Dynamic Weighted Hybrid Model for Battery State of Health Prediction 178
Mingzhi Zhang, Yanhui Zhang

Hierarchical Layout Optimization Algorithm for Power Dispatching Networks Based on Louvain Community Detection 184
Jicheng He, Bo Li, Rui Ma, Donghao Shou, Lan Yang, Jiayue Ren

An Unsupervised Annotation Framework for Primitive States in Non-Intrusive Load Monitoring 194
Chuhao Huang, Sien Tang, Huan Yang

WAC-PVFormer: A Photovoltaic Operation Framework Based on Weather-Aware Contrastive Patch Transformer 202
Zezhong Zhu, Xuanbin Deng, Chunsheng Mo, Qiong Liu, Jianxing Xiong

Applicability Evaluation of Harmonic Spatial Coupling Modeling and Feature Selection Techniques in 10 kV Distribution Transformer Areas under Complex Conditions 207
Mengqing Zhao, Jialin Li, Lei Wang, Shenglin Zhou, Shan Li

Enhanced Dual-Compensation Tracking Differentiator for Linear Active Disturbance Rejection Control of PMSM Position Servo System 211
Fangzhuo Su, Zhitao Wu, Guodong Sun, Shan Lu, Kaitai Xiao

Low-cost closed-loop speed control for a Coreless motor using MT6816 magnetic encoder 216
Chenjue Xu, Yuanbao Kou

Infrared Image Super-Resolution Reconstruction of Power Equipment Based on Degradation-Aware and Edge-Enhanced Attention 221
Jiawei Zhang, Lunming Qin, Houqin Bian, Xi Wang

Arc Simulation Study of C_4F_7N Environmentally Friendly Gas Circuit Breaker 227
Ke Wang, Yiheng Zhang, Yunkun Deng

Application of Physics-Informed Neural Network to Fast Power Flow Calculation in Power Grids 232
Xu Han

A Model Predictive PI Control Strategy for CC/CV Charging in a LCC-LCC Compensated EV Static Wireless Power Transfer System 236
Jicheng Yang, Xin Jin, Henri Josephson Raherimihaja, Guodong Sun, Shan Lu, Weijie Zhang Yanchang Zhang

DACT: A Dual-Attention Encoder with Calendar Tokens for Microgrid Load and Import Forecasting 241
Tingran Meng, Runting Li, Shijie Li

Simplified Time-Domain Model Analysis of Three-Phase CLLC Resonant Converter 246
Liang Fei, Lei Li, Longteng Jiao

Real-time Assessment and Dynamic Modeling of Aggregated Air-Conditioning Load Regulating Capability Based on a Virtual Battery Model 251
Hui Yang, Zhiheng Zhang, Pengchao Zhang, Cong Peng, Guixiong Zhao, Yujie Liang, Siyang Liao Fengming Shi

Numerical Simulation and Experimental Validation of a Large-Capacity Puffer Circuit Breaker 257
Ke Wang, Yiming Chen, Yunkun Deng, Daoyuan Chen

Transfer learning of cable fault location model based on prior fusion fully interpretable residual neural network 262
Ruize Sun, Yong Feng, Yunfe Yao, Yiran Zhou, Zhengyi Shao, Huihui Cai

MCSA-EGRU Cable Breakdown Discharge Waveform Recognition Algorithm Based on Heterogeneous Correlation-Aware Sequence Regularization 271
Ruize Sun, Yong Feng, Yunfe Yao, Yiran Zhou, Zhengyi Shao, Pengfei Miao

Cable Fault Location Method Based on Acoustic- Magnetic Joint Intelligent Recognition 279
Ruize Sun, Yong Feng, Yunfe Yao, Yiran Zhou, Zhengyi Shao, Huanhuan Lu

Robust Power Quality Disturbance Detection for Distributed Photovoltaic Grid-Connected Systems Using PSO-Optimized VMD and Kalman-BiLSTM 288
Qianfan Zhou, Wuyin Zhang, Jiran Zhu, Haiguo Tang, Silin He

Research on Cascade Failure and Resilience Dynamic Evolution of Urban Power Grids under Complex Typhoon Disturbance Fields 294
Sen Li, Jiatong Du, Haoxin Wang

Edge Computing Accelerated Synchronous Transmission Optimization Algorithm for MultiModal Signals in Digital Twin System for LowAltitude Traffic 299
Ning Zhang

Research on Neural Network algorithm Applicable to NMR Time-Domain Signal Inversion of Low Signal-to-Noise Ratio 303
Kewen Liu, Yukang Jiang

A Rapid Measurement and Reconstruction Method for Low-field NMR T_1-T_2 Relaxation Time Correlation Spectrum Based on MRF 309
Kewen Liu, Yuhao Sheng, Fang Chen, Qingjia Bao, Junfei Chen, Yuan Lu, Li Chen, Chaoyang Liu

Linear Regression-Based Critical Gate Localization Method for Combinational Circuits 314
Jinfeng Lv, Zhen Wang

An Optical Loopback Reference and Efficient Digital Demodulation Architecture for Large-Scale Multi-Channel Near-Field Measurements 318
Guangcai Zhao, Ding Xu

SPEAR: State-Constrained Semantic Pruning for Autonomous Penetration Testing in Large Action Spaces 326
Junyu Heng, Haoran Fu, Shicheng Zhou, Aiye Li, Jingju Liu, Xiaofeng Zhong

A Residual Delay Detection Method for OTFS-SCMA Multi-User Uplink over High-Dynamic Satellite-toGround Links 335
Maosen Liu, Zhenghuan Wang, Yaning Yang

Research on active defense model of network security based on generative countermeasure network 341
Yiran Zhao

Research on vehicle safety early warning technology in intelligent transportation system 345
Bin Liu, Yaxing Wei

Research on Enhanced State Estimation for UAVs Based on Residual Compensation Fusion and Edge Deployment 349
Hanwen Cui

190VPP High-Voltage Capacitive Piezoelectric Ceramic Drive Circuit Design 355
Shuaiqi Wang

An Algorithm for Correlating and Detecting Anomalous Traffic in Train Control Networks under Multimodal Learning 360
Rujun Liang, Yuling Qi, Tao Huang, Junxian Zhang

Towards Autonomous Hardware Synthesis: A Cognitive Multi-Agent Framework for End-to-End Heterogeneous FPGA Development and Self-Healing 364
Xingyan Li, Xusen Zhao, Jiandong Peng, Yaoquan Wu, Erran Zhang, Fei Liao

A Review of Metaheuristic Optimization Techniques for Low-Voltage Low-Power CMOS Analog Circuit Design 369
Dada Amina, Guerbaoui Mohammed, Benhala Bachir

Robust SINS/DVL Integrated Navigation Algorithm Assisted by Single-Scale CNN and State-Prior Transformer in Complex Underwater Environments 374
Dongyang Li, Shuo Yang, Qiuying Wang

A Multi-Authority CP-ABE Scheme Supporting Verifiable Outsourcing Based on Blockchain and Zero-Knowledge Proofs 378
Jiashuo Li

Optical Modeling of PDMS-Based Passive Daytime Radiative Cooling and Intelligent Optimization of Multilayer Film Structures 382
Qi He, Jiaxiang Wan, Yifan Luo, Jun Guo

UAV Coverage Path Planning Based on DDQNs with Expert Demonstration Prioritized Replay 386
Yun Wang, Jing Chu, Haocheng Ye, Qi Yue

Research on Network Attack Detection and Security Protection Technology in Cloud Computing Environments 390
Zhanqi Chu

A PINN-ConvLSTM Method for Two-Dimensional Transient Magnetic Diffusion Prediction in Rail–Armature Systems 394
Ruozhen Yin, Shaowei Liu, Xiangyu Du, Xiaoquan Lu, Tianyou Zheng, Jiale Li

Deep Learning-Based Blind Recogniton of Encoding Parameters for Low-Density Parity-Check Codes on Candidate Sets 399
Zheng Qiao, Feng Gao

Research and Application of Cloud-Based CAD Collaborative Design Methods Utilizing Cloud Rendering Technology 404
Ruiyuan Li, Zhining Wang, Zhen Xu, Yali Zhou, Xin Chen

Hardware Impairment Enabled Resource Allocation for Secure NOMA-ISAC Networks 410
Junchen Hu, Xinyu Zhang, Shidang Li, Xiyuan Chen, Weiqiang Tan, Chunguo Li, Bencheng Yu

Edge-Guardian for Offline-Resilient Edge Control and Evolutionary Sensor Placement in Chinese Smart Greenhouses 416
Li Sun, Young Chul Kim

Real-Time Adaptive Gray-Box Digital Twin for Industrial Equipment: Online Calibration and Edge-Deployable Prediction 421
Xiaobei Wen, Chuyuan Wen

Design and Simulation of a Piezoelectrically Driven Torsional-Resonant MEMS Electric Field Sensor 425
Gulin Xia, Maoheng Jing, Xiong Xiao, Chun Li, Wenhao Lu, Xiaoxia Li

Topology- and Physical-Aware Multi-Objective Scheduling for Microservice DAGs 430
Shuaishuai Xu, Bin Liang

Optimization and Implementation of Vector Multiply-Add Operations Based on RISC-V Extension 434
Zhonghao Fang, Shulan Lei, Yajun Wang, Rui Zhang, Junlong Li, Zheng Xu

Mechanics-Electronics Coupling Modeling of Origami-Structured Stretchable Electrodes and Design of Adaptive RF Impedance Matching Circuits 440
Kai Meng, Ying Li

Integrated Offloading Strategy of Data and Computing in Cloud-Edge Scenarios 445
Junbo Wang, Shaonan Li, Xuan Zheng, Hui Lin, Xinji Li, Ling Shen

Comparative Analysis and Domestic Applicability Verification of Schematron Rules for Machine-Readable Standards 451
Wenwen Li, Tianyuan Cai

Security Analysis and Optimization Strategies for Searchable Encryption in Cloud Environments 461
Leiting Zhang, Baohua Huang

Quantum Computing Software in the NISQ Era: Architectural Evolution, Framework Benchmarking, and Software-Hardware Co-design 466
Rujia Qiu, Teng Tian, Wangchao Dong, Enhui Wang, Long Zhao, Bing Xue

Design and Optimization of a Three-Camera Localization System with Adaptive Baseline Switching 470
Zhaomin Zhu, Yan Wang, Zhenyu Pan

Butterfly Optimization Algorithm for Fuzzy control of UAV path planning 475
Junhua Hu, Wenxue Wang, Jixiao Wang, Xiaotai Yang, Kuanfu Zhang, Lei Li, Yang Han, Hu Yu

Thermal and Magnetic Field Analysis of a Low- Interference Heating Coil for VCSEL-Based SERF Atomic Magnetometers 479
Zewei Meng, Peng Zhou, Zihua Liang, Jinsheng Hu, Lu Liu, Gen Hu, Feilong Xu, Mao Ye

A Perception-Aware Seeding and Deep Memetic Discrete Particle Swarm Algorithm for Cloud Task Scheduling 486
Bowen Hu, Bin Liang

Implementation and Application of a Mixing-Based Wideband Jamming Module 490
Yuting Zhai, Yun Zhan, Zicheng Wang, Zhanxin Cheng

In-Vehicle OTA Systems: Update Schemes, and Recall Analysis Under Evolving E/E Architectures 494
Yunjia Ji, Jiajie Wu, Guihua Chen

MAG-IDS: Multi-level Adaptive Gated Graph Learning for Network Intrusion Detection 503
Yang Zhao, Tongjie Wei

Automated Heuristic Generation with Large Language Models for 3D UAV Inspection Routing 508
Yang Liu, Hui Wang, Chaoxu Mu

A High-Precision LOS Detection Circuit Design Based on a Gilbert Multiplier 512
Zhirui Wang, Anping Jiang, Jiancheng Li, Jian Zhang, Zuhang Wang, Quanli Li, Wei Zhao, Yidong Cao

UKF-based robust beam tracking for mobile millimeter-wave ultra-dense networks in smart grids 518
Fangyong Peng, Sheng Hu, Qingsong Teng, Mingwei Xu, Yi Xu, Qingwu Wang, Kai Liu, Yangfei Xie Ansheng Duan, Guozhong Luo, Chunhong Zeng, Mingyong Li, Di Wang, Yi Mo, Yuhui Gao

A deconvolution method for stabilizing magnetic field reconstruction under probe-induced blur 524
Ziqi Wang, Wenyu Nie, Yongyi Tan, Jingxing Liu, Wenxiao Fang

Research on Visual SLAM Navigation Accuracy Improvement Strategies for Dynamic Environments 528
Pengfei Zheng, Kaiwei Jiang, Guotang Yuan, Congkai Lin

Circuit Design of High-Speed Analog Input Module Based on VPX Bus 533
Liang Wu

FPGA-Based Lock-In Amplifier for VCSEL Frequency Stabilization in Atomic Magnetometry 537
Ao Wang, Zewei Meng, Zhenning Guo, Peng Zhou, Gen Hu, Gaopu Hou, Mao Ye

Data-Driven Adaptive Filtering Method for High-Frequency Electromagnetic Interference Spectrum Reconstruction and Suppression 544
Huacheng Sun

Deep-sea Active Sonar Reverberation Simulation Method Based on Vertical Directivity Compensation 551
Hu Ang Hu, Lujun Wang, Wei Zhu

Comparative Study of Polarity-Reversal Responses of Single- and Double-Tip Structures 557
Kai Chang, Li Zhang, Shiwei Du, Yiyan Zhang

ReVerS: A Reconfigurable Near-Data Computing Architecture for Efficient Vector Search in SSDs 561
Yenan Wu, Li Li, Jia Wu, Jianfeng Zhu

Design and Implementation of Electronic Evidence Image Encryption and Decryption System Based on Improved Chaotic Mapping 567
Longfei Dang, Xi Wang, Siyu Lu, Qi Zhong, Mingyi Liu, Miao Yang

FIREPATH-CF: Counterfactual Causal Reasoning for Necessity-Aware Fire Evacuation Path Planning 572
Zhaosen Liang, Wen Wang, Delin Luo, Zhuoxi Chen, Xuanyu Lin

An Online Map Semantic Enhanced HMM Map Matching Method with Microservice Architecture for GPS Highway Free-Flow Tolling 579
Baiyi He, Ying Zhao

Computer Network Security Protection Systems from a Deep Learning Perspective: A Lightweight CNNBiLSTM-Attention Approach with Focal Loss 583
Xiaolan Wang

Runtime Protection Practice for LLM Agent Security: An On-Demand Behavioral Sandbox Approach 587
Junyong Jiang

A Flow-Field-Guided Obstacle Avoidance Method for UAV Swarms 591
Longhui Shao, Chaofeng Liu

Sparsity-and-Variance Driven Neural Network Algorithm for Large-scale Task Scheduling 596
Xuan Xiong, Shaobo Li, Fengbin Wu, Liya Yu, Zichen Huang

A self-powered flexible tactile sensor array based on TPU for interactive gesture recognition 601
Yong Lei, Yue Zhang, Yuhang Yao, Wenbo Fang, Gaoge Wu, Guizhong Li

Background-Leakage-Resolved Dead-Time-Corrected Maximum-Likelihood Timing Synchronization for Photon-Counting PPM Communications 606
Xinrui Li, Changzhi Xu, Jingzhong Guo

An Adaptive Weighted-Learning Band-Limited Generalized Memory Polynomial Predistortion Method for Spaceborne Broadband Distortion Compensation 615
Yaojie Ji, Xinquan Yang

Real-Time Measurement and Analysis Method for Transmission Characteristics of Dual-Port Communication Networks Using Digital Signal Processing 624
Jiawen Hu

Cooperative Trajectory Planning for Multi-UAV Systems in Complex 3D Environments Using Enhanced NMPC 628
Tianyu Zhang, Renchang Liu, Jie Peng, Haoyang Shang, Yifei Dang, Wenbin Kou

Transfer Attacks via Multi-Objective Loss 632
Wencheng Zhu

DCE: Dual Clustering for Temporal Heterogeneity and Channel Correlation in Multivariate Time Series Forecasting 636
Lizhi Lin

Boosting Adversarial Transferability via Structural Reorganization and Masking 641
Zhengyu He

Analysis of Backdoor Attack Methods for CLIP Models Based on Prompt Learning 645
Jianhan Su

FaceD Mamba: Face forgery detection method based on VMamba 649
Xiaobing Yan, Longfei Li, Chunmei Chen, Zhuopeng Wang

A Probabilistic Semantic Modeling and Contrastive Learning Approach for Entity Alignment 653
Panpan Tang, Xiaotian Li, Yang Liu, Li Ling

YOLO Target Detection System Based on Knowledge Graph Fusion 658
Tianjiao Hu

Automated Image Restoration via Blind PnP-ADMM and Structural-Weighted Residual Refinement 662
Zipeng Fu, Xuelian Yu, Xiaoling Ge, Weixian Qian

A Gated GCN-TCN Network for Multimodal Motion Sickness Recognition in Real Driving 667
Long Yang, Liping Xie, Jiatong Xie, Hang Li

A Risk-Aware Executive-Control-Enhanced SAC Method for Autonomous Driving 673
Jiatong Xie, Jun Wang, Long Yang, Hang Li

Research on Intelligent Extraction Method of Nuclear Power Technical Document Component Information Based on Multimodal Deep Learning 678
Guowei Wu, Chaoying Qi, Hui Wang, Jia Meng

Performance Prediction of Hydrocyclones Based on XGBoost Algorithm 684
Chengyong Hu, Kun Fang, Shuo Zhang, Xueqian Wu, Yifei Li, Meili Liu

Spatial-Prior and Shape-Regularized U-Net Variants for Spinal Cord MRI Segmentation 690
Peilin Shen, Siyuan He

GLAMS: A Local-Global Collaborative Graph Learning Framework for Alleviating Over-Smoothing in Node Classification 694
Kexin Zhang, Qiuyan Wang, Siteng Yang, Xiaohui Kou, Yang Yan

PRO-SAC: Deep Reinforcement Learning-Based Congestion Control for Real-Time Video Streaming With Delayed RTP/RTCP Feedback 700
Jinxi Cui, Yuhua Huang, Qingxi Zeng, Binbin Hu, Xiaopiao Wu

HDMixer: Enhanced Long-Term Time Series Forecasting Based on Hierarchical Decoupling 706
MorningKeen Chen

Research of computer operational content recognition algorithm 712
Dongliang Fu, Zhijian Wu, Shurong Zhang, Songbai Liu, Hailin Tang

A Lightweight Small Object Detection Algorithm for UAV Imagery Based on Improved YOLOv11 716
Chang Chang, Changlei Feng, Fan Zhang, Feng Ni, Rui Wang

Dual-Branch Augmented Transformer Framework for Hyperspectral Image Classification 725
Chunlan Yang, Dawei Xue

HCTWRNet-SE: Enhancing Imbalanced Weather Road Recognition with RandAugment, Weighted Loss, and Cross-Attention 729
Meifeng Qin, Yueyi Pu, Zhenyu Song

LRVDOT: Robust Multi-Sensor Fusion for All-Weather Dynamic Object Detection 733
Heng Li, Kaijun Yuan, Yitong Wu, Feiyu Zheng, Yihao Ling, Pengjiu Tian

A Method for Identifying Multidimensional Correlations in Multimodal Interaction Data for AI Training Partners Using Deep Learning 737
Yujie Lin, Jingjing Huang

Cost-Sensitive Knowledge Distillation for Intelligent Mineral Sorting in Industrial Scenarios 741
Peiyang Wu

Conditional Denoising Diffusion Probabilistic Models for Indoor Scene Generation: A Comparative Study on the Habitat Dataset 747
Jilin Song

DSGAN: Decoupled Symmetric Cross Entropy with Multi-Generator GANs for Noisy Medical Image Synthesis 752
Linan Yu, Limin Wang, Guosen Lin, Ruilu Huang, Xizhe Liang

Dynamic Gated Cross-Scale Feature Enhancement for Small Dataset Image Classification 757
Jielin Li, Zhiyu Zhang, Limin Wang, Jianjun Hu, Su Hu, Huizi Cao

Research on Industrial Weld Defect Detection Based on EfficientNetB0 and Spatial Attention Mechanism 763
Minlei Song

A clinical trial decision support scheme based on knowledge embedding model and large language model 768
Ying He, Zihang Chen, Haotian Zhu, Qianmin Su

AFCANet for Cross-Domain Plant Disease Recognition with DCT-Guided Adaptive Frequency-Channel Activation 772
Zhiteng Fang, Jiangpeng Du, Hong Zhang

An Improved YOLO11-Based Method for Restaurant Ingredient Detection 781
Jianding Chen, Junqing Bai

Data Augmentation and Vision-Language Pre-trained Model Transfer for Data-Scarce Disaster Scene Image Classification 785
Shanyuan Gu

Multi-strategy improved slime mold optimization algorithm 791
Zihao Wang, Wenshao Bu, Binzhe Xi, Bangwei Wang

TGFS-YOLONet: Frequency–Spatial Dual-Enhancement Network for Tea Geometrid Detection in Complex Tea Plantation Backgrounds 796
Gensheng Hu, Hangyue Li

Skeleton-Guided Topology Injection for Point-wise Human/Non-Human Classification in Millimeter-Wave Radar Point Clouds 801
Luming Xu, Youwei Hua

Research and System Implementation of an Industrial Intelligent Quality Inspection Algorithm Based on Dual-Stream Transformer Cross-Modal Attention and G2SF Feature Fusion 806
Na Zhang

A Regression Prediction Model for Engineering Investment Progress Integrating DBSCAN 813
Jixiang Gu, Chuanli Lei, Ying Xiang, Yichuan Yuan, Xiaoting Chen, Zongjun Li

Boundary-Aware Attention U-Net for Real-Time Colorectal Polyp Segmentation 819
Yuliang Zhang, Tianyi Tao, Mengyuan Pan, Jialing Peng, Hua Gong, Bo Yang

Reinforcement Learning Approaches for Code Generation: a Comparative Analysis 825
Ivan Alpatov, Firas Jolha, Zamira Kholmatova, Aizat Murtazin, Daria Verevkina, Giancarlo Succi Alexander Tormasov

Dual-Constraint MaxEnt for Interpretable Ensemble Classification on Edge Devices 829
Yunfei Wang

Deep Spatio-Temporal Fusion of EEG and Eye-Tracking Data for Robust Emotion Recognition: A CNN-BiLSTM Approach 838
Yinlu Di, Anning Chen, Hongyu Zhang, Xinyi Yu

Non-Invasive Blood Pressure Prediction Model from PPG Signals Based on CWT-Transformer 842
Jing Liu, Hao Yang

Intelligent Fault Diagnosis of Rolling Bearings Based on Legendre Multi-Wavelet Transform* 847
Zhiyu Zhang, Jielin Li

Multi-Model Classification Optimization via Bayesian Hyperparameter Tuning and Knowledge Distillation 851
Gang Yang

Ops-StructRAG: Structure-Aware Retrieval-Augmented Natural Language Task Understanding for IT Operations Monitoring 857
Mingzhan Wu, Kongsheng Lin, Yuting Lian, Congzhao Wen

YOLOv11-EAS: An Edge-Aware and Selective Network for Remote Sensing Ship Detection 863
Yukang Lu, Jinze Yang

Robot Arm Motion Classification via AdaBoost and SMOTE on an Imbalanced Multi-Sensor Dataset 869
Zhihao Sun, Bing Fu, Yue Li, Jiaqi Su

EBG-SegNet: Explicit Boundary-Prior Modeling for Event-based Semantic Segmentation 873
Xinyan Kong, Junping Yao, Xiaojun Li, Peng Cheng

OAL-Det: Lightweight Oriented Object Detection 880
Xinyang Fan, Changsheng Li

Multi-Scale Object Detection Algorithm for Watermelon and Melon Diseases Based on Improved YOLOv8 886
Yuhao Shen, Wenxue Sun, Yunhan Dong, Bangyu Li, Ziyu Chen

ARCANA: A Reflective Multi-Agent Program Synthesis Framework for ARC-AGI-2 Reasoning 890
Kunbo Zhang, Lei Fu, ZeYu Wang, Zijing Liu, Kejian Tong

Campus Personnel Abnormal Behavior Detection Based on an Improved YOLOv10 897
Yamin Hao, Yong Pan, Yajuan Gu, Lunming Qin, Houqin Bian, Xi Wang

Ultrasonic Wellbore Leak Detection via Segment-Level Multiple Instance Learning and Transfer Learning 906
Tianzhu Zhang, Yan Xia, Wenjun Lv

A multi-modal missing bearing fault diagnosis method based on missing proxy and multi-constraint learning 910
Shuaishuai Guo, Yang Wang

BCLS: Broad Contrastive Learning System for Multimodal Epileptic Seizure Detection 914
Jiayuan Huang, Hongtao Zhao, Junwei Duan, Kai Li

Towards Robust and Efficient 3D Gaussian Splatting: A Partitioned Random Spatial Masking Approach for Clean Rendering 920
Jinao Ye, Zheyang Deng, Lin Wang, Meiqi Wang

Geometry-Aware Cross-View Consistency Learning for Multi-Camera BEV Perception 926
Tianrong Zhang

Can SAM3 Be an Industrial Annotator? An Empirical Demystification and Feasibility Study 930
Jiwei Yu, Haidong Li, Ting Wang, Ruocheng Feng, Ruping Li, Kecheng Zhou, Hongxiao Gan, Shuzhi Gao

A Closed-Loop Hallucination Risk Assessment and Mitigation Framework for Black-Box RAG Systems 937
Zuozheng Wang, Min Li, Yuyue Su, Lin Li, Guanlin Si

Skeleton-Based Action Recognition for Complex Dance Motion Using Graph Neural Networks 945
Sha Liao, Ting Zhang, Fei Yuan

ARP-YOLO11: An ARConv-Enhanced YOLOv11 for PCB Defect Detection 951
Bingxin Huang

CurateDistill: Efficient Data Selection via Active Data Curation and Dataset Distillation 956
Shihao Sun, Yuhan Wang, Ruobing Yan, Jiawei Wang, Yixuan Lu