

2026 3rd International Conference on Electrical Technology and Automation Engineering (ETAE 2026)

**Shenzhen, China
20-22 March 2026**

IEEE Catalog Number: CFP260C8-POD
ISBN: 979-8-3315-5088-2



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:	CFP260C8-POD
ISBN (Print-On-Demand):	979-8-3315-5088-2
ISBN (Online):	979-8-3315-5087-5

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

Research on Multi-Factor Node Load Prediction Based on Deep Learning	1
<i>Kenuo Zhu</i>	
A Multi-Time-Scale Hierarchical Coordinated Frequency Regulation Strategy for Multi-Type Energy Storage Systems in High-Penetration Renewable Energy Grids	10
<i>Min Zhang, Xudong Li, Yusha Zhang, Weiye Teng, Di Jiang, Xi Mo, Zuzhi Shan, Zhao Luo</i>	
Long-Short Step Coordinated Photovoltaic Power Generation Fusion Forecasting	16
<i>Jiayang Weng</i>	
Accelerating Risk Assessment in Distributed Resource Resilience Planning Via Meta-Learning	22
<i>Yunfei Tian, Yi Chai, Zijian Zhou, Chaosheng Li, Jing Peng, Hairong Feng</i>	
Ultra-Short-Term Wind Power Forecasting Method Based on Wind Lidar Error Correction	26
<i>Biao Li, Lixuan Zhu, Shaokun Deng, Lijian Jiang, Ye Tian, Dawei Chen</i>	
Leakage Fault Diagnosis in Low.Voltage Distribution Areas with Photovoltaic Integration Based on the SOGI Algorithm	32
<i>Rongxiang Su</i>	
Research on Fault Section Location in Distribution Network Based on Improved Spider Wasp Optimization Algorithm	38
<i>Jiadong Su, Zhijian Liang</i>	
Dissolved Hydrogen Prediction in Oil-Immersed Transformers Using FEM-Based Fault-Scenario Data Augmentation and TCN-Informer	44
<i>Jinrui Kang, Hanbo Zheng</i>	
Impact Electric Field Measurement Technique and Research Based on Spherical Electric Field Meter	50
<i>Feng Zhou, Zhenghao Chai, Yinglong Diao, Zhaozhi Long, Wenting Li, Kai Wei, Hu Li</i>	
A Wearable Dual-Source Combined Energy Harvester with Rope-Pendulum Hybrid Input for Human Motion Energy Scavenging	56
<i>Mingwei Xu, Minghui Yao, Zhaoqi Wang</i>	
Design and Experimental Validation of a Low-Temperature-Resistant Lithium-Ion Battery Pack Using Fiber Carbon-Nanotube Film Laminated Composite Heaters	62
<i>Jinyang Li, Jirong Huang, Zonghong Xie</i>	
Design of Natural Gas Pressure Difference Power Generation System and its Grid-Connection Control Strategy Under Variable Operating Conditions	67
<i>Jingdong Zhu, Xuebo Li, Zhiqiang Yan, Yixin Zhang, Lin Jiang, Pengcheng Zhao</i>	
Research on Comprehensive Technical Benefit Evaluation of Power Transmission and Transformation Projects based on IFS-EW-TOPSIS	71
<i>Shuo Han, Jiayin Li</i>	
Clustering and Flexibility Assessment of Distributed Energy Resource Considering Topological Connectivity and Uncertainty Complementarity	77
<i>Wanzhou Lu, Yanyang Wang, Zhouhe Zhang, Huan Ma, Qun Chen</i>	

Multi-Timescale Coordinated Control of Wind-Solar-Hydrogen Coupled Systems Considering Thermal Delay and Inertia	85
<i>Zhongyuan Guo, Yi Zhang, Huan Ma, Qun Chen</i>	
Multi-Objective Collaborative Optimization of Power System Maintenance Scheduling Using a Proximal Policy Optimization Approach	93
<i>Yue Zhu, Yang Zhang, Rui Liu, Jiutai Jin, Yu Xing</i>	
Explainable Multi-Agent Distributed Optimization for Integrated Power Grid Outage Scheduling	97
<i>Yang Zhang, Yue Zhu, Liu Feng, Jiantie Xu, Guan Wang</i>	
Reliability Assessment of Distribution Networks Based on Fault Correlation Matrix	101
<i>Jiajun Zhang, Xiangyu Lv, Deixin Li, Jiarui Wang, Haiyang Guo, Yutong Liu</i>	
Study on the Decision-Making and Stability of Power Users' Demand Response Participation Under Multi-Attribute Cost Impacts	106
<i>Yixin Hou, Lin Zhao, Haiwei Jiang, Xing Ji, Jingzhi Zhao</i>	
Energy Scheduling of Islanded Microgrid Based on Hybrid Optimization Algorithm	110
<i>Bojun Tan</i>	
Research on Control Methods for Coal Mine Self-Powered System under External Grid Interruption	116
<i>Yitong Wu, Chang Yuan, Ran Jiang, Ran Tao, Ming Ma</i>	
A Scalable Hierarchical Topology Compression Method for Large-Scale Distribution Networks Based on Graph Neural Network Pooling	121
<i>Lin Peng, Aihua Zhou, Ziniu Li, Meizhao Liu</i>	
Research on Multi-Mode Optimal Scheduling of Microgrids Based on Improved Multi-Objective Particle Swarm Optimization Algorithm	125
<i>Jinguo Li, Shihong Gan</i>	
A Power Grid Load Forecasting Method Based on Multimodal Data Machine Learning Fusion	129
<i>Shufan Shi, Cong Wang, Xiangyu Gao, Yutong Guo</i>	
A GRU-TSSA-iTransformer-Based Framework for Multi-Step Wind Power Load Forecasting	133
<i>Fengzhe Wu</i>	
Short-Circuit Current Suppression Strategy Based on Electrical Distance Partitioning and Hierarchical Topology Optimization	138
<i>Yihong Zhu, Xin Shan, Yi Wang, Ji Zhang, Qi Li, Sicheng Huang</i>	
Data-Model Hybrid-Driven Method for Topology Identification and Impedance Estimation in Low-Voltage Distribution Networks	144
<i>Yiqi Qiu, Jun Su, Yaoyi Wu</i>	
Research on a Comprehensive Evaluation Method for Power Outage Losses of Users in the Power Grid	151
<i>Wei Liu, Shenglong Zhu, Jian Ge, Chao Zhen, Zhengkai Zhang</i>	
Economic Optimal Scheduling of a Renewable Energy–Data Center Considering Time-Flexible Loads	155
<i>Jianrui Wang, Maoran Xia, Bingsi Wang, Yinong Wang</i>	
Multi-Energy Complementary System for Geothermal-Solar Cascade Utilization: A Pathway Toward Carbon Neutrality	161
<i>Linlin Li, Fengxuan Liu</i>	

Research on Loss Assessment and Risk Identification of Natural Disaster Power Outages Based on Multi-dimensional User Portraits	165
<i>Wei Liu, Shenglong Zhu, Jian Ge, Chao Zhen, Zhengkai Zhang</i>	
PSO-Consensus Optimization based Distributed Generator Dispatch Considering Cyber-Physical Coupling	169
<i>Hongshuo Zhang, Ziming Li, Haodong Liu, Haijun Liao, Zhenyu Zhou</i>	
Coordinated Optimal Dispatch Strategy of Cascaded Hydro-Wind-Solar-Pumped Storage Multi-Resources for Enhancing Distribution Network Resilience	174
<i>Kaizhi Xiong, Jiancun Liu, Chengbo Du, Ting Liang, Jiangbei Li, Xiangyu Kong</i>	
Grid-Forming Control Strategy with Improve Linear Active Disturbance Rejection Control in Microgrid	180
<i>Kaizhi Xiong, Long Tao, Pan Yue, Zhenhua Wang, Xiaohan Li, Xuesong Zhou</i>	
Component-Level Modeling and Fine-Grained Simulation Methods for Large-Scale PV-Storage Systems	185
<i>Junjie Feng, Shuangfei Yang, Yiping Lu, Yue Wu, Ziyin Wang, Tengfei Liu</i>	
Energy Planning Strategy of Smart Community Microgrid Based on Improved Gray Wolf Algorithm	192
<i>Xiaorong Xia, Yansong Huang, Pengfei Hu, Fei Wang, Wenjie Xie, Jiangzhou Cheng</i>	
Blockchain-Based Relay Protection Setting Storage Using Dynamic Rational Interval Encoding	202
<i>Congcong Li, Yi Tang, Yudun Li, Jiayin Jiang, Qingfa Chai, Wei Cong</i>	
Adaptive Virtual Impedance and Power Compensation for Oscillation Suppression in Multi-VSG Systems	207
<i>Xinyu Zhang, Yunquang Gao, Chaochao Wang, Yurong Liu, Haohua Jia</i>	
Research and Application of Voltage Optimization Technology for Active Distribution Networks Considering the State Regulation of Distributed Resources	212
<i>Xi He, Huawei Hou, Wei Chen, Xia Li, Fengtao Zhang</i>	
Short-Term Photovoltaic Power Combined Forecasting Based on VMD-SSA-LSTM Under Meteorological-Load Coupling	217
<i>Xiaojie Wang</i>	
Dynamic Optimization Method of DSO-IESs Based on DOE Guidance in P2P Energy Trading	221
<i>Zhiqing Lu, Lei Dong</i>	
Hierarchical Modeling and Rolling MPC of Building AC Loads for PV Integration: A Multi-Building Aggregation Difference Analysis	226
<i>Zhiwei Li, Yishuo Qiao, Xiang Zhang</i>	
Spot Electricity Market Clearing Coordinating Carbon-Energy Linked Pricing and Demand Response	233
<i>Jiayi Lu</i>	
Research on the Construction of Rooftop Photovoltaic Systems in the Textile Industry	237
<i>Puyu Gu, Guiying Liu</i>	
A Surface Temperature Model of Transmission Lines Based on Heat Balance Theory	241
<i>Xukang Cui, Rundong Shen, Hongwei Liu</i>	
A Parallel BiGRU-FEDformer Framework for Power Load Forecasting	249
<i>Jinyang Lv</i>	

Reliability Assessment Methods for Medium- and Low-Voltage Distribution Networks Considering Distributed Energy Resources and Electric Vehicles	254
<i>Jiajun Zhang, Haifeng Zhang, Jingying Yang, Runzi Lin, Tao Liu, Yutong Liu</i>	
Research on Optimization of Reactive Power Compensation in Power Grids Based on Intelligent Optimization Algorithms	258
<i>Jiaxuan Dai, Shiping Su</i>	
Short-Term Power Load Forecasting Based on Time-Delay Feature Reconstruction and IMSSA-Optimized Combined Model	262
<i>Qiang Yao, Fang Wan, Xu Chen, Hexiang Tao, Lufang Guo, Hang Fu</i>	
Research on Cascading Failure Blocking Strategies for Highway Energy Systems Considering Load Classification	267
<i>Penghan Jin, Biao Wang, Hao Wu, Yu Han</i>	
An Improved Federated Spatiotemporal Feature Fusion-Based Method for Cyber Intrusion Detection in Smart Grids	273
<i>Yan Liao, Yi Guo</i>	
Dynamic Frequency Tracking Algorithm for Power Grids Based on Variable Rotating Factor	278
<i>Xinhui Zhang, Da Lu, Chunyu Wang, Helong Li</i>	
Coordinated Smooth Adaptive Inertia–Damping Control for Parallel Multi-VSG Systems	286
<i>Zhendong Mao, Mian Yang, Zecheng Li, Jinyu Wang</i>	
A Voltage Limit Criterion for Low-voltage Distribution Transformer Areas Based on Voltage Data-driven and Decision Tree Algorithm	290
<i>Shaowei Chen, Min Pan, Wuwei Shen</i>	
Economic Optimal Dispatch of Integrated Energy System Considering Renewable Energy Output Level and Energy Storage Configuration	299
<i>Lei Chen, Yongqiang Zhu</i>	
A Hybrid Energy Storage Optimization Configuration Algorithm Based on Improved Bat Algorithm	304
<i>Linhai Wang, Chao Wang, Xiaofeng Bao</i>	
Fault Location Method of Distribution Line based on MSRBMO-SVMD-GST	309
<i>Chaochao Wang, Yunguang Gao, Yurong Liu, Xinyu Zhang</i>	
Bad Data Detection Methods for Phasor Measurement Units	314
<i>Ziliang Huang, Yicong Chen, Yao Liu, Jun Li</i>	
Power Quality Detection Based on AT-CoSaMP	319
<i>Lang Wu, Zeying Zhi</i>	
Study on Fault Location Method of Power Cable Using Wavelet Transform Modulus Maxima	324
<i>Xingchao Zhang</i>	
A Virtual Impedance-Embedded Model Predictive Control for Interlinking Converter with Harmonic Compensation in Hybrid Microgrid	332
<i>Jun Wang, Bin Liu</i>	

Modeling and Stability Analysis of Generator-Side System for Semi-Direct Drive PMSG Wind Turbines Based on Linear Time Periodic Theory	338
<i>Shilong Liu, Jianhang Zhu, Wenyi Tian, Jiabing Hu</i>	
A Mixed-Mode Sampling Control Strategy for Capacitor-Current-Feedback Active Damping to Enhance Performance of LCL-Type Grid-Connected Inverters	346
<i>Yunzhe Li, Jingjie Xu, Jian Yang, Yuhao Wang, Tianxiang Yin, Lei Lin</i>	
Modeling and Simulation of a Three-Phase Photovoltaic Grid-Connected Inverter with P&O MPPT	353
<i>Xuefeng Kong</i>	
Analysis of Phase Change Refrigeration in the Cooling System of New Energy Engineering Vehicles	357
<i>Shen Zhang, Baozhong Wang</i>	
Reliability and Anti-Interference Analysis of Emergency Diesel Generator Sets for Geological Drilling Rigs	361
<i>Chao Li, Tong Lu, Wenwu Liu, Kun Guo, Yuwen Huang, Qing Zhang</i>	
High-Precision Temperature Alarm Method for Switchgear Assisted by Typical Dataset	368
<i>Zhi Wang, Weidong Xu, Cong Yuan, Shichang Chen, Guangxing Liu, Zifeng Yuan, Shuyu Liang, Yanbo Hao</i>	
Image-Voiceprint Multi-Channel Bandwidth Allocation for Power Distribution Equipment Monitoring	374
<i>Hongfa Li, Aiting Qiu, Deihui Zhang, Lang Cheng, Man Xia, Jiamu Yang, Linjun Wang, Ziqing Qu</i>	
Research on Vibration Acoustic Imaging Technology for Ultra-high Voltage Oil-immersed Shunt Reactors	379
<i>Zhaoliang Gu, Mengzhao Zhu, Wenbing Zhu, Qingdong Zhu, Xucheng Wang, Jian Wang</i>	
Research on a Transformer Fault Diagnosis Model Based on RF-SSA-SVM	384
<i>Jiaqi Shi</i>	
Calculation of Transient Hot Spot Temperature for 10KV Oil-Immersed Transformer	389
<i>Bowen Shang, Mingming Xu, Ning Zhou, Yunbo Li, Shuai Wang</i>	
Research on a Boost Compensation Control Method for 220 kV Voltage Transformer Error Testing	394
<i>Ke Zheng, Kan Zhang, Yufu Zhao, Shucang Zhang, Xinyi Zeng, Weikang Cao</i>	
Design and Implementation of an Ethernet Twisted Pair Cable Tester Based on FPGA and TDR	399
<i>Xiangyu Li, Xinghai Wang, Haibo Zhang, Wen Wang</i>	
An Adaptive Frequency Charge Pump for High-Side Power Supply in Motor Pre-Driver Chips	404
<i>Yan Jiao, Mingyu Liu, Yunwu Zhang, Yangyang Lu, Zhikai Meng, Chunwei Zhang</i>	
FCS-MPC Based Dual-Mode Control Strategy for Stability Enhancement of Multi-Converter System	414
<i>Lingyu Wu, Li Zhen, Chengbo Zhang, Jiawei Liu, Yingqi Wang, Zhenbin Zhang</i>	
Modeling and Simulation of Seven-Phase Induction Motor Driven by Electric Power	421
<i>Sinan Zhang</i>	
A Composite Model Predictive Control Strategy for Permanent Magnet Synchronous Motors	426
<i>Mengxuan Wang, Bangji Wang, Dexing Liu</i>	
Research on the Application of Ultrasonic Phased Array Testing Technology for Nozzle Fillet Welds in Power Station Boilers	431
<i>Yanchun Mu, Jiansheng Hu</i>	

Dual-Subspace Robust Predictive Control of Marine Propulsion Six-Phase PMSM Based on Composite Virtual Vectors	435
<i>Xiangjun Wang, Yancheng Liu, Haohao Guo, Fengkui Zhang, Shi You, Qiaofen Zhang</i>	
Research on Sensorless Low-Speed Control of Automotive Electronic Water Pumps Based on an Improved Active Flux Observer	440
<i>Pandeng Meng, Xin Cheng, Yan Deng, Hui Pan</i>	
An Isolated DC-DC Converter with Wide Frequency and Wide Voltage Range	444
<i>Xiangyu Lei, Yiling Wu, Shaojie Liu, Chaohui Li, Zhan Yin, Chunbo Shi, Guangdong Wang, Liang Dong</i>	
Method of Automatic Upgrade of Power Supplies for Accelerator	450
<i>Hao Han, Qianqian Hou, Jiang Zhao, Anhui Feng, Peng Sun, Lingchong Yang, Jinchao Wen, Xinwei Jiang, Chenwei Cao</i>	
Physics-Guided Transfer Learning for Electrical Life Prediction of Low-Voltage Circuit Breakers using HHO-Optimized Neural Networks	456
<i>Zhichao Wu</i>	
Analysis and Design of a Dual-Type Outputs Wireless Power Transfer System	460
<i>Jiabin Wang, Dukju Ahn, Chao Liu, Hongjing Ouyang, Yunhui Shang, Xiangpeng Cheng, Yiming Zhang</i>	
Efficient Processing Technology and Performance Analysis of Amorphous Iron Cores for High-Efficiency Motors	464
<i>Huizhi Li, Huangfeng Xu, Wentao Tian, Yuqing Lu, Jiatao Wang, Naxin Yan</i>	
Experimental Study on Two-Phase Heat Transfer Characteristics of Electronic Fluorinated Liquid in Microchannel Heat Exchanger	468
<i>Zhimeng Zhang, Chunhui Liu</i>	
Multi-Parameter Characteristics and Rapid Detection Method of Arc Discharge in Oil Inside Bushings	472
<i>Jun Liu, Kun Li, Peilong Chen, Shengjun Fu, Kejie Huang, Yunfei Jia</i>	
Intelligent Commutation Optimization Method Based on Improved Multi-Objective Genetic Algorithm	476
<i>Tao Zhang, Hongbin Liu, Yunguang Gao, Dongyao Wang</i>	
Research on the Development Law of Partial Discharge Caused by Capacitor Plate Tip Defects in Resin Impregnated Paper Bushings	481
<i>Jufang Wei, Junji Feng, Liqing Liu, Yuxuan Che, Mingyu Wen, Yong Ma, Bo Qi</i>	
Hybrid Physics-Data Driven Thermal Network Modeling and Temperature Estimation for Permanent Magnet Synchronous Machines	485
<i>Taiming Liu, Huimin Wang, Xinglai Ge</i>	
Design of a Super-Twisting SMO Based on a Third-Order Phase-Locked Loop	496
<i>Xiang Li, Peng Xue, Xiao Sun, Ziqiang Wang</i>	
Numerical Simulation Analysis of Electromagnetic Characteristics and AC Loss of STARS Conductors with Different Structures	501
<i>Wenye Li, Qianjun Zhang, Mengchao Dong, Qin Li</i>	
Integrated Design and Experimental Study of GIS Current Sensing Based on Fiber-Optic Integrated Basin Type Insulator	505
<i>Kun Zhang, Shuai Yang, Zhongyu Wang</i>	

PMSM Asymmetric Model Predictive Current Control Based on Trajectory Error Minimization	511
<i>Kejie Feng, Bin Liu</i>	
Control Strategy to Improve the Accuracy of Current Compensation for Single-Phase Transformerless Three-Leg UPQC	516
<i>Huangcheng Wu, Bin Liu</i>	
The Carbon Footprint Grading Evaluation Method for Electrical Equipment: A Case Study of Transformers	521
<i>Ran Zhuo, Mengsi Wang, Meng Gao, Qiulin Chen, Sicheng Zhao, Ning Ding</i>	
Tube-Based Model Predictive Control for Robust Current Sharing in Interleaved DC-DC Converters	529
<i>Junkai Ding, Bin Liu</i>	
The Application of Incremental Fuzzy Control in Permanent Magnet Synchronous Motors	535
<i>Renjie Liang, Xin Hu, Zhenyu Gu, Lei Han</i>	
Electrochemical Performance and Stability of a Neutral Hydrophilic Silicone Oil/Zinc Acetate Mixed Electrolyte from 20 to 80 °C	545
<i>Maosong Xia, Xingyun Ma, Weidong Peng, Yunqi Guo</i>	
Cross-Condition Bearing Fault Diagnosis Based on TCN-CBAM-DANN	549
<i>Jianwei Wu, Changming Zhang, Quanli Jiang</i>	
Aging Characteristics of Oil-Paper Insulation Under High-Frequency AC Electric Field	554
<i>Tao Zhu, Xin Tong, Qing He, Yunfei Wu, Qijia Xie, Guiyuan Li, Bo Qi, Tianhe Yang</i>	
Research on Overvoltage Reconstruction Based on Transfer Characteristics of Voltage Transformer	558
<i>Kaijun Du, Zhongchao Xue, Jin Yu, Qingfeng Wang</i>	
Design of a Hall Signal Simulator for Three-Phase DC Brushless Motors	564
<i>Hengtian Yang, Fuyuan Deng, Lulu Chen, Liangmei Zhang, Kangjun Zhang</i>	
Research on Heat Transfer Characteristics for Reactor Vessel Based on FBG Sensing and Thermal Simulation	568
<i>Juan Wang, Zhentao Zhang, Xin Zhang, Mengge Xu, Siqi Ma</i>	
Simultaneous Wireless Power and Data Transmission Based on Orthogonal Multi-Carrier	573
<i>Jialong Yu</i>	
Formalizing the Madelung Rule for Hysteresis Modeling in Piezoelectric Actuators	582
<i>Rui Li, Ru Xue, Kairui Cao, Zhi Li, Jinmei Xie</i>	
Microscopic Self-Healing Mechanism of the Cellulose/Polyurethane Composite System	587
<i>Jiefeng Liu, Jing Luo, Xianhao Fan, Chuying Liu, Wentao Li, Junhao Song</i>	
Design of a Microcontroller-Based Heart-Rate Monitor	591
<i>Deshen Lv, Qi Chen, Mengting Zeng, Yongjian Chen, Renhe Zuo</i>	
Analysis and Measurement of Nonlinear Characteristics of EGR Valves in Hybrid Vehicle Engines	598
<i>Chunsheng Mao, Pandeng Meng, Zijun Wang, Chao Yuan</i>	
Adaptive Multi-Objective Optimization Design of Rotary Magnetorheological Damper	602
<i>Junqiang Li, Xiaoqi Lu, Juan Wang, Dong Yang</i>	

Design and Performance Study of a Novel Three-Directional Tuned Particle Damper	607
<i>Yu Zhou, Wangqiang Xiao, Zhiqin Cai</i>	
Research on Diesel Engine Speed Regulation Algorithm based on Deep Reinforcement Learning	615
<i>Hong Yang, Guoqiang Zhang, Ru Yang</i>	
ES-YOLO: An Edge-Guided and Scale-Aware Model for Infrared Substation Equipment Detection	621
<i>Zheng Zhu, Jingcheng Wang, Qiong Wu, Junlu Xia, Rui Xia, Bo Zhang, Bo Xu, Wei Yang, Junjie Qian</i>	
YOLOv11-IAF: An Improved YOLOv11 Method for Power Insulator Recognition and Detection	626
<i>Zeyu Zhang</i>	
Soft Constrained Reinforcement Learning for USV Dynamics System Identification	631
<i>Haipeng Li, He Shen, Yixin Yang</i>	
A Practical Study on Fine-Tuning Large Multimodal Models for Power Industry Applications: From Domestic Hardware Adaptation to Deployment in Smart Safety Systems	637
<i>Moyuan Zhou, Ruoxing Zhang, Yue Ma, Yu Tian, Jian Xue, Shen Wang</i>	
Modular Reconfigurable Wheel-Track-Leg Hybrid Robot: Structural Design and Simulation Analysis	644
<i>Yaoyao Chen, Liheng Zhang, Huashan Zuo, Zhizhong Wang, Wenkai Zhang, Zhenglong Zhao Wenhao Wang</i>	
Research on Intelligent Warehouse Multi-AGV Scheduling Optimization Integrating Queuing Theory and Genetic Algorithm	649
<i>Jibo Liu, Jinming Xu</i>	
Research on Large Language Model Knowledge Question Answering System for Power Grid Dispatching and Control Field	656
<i>Run Lin, Haoran Li, Jingjie Bai, Yidan Ren, Zhongshan Qu, Zhili Yang</i>	
Temporal Knowledge Transfer and Distillation for Cross-Condition Soft Sensor Modeling in Wastewater Treatment Processes	664
<i>Hongchao Cheng, Jiaxuan Zhong, Dongmei Chen, Yiqi Liu</i>	
Research on Layered Control and Fault Recovery Mechanisms for Fast Charging Safety Diagnosis of High-Voltage Battery Systems Under Charging Network Interoperability Conditions	669
<i>Dan Xu, Hao Gui, Huangyin Chen</i>	
A Multi-Star Astronomical Positioning Method Based on BFGS with Backtracking Line Search	673
<i>Yulin Wu, Tao He, Xianyi Li, Chao Zhuo, Lei Ren, Xiaoxuan Lin</i>	
Application of Auxiliary UAVs in Complete Safety Measure Deployment Systems for Transmission Towers	678
<i>Qinglei Zhang, Haozhi Wang, Chengang Cui, Xunhu Yi, Chen Peng, Hongwei Kang, Long He, Jie Yang Feng Zhu</i>	
An Intelligent Detection and Assessment Method for the Safety Status of Transmission Towers Based on Multi-Source UAV Data Fusion	683
<i>Hong Huo, Qiang Zhang, Chunlei Zhao, Jian Du, Junliang Liu</i>	
Actor-Critic-Based Event-Triggered Adaptive Dynamic Programming for Nonlinear Multi-Agent Systems	687
<i>Ruijia Sun</i>	

Security Situation Awareness of Elevator Control System Based on Graph Convolutional Neural Network and Multi-Source Electrical Parameter Fusion	691
<i>Ziming Xu, Sihong Yu, Qinfeng Tong, Diqun Yan, Keyi Shi</i>	
Construction and Practice of Evaluation Model for Curriculum Objective Achievement of Electrical and Electronic Technology Under Digital Transformation	695
<i>Lijing Yan</i>	
KDM-RRT: A Bidirectional RRT with KD-Tree and Multi-Candidate Evaluation	702
<i>Wei Wang</i>	
A Text-Semantics-Driven Point Cloud Generation Method for Traffic Scenes	707
<i>Hua Zhao, Ziheng Yuan, Ming Cen</i>	
A Multi-Vehicle Autonomous Driving Simulation System Based on DORA Middleware	714
<i>Yipei Yang, Ziheng Yuan, Ming Cen</i>	
DBA-Net: Dual-Bilinear Attention Network for High-Speed Railway Pantograph Arcing Detection	721
<i>Rong Wang, Hui Xiang, Ziyang Ling, Jiaxia Li, Yang Hu, Ganpei Zhao</i>	
Research on Gliding Vehicle Algorithms with Terminal Velocity and Angle Constraints	725
<i>Weizhi Xu, Tao Jiang</i>	
Overshoot-Free Decoupling Control Strategy for Steer-by-Wire Systems based on Asymmetric Cost Function and Dual Neural Networks	732
<i>Yiting Huang, Zheng Wu, Bole Su, Yuan Yao</i>	
Multi-Protocol Unified Data Acquisition Architecture for Industrial MES Environments	738
<i>Xiuhong Han</i>	
Mechanical Predictive Maintenance: A Transformer-Based Temporal Multimodal Fusion Mechanism	742
<i>Mile Wei</i>	
Research on Autonomous Ramp Climbing Control Strategy of Electric Tractors Based on Improved Pid Algorithm	747
<i>Junwei Li, Bo Li, Qianlong Zhang, Jiachang Song</i>	
Disturbance-Resistant State Estimation Method for AUV Based on Bidirectional Fusion and Adaptive Noise	753
<i>Jiacheng Li</i>	
A Chaos-Enhanced Dung Beetle Optimizer for 3D Global Path Planning of a Biomimetic Amphibious Robot	762
<i>Chenqing Sun, Xiaoqiang Dai, Jinxing Liu</i>	
Fixed-Time State Observer and Curvature Guidance for Robust Path Tracking of High-Speed USV	766
<i>Long Si, Weiting Liu, Xiaoqiang Dai, Jinxing Liu</i>	
BIE: Bipedal Robots Using Implicit-Explicit Learning Framework	770
<i>Cheng Xing, Xiaopeng Chen, Yuhan Qiu, Qi Deng</i>	
Monocular 3D Visual Homing for UAV Based on Photometric Potential Field	774
<i>Jiawen Liu, Yixiang Xu, Shaowei Gan, Liangming Chen</i>	

Research on Structural Design and Workspace Simulation of Delta Parallel Robot	778
<i>Gaoge Zhang, Pengfei Chen, Zhenming Jiang, Yi Zhong, Pengfei Jiang, Yi Zhong, Shuangyang Xu</i>	
PCBDefect-Net: An Efficient Deep Learning-Based Algorithm for PCB Defect Detection	782
<i>Junxi Hu</i>	
Deep Reinforcement Learning for Dynamic Task Scheduling and Optimization in Multi-Robot Collaborative Sorting Systems	786
<i>Hongwen Liu</i>	
Research on Digital Twin Modeling and Multi-Domain Co-simulation Technology for Mechatronics Automated Production Lines in Smart Manufacturing	792
<i>Xiangheng Kong</i>	
DD-YOLO: Real-Time Pill Defect Detection Based on an Improved YOLO Framework with Feature Complementary Mapping	796
<i>Yiyue Hu</i>	
Adaptive Test Vector Generation Under Zero-Defect Constraint	800
<i>Erjun Yu, Zhiwen Yu, Min Zhang, Mingliang Hu, Yitong Lu, Wen Gao, Dichen Niu, Dong Wang</i>	
Kinematic Modeling and Verification of a 6-DOF Robotic Arm Based on a 3D-Printed Cycloidal Pinwheel Reducer	805
<i>Ming Lu, Haohang Qin, Mingjian Yang, Lala Du, Guoyong Lin, Ruliang Wang, Chengjia Huang Yifeng Huang</i>	
Active MPC for High-Precision Lateral Trajectory Tracking of Autonomous Vehicles Against Longitudinal Velocity Disturbances	810
<i>Jianan Chen</i>	
Research on Adaptive Denoising Method for Random Load Disturbance Background in Online Condition Monitoring of Wind Turbines	814
<i>Sen Wang, Da Peng, Jingsi Wang</i>	
IEL-YOLO: A Low-Light Robust Wood Defect Detection Method Based on YOLOv11	818
<i>Junjie Zheng</i>	
ARConv-YOLOv11: A PCB Defect Detection System for Industrial Production Lines Based on Adaptive Receptive Convolution	822
<i>Junjie Zheng</i>	
An LSTM-Kalman Fusion-Based Hybrid Observation Method for Wheel-Rail Adhesion Coefficient Estimation	826
<i>Haotian Gan, Song Wang, Junqi Lu, Bingruo Xie</i>	
Design of Control System for Multi-Station Automatic Cap Screwing and Correcting Machine Based on PLC	832
<i>Junling Zhang, Yu Tu</i>	
Regression Prediction of Communication Signal Bit Error Rate under Anti-interference Based on Machine Learning Algorithms	839
<i>Shuang Wu, Zhenzhen Li</i>	
Design of UAV Altitude Controller Based on RBF Neural Network	844
<i>Shaoran Liang</i>	

Kinematics Solution of a Pipe Bending Robot Based on an Improved Particle Swarm Optimization Algorithm	849
<i>Yuanhong He, Bing Li, Junfei He, Yunzhe Xu, Liangyou Li, Yulan Wei</i>	
Attitude Control of Multi-Rotor Unmanned Aerial Vehicles based on RBF-ADRC	853
<i>Gang Wang, Qiwu Wu</i>	
A Posture-Aware LiDAR-Based Collision Avoidance Framework for Stacker-Reclaimers with Dynamic Thresholding and Time-to-Collision Prediction	857
<i>Kaixuan Qi</i>	
A Multi-Source Data Fusion Framework for Digital Stockyard Modeling Using LiDAR, UAV, and Operational Data	861
<i>Jiapeng Yan</i>	
Study on In-Orbit Single Event Effect Detection System for Nanoscale SRAM	865
<i>Yinghui Liu, He Wang, Lei Luo, Nana Huai, Yan Zhao, Jingze Zhang</i>	