

2025 Asia Conference on Energy Conversion Systems and Power Electronics (AEC SPE 2025)

**Kuala Lumpur, Malaysia
4-6 September 2025**

Pages 1–545

IEEE Catalog Number:
ISBN:

CFP250P8-POD
979-8-3315-3793-7



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:	CFP250P8-POD
ISBN (Print-On-Demand):	979-8-3315-3793-7
ISBN (Online):	979-8-3315-3792-0

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

TABLE OF CONTENTS

Investigation of Electric Field Distribution along Porcelain Insulator with the Influence of Deteriorated Insulator	1
<i>Kalaiselvi Aramugam, Akash Chowdary, Subhashini Gopal Krishnan, M.K.A. Ahamed Khan Mastaneh Mokayef</i>	
Responsive Home for Emotion Regulation Applications with Convolutional Neural Network	6
<i>Cheng Hong Hew, Mastaneh Mokayef, M. K. A. Ahamed Khan, MHD Amen Summakieh, Susama Bagchi Sanjoy Kumar Debnath, D.Najumnissa Jamal, Kalaiselvi Aramugam</i>	
Performance Optimization and Fault Prediction Model of Electromechanical Transmission System Based on Data Mining	12
<i>Tianshu Li, Xiaolan Liu, Juan Ding, Fanju Zeng, Chunyan Huo</i>	
Thermo-physical Coupling Modeling and Intelligent Control Algorithm for Silk-making and Drying Process	17
<i>Tiegong Gao, Ting Jiang, Guangqiu Wen, Yiqing Huang, Wenqiang Wu, Bin Liu</i>	
Research on Machine Learning Algorithm for Safety and Life Prediction of Lithium Battery Energy Storage System	23
<i>Jin Xu, Haijun Wu, Jihui Dong, Tengfei Zang</i>	
Improved Kalman Filter Algorithm for State of Charge Estimation of Lithium Batteries	30
<i>Jun Xu, Tengfei Zang, Xinze Wang, Chuan Peng, Shucheng Liu</i>	
Research on Abnormal Behavior Detection and Security Protection Model of Internet of Things Devices Based on Deep Learning	36
<i>Lijing Yan, Yifan Song, Ying Yang, Di Lun, Zheng Wang</i>	
Distribution Network Operation Optimization Scheduling Model Integrating Big Data and Beidou Navigation	41
<i>Yufeng Chai, Min Wang, Zhongying Zhao, Bin Li, Hui He</i>	
Research on Energy Efficiency Optimization Algorithm and Simulation of Liquefied Natural Gas Cold Energy Recovery System	47
<i>Wenbo Yang</i>	
Intelligent Control Strategy for Large-Scale Air-Conditioning Loads Participating in the Optimal Scheduling of Virtual Power Plant	53
<i>Jie Hua, Xiaotong Chen</i>	
Cable Path Optimization and Multi-Objective Decision-Making Method of Transmission Line Based on Deep Learning	60
<i>Jiani Ji, Rongxiang Wu, Jia Wu, Zhen Lu, Yong Huang</i>	
Evaluation System Model of Power Grid Investment Projects Based on Fuzzy Clustering Algorithm	65
<i>Lei Li, Jianfeng Wang, Pan Ling, Kelian Li, Binbin Huang</i>	
Simulation Research on Marketing Decision Model of Electric Power Enterprises Based on Machine Learning	71
<i>Qian Ma, Liang Gou, Song Liu, Wanzhen Ma, Ping Wang</i>	

Simulation of Deep Learning-based Grid Load Management Benefit Evaluation Model in Dual- Carbon Context	77
<i>Weihe Xu, Feng Mao, Chonglei Zhong, Jie He, Chengwei Zhang</i>	
Joint Monitoring Model for Power Grid Investment Projects Based on Big Data Analysis	83
<i>Ao Yuan, Chun Li, Kai Chen, Qinfang Wu, Weidong Zhong</i>	
Performance Evaluation and Optimal Design Model of Pile-Based Truss Photovoltaic Platform under Multi-Field Coupling	89
<i>Chen Chen, Lixia Zhao, Shijie Guan, Yan Lv</i>	
Multi-Objective Optimization Model for Operation Efficiency Analysis and Optimization of 220kv Spare Transformer	95
<i>Chuansheng Luo, Lei Huang, Guangliang Zhang, Anrun Wang, Guanjun Song</i>	
Research on Secondary Circuit Identification and Path Optimization of Substation Based on Dijkstra Algorithm	101
<i>Zutao Shen, Chengtao He, Yongwei Tao, Libo Zhou, Dan Luo, Bin Xiao</i>	
Research on Spatial Layout and Load Optimization Algorithm of Electric Power Operation Equipment	106
<i>Kai Wei, Chen Yang</i>	
Intelligent Self-Calibration and Error Correction Algorithm of Transformer Equipment Sensor Based on Deep Learning	112
<i>Junkai Huang, Tao Yang, Qiang Fan, Xianmei Yuan, Shuzhou Xiao, Chao Zhao</i>	
Intelligent Assessment and Data-driven Modeling of the Insulation Performance of 220kV Fully Enclosed Isolators	117
<i>Haiming Li, Yuandong Wang, Jiaming Dai, Xianglai Yang, Zhicheng Hou, Xinyong Su</i>	
Design of Intelligent Scheduling and Control System for 220kV Fully Enclosed Isolation Switch Based on Multi Objective Optimization Algorithm	122
<i>Haiming Li, Qianli Wang, Weiming Liu, Yuandong Wang, Bin Liu, Zhaolei Zhang</i>	
Research on Fault Prediction and Intelligent Diagnosis System for 220kV Gas - Insulated Disconnecting Switches Based on Machine Learning	128
<i>Jiaming Dai, Haiming Li, Junshuang Zhang, Yong Zhang, Xueli Yang</i>	
Vibration Characteristics Analysis and Fault Traceability of 220kV Fully Enclosed Isolation Switch Driven by Fusion Algorithm	134
<i>Junshuang Zhang, Haiming Li, Hongwu Guo, Qianli Wang, Jun Hou</i>	
Intelligent Sensing Technology for the Operation Status of 220kV Isolation Switches Based on Big Data Analysis	140
<i>Yang Cao, Junshuang Zhang, Xianglai Yang, Qianli Wang, Jun Hou, Ze Han</i>	
Research on Energy Efficiency Modeling and Control Algorithm of 220kV Fully Enclosed Isolation Switch for Green and Low Carbon Development	147
<i>Yuandong Wang, Yang Cao, Guoyan Zhang, Haiming Li, Heguang Song</i>	
Research on Intelligent Identification and Early Warning Model of Substation Hidden Dangers Based on Collaborative Perception of Heaven and Earth	153
<i>Yuan Fu, Lintao Shi, Changhao Yu, Lei Cao, Yang Su, Zhi Yang</i>	

Deep Learning Method for Fault Location and Quick Repair of Broken Strands and Wires in Distribution Network	158
<i>Xinwei Li, Lei Huang, Kai Yang, Wenju Cheng, Zhengchao Long</i>	
Research on Optimization Algorithm of Transmission Line Inspection Path Based on UAV and Satellite Cooperation	163
<i>Jinhu Liu, Lin Chen, Shuntao Huang, Xiao Zeng, Danbing Liu, Di Li, Yadi Wang</i>	
Timeliness Optimization Model of Distribution Line Fault Repair Based on Data Drive	169
<i>Qun Yu, Junwen Long, Kai Yang, Wenju Cheng, Ying Liu</i>	
Research on Multi-Scale Forecasting Model of Wind Power in Extreme Weather Based on Multi-Source Heterogeneous Data Fusion	174
<i>Xiaoli Zhu, Xuannian Lei, Haiyi Xiao, Hang Xu, Zhiyuan Zhu</i>	
Research on Data Model Construction and Simulation Optimization of Energy System Based on Digital Twinning	181
<i>Mengzhen Pan, Jian Chen, Zhengbin Qin, Shuyun He, Ying Yao</i>	
Application and Intelligent Decision Optimization of Multi-Source Data Fusion in Energy Digitalization Foundation Base	188
<i>Zhengbin Qin, Mengzhen Pan, Wuyin Zhang, Jian Chen, Wenjun Liu</i>	
An Access Control Method for Power User Data Based on Revocable Attribute Encryption	194
<i>Tao Dai, Hongliang Zheng, Chunyan Yang, Chuanmao Xu</i>	
Design and Efficiency Improvement Analysis of Automation Operating System in Electric Power Logistics Park	199
<i>Ke Lu</i>	
Simulation and Optimization of Temperature-Flow Coupling of Geothermal Energy Harvesting-Storage-Supply System Based on Digital Twin Models	205
<i>Shuai Ma, Ruihuan Wang, Qiang Zheng, Jiayun Wang, Jingwen Tie</i>	
Study on the Self-Convergence Construction Method of Digital Simulation Model for Geothermal Energy Extraction-Storage-Supply System	213
<i>Ruihuan Wang, Qiang Zheng, Wei Chen, Bo Ma, Shuai Ma, Feiyu Han, Hanyu Wang, Chen Wang</i>	
Research and Application of AI and Digital Substation-Based Monitoring Technology for Electricity Theft Prevention	223
<i>Xiaqin Yang, Yuan Chen, Wanting Zhu, Dongdong Deng, Pei Li, Haipeng Bi</i>	
Construction of an Intelligent UAV-Based Non-Contact Check the Electric Path Planning and Recognition Model for High-Voltage Transmission Environments	228
<i>Xiubiao Li, Xiaojia Chi, Gaohao Wen, Pai Liu, Qingfeng Han</i>	
Research on Digital Calibration System and Optimization Algorithm of Current Transformer for High Precision Measurement	234
<i>Gang Liu, Jiguang Xue, Wenyu Cheng, Xuliang Zhao, Zhibo Feng</i>	
A Novel Theoretical Line Loss Calculation Anomaly Data Recognition for Distribution Grids Based on Long and Short-Term Memory Networks and K-means++ Clustering	240
<i>Yun Zhao, Yuxin Lu, Xipeng Liu, Wenying Yao, Shan Cha, Zhuo Zhang</i>	

5G Slicing and TSN Integration Solution for Smart Grid	247
<i>Jialin Chen, Dekun Zhou, Liang Dong, Xi Li, Lei Tao, Tong Sun</i>	
Visualization Analysis of Sound Wave Interference through Computer Simulation	253
<i>Hui Meng, Yi Wu, Xinrong Guo, Huili Dai</i>	
An Artificial Intelligence-Based Security Risk Assessment Model for Power Systems	258
<i>Tao Dai, Chunyan Yang, Chuanmao Xu, Jiaxiao Meng</i>	
Research on Fast Judgment and Location Method of Power Failure in Distribution Network Based on Multi-Source Energy Metering Data Fusion	263
<i>Leiyang Zhao, He Cui, Xuan Kong, Fengze Li, Zhibo Feng</i>	
Research on decision-making model of transaction behavior between virtual power plant and main network based on high-frequency interaction	269
<i>Jing Yang, Tao Yu, Hong Zhao, Yupeng Huang, Weihua Weng, Yexiao Li</i>	
Real-Time Object Detection and Tracking Using Deep Learning in Autonomous Driving Systems	275
<i>Yejun Che</i>	
Application of Intelligent Control Algorithm in Insulation Bucket Processing of Flexible Air Supply Device	280
<i>Siyuan Weng, Haijin Quan, Jinhui Xu, Wei Zhao, Huan Liu</i>	
Research on Trusted Exchange and Data Traceability Mechanism of Health Information System Integrating Blockchain and Internet of Things	284
<i>Yanjuan Meng</i>	
Research on the Application of Radar Echo Prediction Algorithm Integrating Spatiotemporal Attention Mechanism in Severe Convective Weather Forecast	290
<i>Zhangtao Li, Jiang Qu, Wenlong Gong, Xue Wang, Mengwei Li</i>	
Near-field RCS Measurements: Based on ISAR Imaging with Scattering Center Feature Extraction	296
<i>Renfei Ning, Guoxu Feng</i>	
Construction of Energy Efficiency Scheduling Model of Smart Campus Wireless Network Based on Multi-objective Optimization	302
<i>Xiaojun Chai</i>	
Research on Network Attack Detection and Defense Model Optimization Based on Deep Learning	309
<i>Yiqing Chen</i>	
Application of Artificial Intelligence Techniques in Computer Vision and Networked Systems	315
<i>Hongzheng Shan</i>	
Research on RAG Enhanced End-to-end Intelligent Reasoning Algorithm for Real-time Decision-making	321
<i>Zhenming Deng, Wen Xiong, Haichuan Zhang, Fei Chen, Wenrui Chen, Xing Wang, Lu Yan, Lei Lu</i>	
Research on Self-Built Method of Dynamic Digital Twin Model of Distribution System for Smart Grid	327
<i>Guilin He, Min Lei, Lei Han, Peifa Shan, Ruipeng Chen</i>	
Real Time Perception Algorithm for Dynamic Scenes Integrating 3D Reconstruction and Visual SLAM	334
<i>Huimin Huang, Jiawang Liang</i>	

Application Analysis of Multi-sensor Fusion Technology in Mechatronics Fault Diagnosis	340
<i>Xiudan Kang, Hongchao Yu, Linlin Liu, Weiyin Wang, Hailong Wang</i>	
Research on Dynamic Digital Twin Modeling Technology of Smart Distribution Network Based on Cloud Edge Collaboration	346
<i>Min Lei, Guilin He, Ye Ouyang, Peifa Shan, Jiaqi Liu</i>	
Research on Path Planning and Obstacle Avoidance Control of 6-DOF Industrial Robot Based on Deep Reinforcement Learning	352
<i>Ruichao Li, Ying Wei, Yanru Sun, Qiushi Chang, Hongmin Li</i>	
Research on Intelligent Storage and Structure Reconstruction of Multi-source Heterogeneous Data in Power Grid Based on Graph Neural Network	358
<i>Bin Liu, Yong Feng, Yang Yu, Gang Luo, Chunyang Zhang, Jianbo Lu</i>	
Research on Degradation Modeling and Remaining Useful Life Prediction Algorithms Based on Electrical Equipment Condition Data	364
<i>Chong Liu, Guoqing Kan, Ping Tang</i>	
Research on Intelligent Identification Method of Structural Anomalies of Submarine Cable Channel Based on Deep Learning and Multi-Source Fusion	371
<i>Jinyao Liu, Boqing Li, Xiaoqing Lin, Zhijie Zeng</i>	
Research on Autonomous Navigation and Accurate Operation Strategy of Target Area of Wall-Climbing Robot Based on Image Recognition	377
<i>Qi Liu</i>	
Abnormal Communication Behavior Identification and Defense Model Based on Graph Neural Network in SCADA System of Power Plant	383
<i>Xuanyi Liu, Yiran Wang, Yunli Sun, Yang Dou</i>	
Research on Inference Optimization and Adaptation Techniques for Multimodal AI Models under Domestic Chips	388
<i>Xindai Lu, Peiqi Luo, Wenxue Cao</i>	
Research on Database Query Performance Optimization and Adaptation Models under Domestic CPUs	393
<i>Siqi Shen, Xuxiang Zhou, Jianhao Shao</i>	
Research on Industrial Equipment Recognition Algorithm Integrating Image Enhancement and Attention Mechanism	399
<i>Yanbo Wang, Xindai Lu, Chaonan Li, Jichen Li</i>	
Algorithm for Stable Gait Generation and Dynamic Balance Control of Humanoid Robot Based on Reinforcement Learning	408
<i>Ying Wei, Ruichao Li, Fengxiang Quan, Yanru Sun, Chongyan Pang</i>	
Construction and Optimization of Image Recognition Fusion Model for Multi-Device Collaboration	414
<i>Yuqing Xie, Xiaoke Xu, Tao Zhang, Wenxue Cao</i>	
Real-Time Risk Identification and Dynamic Warning Method for Cross-Channel Transmission Lines Based on Edge Calculation	421
<i>Rui Yang, Xunyun Liang</i>	
Research on Optimization Model of Edge Image Recognition Based on Lightweight Depth Network	428
<i>Jiaying Yu, Jiawang Liang</i>	

Recognition and Simulation of Animated Character Expressions in Complex Scenes Based on Machine Vision	434
<i>Aihua Zhang, Lu Yuan</i>	
Research on Intelligent Analysis and Attack Traceability Technology of High-Dimensional Alarm Log for Power Plant Operation and Maintenance System	440
<i>Xinqing Zhang, Xiaoming Zhang, Ping Chen, Fengye Feng</i>	
Fault Diagnosis and Rapid Isolation Method of Complex Power Grid Based on Deep Learning	445
<i>Liyun Pan, Lei Wang, Xinqiao Gu, Junxian Yan, Rui Ma</i>	
Multi-Parameter Feature Extraction and Fault Intelligent Identification Method for Secondary Cable Connection Performance in Substation	451
<i>Zhenhua Wang, Wei Liu, Guoyang Zhao</i>	
Research on Personalized Eyeball Structure Modeling and Parameter Optimization Algorithm for Refractive Surgery Planning	457
<i>Lang Wang, Zugu Lu, Yu Tang, Yini Lai, Mingyang Zhou</i>	
Research on Precision Prediction and Self-Correction Model of Multi-Sensor Fusion Electronic Assembly for Industrial Automation	463
<i>Qiang Wang, Zhi Di, Jianrui Hou, Heng Yu, Jiming Yang, Xinxue Wang</i>	
Research and Development of Personalized Sports Rehabilitation Feedback System Based on Human Motion Capture and AI Algorithm	470
<i>Qingman Wei, Boyang Li</i>	
Research on Automatic Recognition and Diagnosis Model of Tongue Image in Traditional Chinese Medicine Based on Multimodal Deep Learning	474
<i>Yifan Xu</i>	
Research on 3D Engine Construction Technology Based on Panoramic Image and Laser Point Cloud Fusion	480
<i>Lezhen Zhang, Shijin Xin, Jianyong Gao, Chengjia Bao, Zicheng Deng</i>	
Development of Intelligent Analysis and Decision Support Platform for Secondary Cable Connection Quality in Substation	486
<i>Mingming Zhang, Wei Liu, Fang Li</i>	
Design of Adaptive Impedance Control Algorithm for Underwater Manipulator Based on Environmental Interaction Modeling	492
<i>Xingchen Liu, Dong Zhang, Haonan Chen</i>	
Research on Foreign Body Image Recognition Technology of High Voltage Overhead Transmission Line Based on Faster R-CNN Algorithm	498
<i>Yige Chen, Ye Liu, Huirong Zhang, Zhiyong Chen</i>	
Research on Automatic Deployment and Intelligent Testing Framework of Autonomous Controllable Operating System for Power Energy System	505
<i>Xiang Lu, Yang Su</i>	
Research on Intelligent Diagnosis and High-Precision Prediction Algorithm of Oil-Water Well Production Data for Water Drive Development	511
<i>Kun Tian</i>	

Research on intelligent identification and traceability analysis of network intrusion behavior based on Multi-modal deep fusion model	517
<i>Yi Wang, Yang Gao, Sheng Yang, Wencheng Zhang</i>	
Intelligent Decision Model of Polymer Flooding Parameter Optimization and Injection-Production Strategy Based on Machine Learning	522
<i>Xu Yan</i>	
Research on Image Recognition and Data Optimization of Intelligent Management System of Power Warehouse Driven by Meta-Universe	528
<i>Yu Zhang, Qiang Guo, Rui Ding, Lei Yu, Xiaolei Tian</i>	
A Method for Assessing the Security Risks of the Software Supply Chain in the Power System Based on Triangular Fuzzy Entropy	534
<i>Hongliang Zheng, Zhijun Zhi, Tao Dai, Jiaxiao Meng</i>	
Research on Accurate Modeling and Scheduling of Safety Constrained Motor Combination Based on Swarm Intelligence Algorithm	539
<i>Yubin He, He Huang, Yaping Hu, Yongquan Nie, Hekai Xu, Yuwen Deng</i>	
Research on Power Management and Intelligent Scheduling Algorithm of New Energy Vehicles Based on Multi-objective Optimization	546
<i>Guizhi Sun, Junhong Xi</i>	
Design and Simulation Analysis of Load Transfer Schemes for Distribution Networks Based on Digital Modeling	551
<i>Yangzi Zhang, Zhao Chen, Zhenzhou Weng, Jiang Shang, Shiyu Chen, Guopei He</i>	
Research on Dynamic Simulation Algorithm of Hydropower System Integrating Physical Modeling and Data Driving	558
<i>Yulin Chen, Tianchen Li, Zihao Shi, Lei Huang, Zelin Wang</i>	
Optimal Configuration and Operation Strategy of Power Grid Relay Protection Based on Big Data Analysis	563
<i>Shichang Hou, Ming Jiao, Yuxi Wang, Liang Wei, Zhibo Yu</i>	
Research on Intelligent Sensing and Predictive Control of High-Frequency Trading Robot by Integrating Big Data Analytics	568
<i>Mingdi Jiang, Xintong Cao</i>	
Research on Modeling and Dynamic Response Optimization of Supercapacitor Backup Power System for Wind Power Operation Safety	574
<i>Bin Liao</i>	
Prediction Model of Tobacco Purity Combining Hyperspectral Technology and Machine Learning	580
<i>Yonggang Liu, Ziyu Liu</i>	
Performance Optimization Simulation of Vacuum Dehumidifier Based on Fluid Dynamics and Heat Transfer Model	586
<i>Yonggang Liu, Ziyu Liu</i>	
Balance Model of Source-Load Peer-to-Peer Power System and Its Application in Smart Grid	591
<i>Jiehui Shen, Wenzhe Huang, Limin Bu, Xingxing Zhou</i>	

Research on Hierarchical Architecture Design and Deployment Optimization of 5G Private Network in Pumped Storage Power Station	597
<i>Daochu Tang, Chen Wang, Wanqin Ding, Ruihuan Wang, Wendong Wang, Xin Chen, Xiaohu Li, An Song</i>	
Distribution Network Planning and Reliability Collaborative Optimization Considering Distributed New Energy	604
<i>Xiaobo Wang, Xiaoyuan Chen, Jing Mao, Xingxing Zhou</i>	
Research on Real-Time Fusion and Intelligent Analysis Algorithm of Heterogeneous Sensing Data in Construction Site	610
<i>Wanhui Zhang, Guangzhi Zhang, Weibin He, Yujia Chen, Lijuan Peng</i>	
Design of Signal Processing and Control Algorithm for Distributed Sensor Networks Facing Complex Environment	617
<i>Zijun Liu</i>	
Research on Modeling and Intelligent Analysis Method of Power Grid Multi-Source Data Fusion Based on Business Scenario Driving	624
<i>Li Chen, Shaobo Liu, Hao Yang, Qijuan Sun, Juntai Shi</i>	
Thermodynamic Analysis and Multi-Objective Optimization Design of Building New Energy Integration System	630
<i>Li Ye, Fangda Lin, Zhitian Kou</i>	
Research on Design and Performance Optimization of Drive System of Infinitely Variable Speed Motor Based on Fuzzy Control	636
<i>Huimeng Guo, Wei Zhao, Lina Sun</i>	
Production Command Decision Support System for Complex Urban Power Grid Based on Multi-objective Optimization Algorithm	641
<i>Xinge Hu, Mingyuan Shang, Shengya Qiao, Wangwei Ji, Xinru Zhao</i>	
Power Communication Authentication Scheme for Collaborative Integration of Space, Sky, and Earth	647
<i>Yuxiang Liu, Maozhi Xu, Jiakai Hao, Huixia Ding, Hongxi Zhou</i>	
Research on operator fusion and graph optimization technology of real-time video behavior recognition model based on NPU instruction set	653
<i>Jianxiang Luo, Qinghang Wu, Guisheng Zhang, Yefeng Xia</i>	
Design and Simulation of Multi-Objective Intelligent Optimization Model for Joint Operation of Reservoirs	659
<i>Zhe Song</i>	
Research on Fault Response Optimization and Adaptive Control Strategy of Power Metering System Based on Reinforcement Learning	666
<i>He Cui, Leiyang Zhao, Rundan Zhang, Xuan Kong, Liying Liao</i>	
Research on Multi-Service Access and Dynamic Scheduling Strategy of Power Communication Network Based on Edge Computing	673
<i>Fang Fang, Yang Yang, Guodong Zhu, Ying Guo, Ye Li</i>	
Research on Accurate Traceability and Prediction Method of Power Failure Events of Smart Meters Based on Spatio-Temporal Big Data	679
<i>Xuan Kong, Rundan Zhang, Leiyang Zhao, He Cui, Yunze Li</i>	

Research on Intelligent Modeling and Predictive Control Method of Force Behavior of Transmission Tower Based on Reinforcement Learning	685
<i>Wenbin Li, Yanting Feng, Yong Wang, Yadong Lv, Xiaokang Li, Qizhi Chen</i>	
Research on Fault Information Self-Learning Recognition and Edge Cooperative Research and Judgment Mechanism for Intelligent Power Distribution Terminals	691
<i>Yunze Li, Xuan Kong, Zhibo Feng, Leiyang Zhao, Simian Guo</i>	
Study on Anomaly Analysis of Electricity Metering Big Data and Evolution of Power Outage Patterns under Complex Operating Conditions	697
<i>Liyang Liao, Simian Guo, He Cui, Xuan Kong, Zhibo Feng</i>	
Research on Intelligent Energy Consumption Monitoring and Optimization Control Model for Multi-source Data Fusion in Sports Stadiums	703
<i>Yana Wang, Dongyang Si</i>	
Application of Multi-Objective Optimization Algorithm for Intelligent Distribution Network in Power Distribution	710
<i>Shijian Wang, Xiaopeng Cai, Zijie Wang, Li Ding, Chenyuan Xu</i>	
Research on Fault Prediction and Intelligent Control Strategy of Hydraulic Equipment Based on Edge Computing	716
<i>Jing Wang, Kun Wang, Jinyi Li, Lin Zhou</i>	
Research on 3D Terrain Modeling and Automatic Accuracy Evaluation Method Based on Aerial Tilt Photogrammetry	723
<i>Yang Fan, Jing Cong</i>	
Research on State of Health Evaluation Mechanism of Electrochemical Energy Storage System Based on Time Series Modeling and Deep Learning	728
<i>Hui Liu, Yanqiao Chen, Ye Tao, Xianwen Wang, Chu Wang</i>	
Research on anomaly detection and failure prediction model of lithium iron phosphate battery cluster based on consistency feature extraction	734
<i>Shuo Zhang, Wenbin Sun, Shikai Ye, Wenxian Lin</i>	
Design and Verification of Intelligent Scheduling Algorithm for Aeronautical Precision Hydraulic Parts Processing for Digital Workshop	742
<i>Ziyang Liu, Zhihua Wang, Shaohua Ma</i>	
Intelligent Layered Injection and Production Technology and System Control Strategy for Fault-Block Reservoirs	748
<i>Yanfen Yu</i>	
Parameter Self-Tuning Method for Electrical Automation Control Systems Based on Reinforcement Learning	755
<i>Kai Chen</i>	
Research on Accurate Valuation of Farmland Assets and Plot Identification Model Based on UAV Multispectral Images	761
<i>Li Lin</i>	
Research on Multi-Dimensional Anomaly Monitoring and Fault Location Algorithm of Distribution Network Based on Data Drive	768
<i>Pengtao Ma, Yi Liu, Chao Lu, Ning Li, Xin Li</i>	

Modeling and Optimization Control Method for Voltage Loss Reduction in Distribution Networks Based on the Characteristics of Distributed Power Source Access	774
<i>Jianyu Luo</i>	
Real-time Voltage Stability Evaluation and Hierarchical Control Model of Distribution Network for Large-scale Renewable Energy Access	780
<i>Zongxi Xie</i>	
Research on Immersive Reconstruction and Interactive Visualization System of Digital Cultural Heritage Based on AR/VR Technology	788
<i>Fang Lin, Zhiyue Ma</i>	
Data Privacy Protection and Security Access Control Mechanism in Cloud Computing Environment	794
<i>Xin Guo, Mingxing Zhu</i>	
Extraction and Feature Recognition of Gravity and Magnetic Anomaly Information in Gold Mining Belts Based on Multi-scale Wavelet Analysis	800
<i>Qun Liang, Peng Yang, Dong Li, Tao Zhang, Chengyuan Liu, Meiling Xu</i>	
Research on the Evolution and Technological Innovations of 5G Cellular Network Architecture Based on Digital Signal Processing	806
<i>Zhenxuan Xu</i>	
Research on Modeling and Optimization Algorithm of Soft Robot Perceptual Control System Based on Octopus Neural Structure Simulation	813
<i>Bingjun Zhao</i>	
Research on Condition Monitoring and Early Warning System of Hydraulic Machinery Based on Multi-Source Sensing and Digital Twinning Technology	819
<i>Tianchang Li</i>	
Design and Implementation of Intelligent Power Outage Pre-Scheduling System for Improving Power Supply Reliability	825
<i>Shuo Tan</i>	
Research on Behavior Pattern Recognition and Interactive Regulation of Air Conditioning Based on Big Data Analysis	830
<i>Maomao Ding, Zhongwei Cai, Tianpeng Xia, Lu Liu, Junxiang Duan, Jiamei Yan</i>	
Research on Load Forecasting Algorithm in Power Grid Investment Planning	835
<i>Xue Ding, Yangyang Luo, Hao Zhou, Zhe Chen, Hui Luo</i>	
Research on Intelligent Generation and Simulation Optimization of VR Scene Based on 3D Reconstruction and Deep Learning	841
<i>Cong He</i>	
Multi Objective Optimization Algorithm and Large-scale Data Model Analysis in Urban Power Grid Planning	847
<i>Shiwei Kong, Jie Han, Yi Qin, Zheng Zhang, YueXian Chen</i>	
Power Grid Investment Demand Forecasting Model Based on Differential Evolution Optimization Support Vector Machine	853
<i>Zhengxiong Long, Weifeng Hu, Yuchen Zhang</i>	

Algorithm Design and Application of Supply Chain Optimization for Power Grid Infrastructure Materials	859
<i>Pengyu Shi, Jinglei Huang, Kehui Cheng, Zhenyu Zhou, Jingliang Xie</i>	
Data Mining and Risk Early Warning Model Construction in the Process of Power Grid Investment Conversion	864
<i>Jing Xia, Zhaoxu Zhang, Nan Song, Po Hu</i>	
Research on Fault Diagnosis and Predictive Maintenance Algorithm of Complex Industrial System Based on Graph Neural Network	871
<i>Kongduo Xing, Yetong Wang, Haifeng Lu, Dawei Yun</i>	
Lightweight Reasoning Acceleration Algorithm of Deep Neural Network for Edge Computing Environment	878
<i>Kongduo Xing, Ting Liu, Yetong Wang, Dawei Yun</i>	
Design and Implementation of Multi Agent Autonomous Collaborative Control Optimization Model Integrating Reinforcement Learning	884
<i>Kongduo Xing, Yetong Wang, Bing Zheng, Haifeng Lu</i>	
Research on Power Grid Investment Decision Model Based on Multi-objective Optimization Algorithm	890
<i>Chen Ye, Han Jiang, Yaogang Luo</i>	
Power Grid Portfolio Forecasting Method Based on Improved Genetic Algorithm	897
<i>Chen Ye, Yaogang Luo, Han Jiang</i>	
Power Grid Investment Capacity Prediction Based on Grey Neural Network Combination Model	902
<i>Chen Ye, Qinyue Cui, Yining Liu</i>	
Research on Automatic Key Frame Extraction and Motion Capture Optimization Method for Animation Production Process	907
<i>Yong Zhang</i>	
A Power Grid Investment Demand Prediction Model Based on Data Mining Technology	912
<i>Zhipeng Zhang, Yunpeng Jiang, Xiaozhe Sun, Zhengqing Yang, Guoyu Xia</i>	
Displacement Measurement Method Integrating Kalman Filter and ViT Algorithm	917
<i>Chen Chen, Peng Li, Zhi Li, Peng Wu, Zuxiang Xu</i>	
Research on the Construction Method of Human Dynamic Behavior Modeling and All-factor Training Simulation System Combining Virtual and Real Interaction	923
<i>Kaiming Han</i>	
Research on Robustness Optimization of Machine Vision Defect Monitoring System Based on Spatio-temporal Redundancy Mechanism	928
<i>Ning Li, Yiyao Wang</i>	
Research on Multi-Scale Feature Enhanced Neural Network Model for Electromagnetic Compatibility Fault Diagnosis	933
<i>Ting Wang, Ning Li</i>	
Design of Multi-Agent Collaborative Algorithm for Mission Planning and Path Optimization of Aerospace Vehicles	940
<i>Wei Zhang, Ruijia Bao, Huan Liu, Taichao Luo, Tengfei Ji</i>	

Research on Risk Assessment and Control Path of Power Transmission and Transformation Project Settlement Based on Fault Tree Model	946
<i>Miaohuan Song, Xiaomei Zhang, Wenqin Ning, Xiyu Gu, Yanxia Zhang</i>	
Structure and Control Algorithm Optimization of a High-Voltage Switch-Driven Motor Suitable for 50Hz and 20Hz Dual Frequency Sharing	952
<i>Xiaofeng Wang, Congwei Yao, Baoying He, Dawei He</i>	
Design and Simulation of Long-endurance UAV Composite Power Energy Allocation Algorithm for Efficient Energy Utilization	958
<i>Hongfei Wu, Guanquan Wei, Yuhua Qian</i>	
Research on Identification and Evaluation Algorithm of Optimal Horizon of Oil and Water Wells Based on Multi-source Logging Data Fusion	964
<i>Wenjie Jing</i>	
Research on intelligent decision-making model of measure well selection and layer selection based on machine learning and production dynamic data	971
<i>Hao Wang</i>	
Distributed Intelligent Home Appliance User Privacy Protection and Data Communication Optimization Based on Federated Learning	977
<i>Xuerong Wang, Subin Wang, Jin Li</i>	
Research on Intelligent Modeling and Complex Relation Reasoning Algorithm of Large-scale Heterogeneous Data Based on Graph Neural Network	983
<i>Yushen Li, Jiawei Cui</i>	
Research on Security Policy Optimization in Access Control of Power Grid Enterprise Information Systems Based on a 4A Platform Using Deep Reinforcement Learning	989
<i>Jiangang Ye, Hua Fu, Hualin Huang, Yu Fan, Heng Xia, Yongtao Tian</i>	
Material Detection Algorithm Based on Image Recognition in Intelligent Workshop AI Control Platform	994
<i>Fanggang Niu, Yin Gong, Yong Xia, Wei Hu, Yan Zhou, Kaiwen Xue, Zhengquan Xie</i>	
Research and Application of Multi-Agent Cooperative Decision Algorithm Based on Deep Reinforcement Learning	999
<i>Hongyi Hao</i>	
Model for Identifying Multiple Fault Types in Rotating Machinery Based on Data Fusion of Multi-Sensor Vibration Signals	1005
<i>Chongnan Tang, Hailin Miao, Yahui Yu</i>	
An Intelligent Information Sharing Method for Distribution Lines Based on Association Rules	1011
<i>Gao Yuan, Li Bingsheng, Hou Xiaoning, Zhong Xiancheng, Zhang Jin, Lin Bin</i>	
Research on Hidden Danger Prediction of Power Transformer Based on TabTransformer	1017
<i>Xi Song</i>	
Research on Multi-modal Visual Embodied Intelligent Navigation Algorithm for Complex Environment Perception	1024
<i>Yingying Li, Qiuxue Ouyang, Chaojie Wang, Jian Tang, Zengbin Wang</i>	

Research on Automatic Classification and 3D Modeling of Urban Road Point Clouds Based on AI Segmentation Algorithm	1031
<i>Tianyi Zhao</i>	
Dynamic Prediction and Application of Carbon Emissions of Power Grid Enterprises Based on Time Series Deep Learning	1037
<i>Yuan Zhang, Shu Xia, Peng Chen, Li Lan, Yanyuan Qian</i>	
Real-Time Data Modeling and Anomaly Identification Method of Terminal Battery Digital Monitoring Device for Smart Grid Application	1042
<i>Huixuan Zeng, Xuzhao Lin, Fang Zou, Xiaoqing Su, Xiaotong Zhang, Jiawei Ren</i>	
Design of on-Line Monitoring System for Dielectric Loss Parameters of Oil-Immersed Capacitors and Optimization of Deep Learning Algorithm	1048
<i>Xu Mengyi, Guo Jiang, Huang Xiang, Wu Biao</i>	
A Measurement Inaccuracy Monitoring Method of Electricity Meter Based on Whole-Box Measurement	1055
<i>Guangyu Liu, Yu Dai, Jianjun Zhang, Lin Gao, Hui Zhao, Baochan Huang</i>	
Dynamic Behavior Measurement and Feature Recognition of Subway Vehicles Based on Multi-Sensor Fusion	1060
<i>Shen Zhan, Wei Xue, Jiancai Zou</i>	
Development and Application of Dynamic Gauge Testing System for Pantograph of Metro Vehicles Facing Complex Working Conditions	1066
<i>Jiancai Zou, Wei Xue, Shen Zhan</i>	
Technical Research on Improving the Accuracy of Micro-Model in Carbon Emission Monitoring by Using Deep Learning Algorithm	1072
<i>Wenbo Zhang, Dongxu Liu, Rong Yang, Jun Wei, Nan Zhang</i>	
Research on Green Electricity Price Forecasting Model of New Energy Spot Market Based on LSTM and Reinforcement Learning	1078
<i>Ruxue Jing, Yang Zhang, Xiuxiu Li, Liyun Li, Xia Zhang, Yuehua Li, Yongxiang Li</i>	
Architecture Design and Performance Evaluation of Distributed Power Monitoring Visualization System for New Energy Station	1085
<i>Jun Wei, Hailong Yang, Wenbo Zhang, Hua Wang, Rong Yang</i>	