

2024 5th International Conference on Mechatronics Technology and Intelligent Manufacturing (ICMTIM 2024)

**Nanjing, China
26-28 April 2024**



**IEEE Catalog Number: CFP24FZ3-POD
ISBN: 979-8-3503-6327-2**

**Copyright © 2024 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP24FZ3-POD
ISBN (Print-On-Demand):	979-8-3503-6327-2
ISBN (Online):	979-8-3503-6326-5

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

CURRAN ASSOCIATES INC.
proceedings
.com

Table of Contents

Research on the Application of Artificial Intelligence in Equipment Manufacturing Yinggang Zhang, Weiyi Xia, Tongwen Yuan	1
Construction and Research of Intelligent Manufacturing System Components Based on Agent Concept Feifei Liu, Yikai Huang, Zhengyu Li	10
Splicing Design Method and Accuracy Analysis of the U-shaped Frame Jingyu Han, Xiangyu Li, Meilin Xie, Wei Hao, Xuezheng Lian, Jie Wang, Wei Song, Ping Ruan	15
Design and Optimization for Three-Degree-of-Freedom Vibration Systems with Viscous Damping Zhenli Zhang, Hanbei Guo, Xuesong Yang, Bo Xiong	20
Research and Design of Control System for Nuclear Track Membrane Wastewater Treatment Yunjie Li, Dan Mo, Jinglai Duan	25
Design of Mecanum Wheel-based Intelligent Stacking AGV Using Kalman Filtering Algorithm Sitong Chen, Jiaheng Liu, Xinyan Yin, Mengxuan Li, Lei Bi	29
Research on Intelligent Selection of Hydraulic Support for Gently Inclined Comprehensive Mining Face Based on PSO-BP Neural Network Yue Wu, Guoping Li, Zhiwei Zhang, Longlong He	34
A Novel Two-axis Lorentz Actuator: Parametric Design and Analysis Zhongxiang Yuan, Shuliu Zhou, Zhengguang Zhang, Cailin Hong, Ziyu Xiao, Xiaoqing Li	39
Modeling and Simulation Design of Single Crystal Silicon Growth by Czochralski Method Ruidong Xie, Wenle Ma, Zheqi Zhang, Pei Zhu, Yingmin Yi	44
Design of a Compact Rotational Compliant Stage with Two-stage Lever Amplification Mechanism Bingyu Cai, Mahmud Iwan Solihin, Xujin Lu, Zhigang Xie, Chaoran Chen, Defu Yang, Yawen Zhao	50
Model-based Automated Safety Analysis Method for Safety-critical System Xinyan Xu, Ran Wei, Haochi Wang	55
Forming technology and finite element analysis of continuous flexible anti-seepage wall Hao Wang, Songtao Li, Yuanxin Luo, Yang Luo	60
Asynchronous Controller Design for Markov Jump interconnected Systems with Output Quantization Wenxiu Yan, Liwei Li	65
Design of USV for autonomous recovery of UAV and AUV at sea Ennong Tian, Ye Li, Ao Li	70
Design and Simulation of Rogowski Coil with Pulse Compound Integrator Haowen Yang, Mingcheng Wang, Ran Wei	75
A Wide-Range Dual-Bridge Non-Isolated Three-Port Converter Based on P1S3 Architecture Zhongxian Wang, Tao Lian, Shuli Sun	80
Research on Product Modeling and Design Path Driven by Artificial Intelligence Based on Kansei Engineering and TOPSIS Lei Yong	84

Calculation and Analysis of Influencing Factors of Oil Friction Loss in Submersible Motor	90
Yang Chu, Peng Zhou, Yunlong Peng, Yanliang Xu, Changhu Wang, Yong Zhou	
Development of a Distributed Control System Based on PROFINET for SINUMERIK ONE	94
Wenbo Yang, Fenghu Pan, Song Jin, Jinfeng Li	
Joint Optimization of Maintenance and Production Scheduling for Multi-component Systems	99
Ming Chen, Yu Kang, Pengfei Li	
Optimization and Simulation of Roller Leveler Frame	104
Xinqin Wang, Chunkuan Du	
Research and Application of Numerical Batching and Mixing Equipment	108
Xiangli Lin, Jinjian Yu, Ruikun Pang, He Liu	
Development and Verification of Thrust and Torque Integrated Instrument for Ship Model Shafting	113
Yongshun Wu, Qixin Liu, Xiaokui Zhou, Sujun Yang, Jiacheng Shen, Xiaochao Zhao	
Design and Implementation of a Python-based Software for High Field Magneto-Imaging System	118
Xiaoqing Gongye, Xinyu Liu, Mahmoud A. Khalifa, Jinsheng Wang, Xinchun Zhang, Zhigao Sheng	
Principle and Design of small Power Claw-Type Bearingless Permanent Magnet Slice Motor	122
Jinshuai Zhen, Yanliang Xu, Wenjing Zhang, Mingming Ding, Daqian Hao, Yang Chu	
A Novel MMC Circulation Suppression Control Strategy under Asymmetric Bridge Arm	126
Guanyu Yue, Hongxiang Zhao, Xuanyu Wang, Rui Du	
Design of Remote Diagnosis System for Starting Performance of Gyro Compass Based on C/S Mode	131
Genzheng Nie, Qiang Zhang, Shaoyi Guo, Shuhao Zhang	
Non-smooth Dynamics Analysis of a Variable Topology Mechanism with Two Topologies	137
Ruihai Geng, Gang Tian, Bohan Jin, Yushu Bian	
Innovative Design of Self-Propelled Forage Harvester Based on Evolutionary Tree	141
Haishu Wang, Zhiyong Yue, Jiamiao Yu, Fuling Wang	
Analysis and Optimization of Projectile Structure of Micro Electromagnetic Launcher Based on Scenarios	146
Yang Wu, Yu Zhou, Hang Yang, Guowei Li, Weifeng Zhu, Chunfa Zhang	
Four-quadrant Key Circuit Design of Electric Vehicle Wireless Charging System	152
Chuan Yang, Qiuyan Ning, Fengjiao Luo, Wenge Huang	
Research on Temperature Field of Distribution Transformer Based on Distributed Optical Fiber Sensing Technology	156
Feng Xue, Xiangnv Wang, Haobo Liang, Zhilin Yin, Mincong Ye	
Sensorless Control Strategy of Switched Reluctance Motor Based on Inductance Decrease Region	161
Wenchao Zhang, Fuyin Ni	
Study on AC Asymmetric Fault Control Strategy of MMC-HVDC Based on CRC and PI-IVPI Bridge Arm Current Decoupling	165
Tong Xv, Xue Wang, Hang Li, Xin Li	
Design of Tunneling Magnetoresistive Effect Current Sensor for Power Cable Sheath Current Measurement	176
Zhengyong Hu, Wenrong Si, Lv Cui, Zhiya Niu, Hui Huang, Sen Qian	

Multi-objective Optimization under Electromagnetic Launch System	182
Rui Zhu, Weidong Xu, Peizhu Liu, Xuzhe Xu, Wenyi Ye	
Design and Experiment of Thyristor Drive Circuit for CRATF Superconducting Magnet Power Supply	187
Wenhao Li, Yalong Yang, Li Jiang, Ge Gao	
Enhancing Temperature Adaptability for Airborne Equipment in Non-Pressurized Cabin: A Methodological Investigation	193
Yuanhao Li, Duxi Liu, Haoqiang Wang	
Topology Optimization of the Gearbox Shift Fork Based on the Variable Density Method	199
Ziwen Wang	
MMC Capacitor Voltage Equalization Control Method for Cyclic Conduction of Submodules	204
Baifeng Liu, Jun Liu	
Research on the Energy Harvesting Coefficient and Near Wake Flow of a Dual Vertical Axis Wave Current Coupled Power Generation System	209
Aiping Wu, Tianli Ma, Shiming Wang, Chengling Ding, Boting Liu	
Overload Capability Design of MEMS Polycrystalline Silicon Nano-Diaphragm Pressure Sensors	214
Fumin Xiong, Yuxin Xi, Zhangbin Feng	
Active Disturbance Rejection Control Of Permanent Magnet Synchronous Motor Speed Control System Based On Improved Fal Function	219
Minyi Jiang, Jun Liu	
Reinforcement Learning based Anti-UAV Three-dimensional Pursuit-evasion Game for Substation Security	224
Qingxue Dong	
Harmonic Analysis of the Power System of a Certain Icebreaker Research Ship	228
Junqi Shi, Yilong Zhou, Jiaming Liu, Yu Li	
Intelligent Intake and Fuel Constant Temperature System for Mine	235
Jiangpeng Fan	
A Method for Adjusting the Resistance Size in a Negative Feedback Circuit Through Process	239
Xiaoping Xu, Hongliang Fan, Li Wang, Huihui Wang, Wenyuan Fang	
Study of Current Prediction Control for Permanent Magnet Synchronous Motors with Parameter Mismatch Consideration	244
Mengyuan Shu, Min Wei	
A CBCT Beam-hardening Artifact Correction Method based on Optimal Filter Material Selection	248
Chang Liu, Yu Han, Xiaoqi Xi, Zhicun Zhang, Lei Li, Bin Yan	
Model Predictive Current Control of Permanent Magnet Synchronous Linear Motor Based on Sliding Mode Observer	252
Hui Zhang, Zhongcui Miao	
Research Progress and Application of Multi-Sensor Data Fusion Technology in AGVs	256
Chuan Huang, Zhiyong Ma	
Identification of Low-Voltage Distribution Substation Based on DTW Method	262
Guocheng Li, Long Ma, Cong Wang, Zeguangu Lu, Guorui Hu, Zhimin Li, Haichao Cui, Jiakun Lei	

A Compound Virtual Synchronous Machine Strategy for Low Voltage Ride Through	266
Longfei Mu	
Frequency Maximum Deviation of a Damped Power System Disturbance Based on a First-Order Governor Model	270
Xingyuan Wei	
Research on Extension of Stability Domain of Converter Parameters Based on Voltage FCS-MPC	274
Xiping Bao, Guifeng Wang, Yi Wang	
Analysis of the Forced Vibration of the Flexible Wheel of the Electromagnetic Harmonic Movable Tooth Transmission System	280
Yubo Ren	
Non-regenerative Braking Strategy for Capacitor-free IPMSM Driver Considering Energy Dynamic Balance	285
Jian Yang, Chenyue Xu, Jingyang Zhou, Jinghang Xie, Xiangyang Liu, Yuanming Zhang	
Linear Regression-Based Dead-Time Identification Strategy for PMSM Using Static Voltage Injection	291
Zhenyu Liu, Jingyang Zhou, Jian Yang, Chenyue Xu, Songlin Gao, Lingjun Lu	
Power Compensation Control Method for a New Type of the Three-Phase Cascaded PV System under Shadow Conditions	297
Yu Cheng, Xuanyu Wang, Rui Du, Yajie Shen	
Thermal-stress-sag Coupling Power Flow Calculation and Safety Assessment of Overhead Line under Extreme High Temperature Environment	301
Zonglong Li, Honghan Li, Daojun Song, Shumao Yang, Juan Tang, Jian Hu	
Electromagnetic Design and Analysis of Permanent Magnet-Assisted Synchronous Reluctance Motor	306
Benqing Lv, Yinhang Ning, Zhihao Huang, Longlong Fu	
Research on Load Distribution Control System for Multiple Asynchronous Motors Based on Variable-Frequency Regulating Speed Technology	310
Ziqian Zhang, Jianzhi Liu, Yuan Li, Chengyuan Zheng, Changning Ma	
On-machine Wear Measurement for Milling Cutter Based on Machine Vision	314
Jiarui Yu, Tao Zan, Weibo Liu, Yikun Li, Junxi Peng, Qichang Lei	
Finite Element Analysis and Experimental Validation of 72000kN Vibration Isolation Device Testing System	319
Tongxin Xu, Pengju Li, Shuai Huang, Jixiang Zhang, Yongmei Li	
Research on Triple Distance and Triple Velocity Measurement Methods for Laser Trackers	325
Fei Lv, Chang'an Hu, Jiangang Li, Hongwei Jing	
Hot Rolled Strip Deviation Detection Based on Improved YOLOv5	331
Xiaoyan Zhu, Xin Wan	
Research on Valves Fault Detection Method Based on Characteristic Parameters	336
Shun Yang, Xinhai Yu, Ge Yu	
Motion Simulation and Optimization of LED Chip Scanning and Positioning Based on NX MCD	345
Zhengyu Li, Fifi Liu, Yikai Huang, Jianwen Zhang	

Bearing Fault Diagnosis Based on the Improved Residual Network	350
Xinming Liu, Guangci Shi, Wei Li, Jianguang Ji	
Ship Attitude Prediction Based on VMD-PSO-LSTM	355
Yichen Guo, Wenlin Yang, Anri Hu, Xin Tan	
A Photovoltaic Panel Defect Detection Method Based on the Improved Yolov7	359
Hongzhi Liu, Fenghe Zhang	
Analysis and Compensation of Reverse Clearance of Feed Axis of Pipe Bender	363
Yiqing Wu, Bing Li, Liangyou Li, Yang Shen, Qingzhu Zhang, Ting Wang	
High-speed Elevator Car Full-Band Noise Prediction Method Based on FEM-BEM and SEA	367
Gang He, Feiyu Zhu, Qiyong Hu, Yuan Ning, Jinhao Sun	
Support Segmentation Based on the Slice for Ceramic Stereolithography	373
Yizhe Yang, Bingshan Liu, Kaixiang Zhang, Gong Wang	
Application of Laser Ultrasonic Detection Technology in Thin Metal Plate Weld Detection	380
Miao Lou, Yanxia Li, Junlan Chang, Hongbo Tao, Jinqiu Deng	
A Parameter Optimisation-Based Fault Extraction Method for MNAD Rolling Bearing	384
Xuefeng Mao, Chao Jiang	
Research on the Method of Universal Forklift Pallet Detection and Pose Estimation Based on Visual and 3D Point Cloud Fusion	388
Jingxin Gu, Hongchao Song, Chuanwen Li, Senqiang Zhu	
Research and Analysis on Prediction of Welding Deformation of Flange Plate of Loading Wheel	395
Lina Li, Yuanhui Hao, Hongchang Sun	
Fast-response and Broadband Laser Detector Based on the transverse Thermoelectric Effect	403
Xi Chen, Bowan Tao, Ruipeng Zhao, Kai Yang, Yudong Xia	
Data Anomaly Detection in Power System State Estimation Based on Support Vector Machine	407
Jiahui Guo, Bingqing Nie	
Initial Position Detection Strategy for PMSM Based on Improved Gradient Descent Algorithm and Elliptical Excitation Voltage Injection	412
Jian Yang, Jinghang Xie, Jingyang Zhou, Huatong Pang, Yaying Wang, Tianwei Liang	
Nonlinear Identification of Double-Bolt Connected Beams Based on the Valanis Model	417
Yufei Xue, Yongpeng Chu, Ran Chen, Xin Xu, Guorong Mi, Lu Yang	
Research on Fault Diagnosis Method for Power Transformers Based on Unbalanced Data Driving	421
Zhihao Wang, Suxiang Yang, Yongdong Xiong, Yuchong Zhu	
A Multi-parameter Optimization Setting Method of Reactive Power Control for Fault Recovery Process of Doubly-Fed Wind Farm	425
Qiang Xiao, Shiling Zhang, Fan Ye, Jungang Wu, Lu Xie, Jian Hu	
The Method of Series Arc Fault Detection and Line Selection in the Frequency Converter Load Circuit	430
Zhangxuan Yu	
Real-time Driving Ability Prediction Model Based on GWO-LSTM	434
Yongqing Chen, Yangyang Xia, Jiajia Chen, Jie Chen	
A Novel Control Method for MMC-HVDC under Wind Farm Integration	438
Li Ding, Yajie Shen, Hongxiang Zhao, Xuanyu Wang	

A Novel Graded Pressure Equalizing Control Strategy for MMC Submodule	442
Liren Zhou, Rui Du, Yajie Shen, Hongxiang Zhao	
Research on Fracture Analysis of Tobacco Machinery Bearing Based on Finite Element Analysis	446
Kaigang Li, Quanhai Zhao, Li Wang	
Intelligent Crane Safety Monitoring System Driven by Millimeter Wave Radar Waves and Machine Learning	450
Sijun Tang, Jinsong Dai, Yuzhou Chen, Songyao Xing	
Research on Force/Position Hybrid Control Method for Cooperative Polishing of Dual Robots Based on Adaptive Impedance	457
Xiaoyan Jiang, Zhen Zhou	
Study on Model-Based Identification Method of Machining Part Fabrication Features	463
Haijun Yin, Jiahui Li, Yuning Wang, Tuanwei Wu, Jianguang Liu	
A Novel Deformable Wheel-leg Robot Design and Simulation	468
Zicheng Song, Xiaoqing Zhu	
Research on grinding parameters for machining spiral grooves on solid carbide end mills using an arc-shaped edge of the grinding wheel	474
Ruitang Ma, Junmin Zheng, Qiuyu Jiang, Hepeng Huang	
Integrated Air-Ground Fire Operation System	479
Meiqi Zeng, Zhoutao Bi, Jiaming Chen	
Motion Control Study of a Quadruped Robot Based on Gazebo	488
Tong Gong, Nainjian Chen, Congzheng Gao, Guangyue Xu, Chenjia Luo	
Research on Path Planning of Inspection Robots for Epidemic Prevention	493
Chunmei Zhang, Bin Zhai, Long Ding, Ziqi Liang	
Autonomous Mobile Robot Path Planning Based on Improved DWA for Following Human Inside Staircase	498
Junqiang Li, Zhiang Chen, Yongchao Zhong, Juan Wang	
Design and Analysis of Robot Variable Stiffness Dual-Mode Actuator Based on Magnetorheological Fluid	505
Guangyue Xu, Nainjian Chen, Chenjia Luo, Tong Gong, Congzheng Gao	
Research on the Online Mobile Machining Equipment and System for Hydroelectric Generator Rotor Flange End Face	510
Chuanshi Cheng, Leifeng Lu, Zaiming Geng, Weidong Chen, Hongshen Zhao, Ming Ma	
Real-Time Trajectory Planning for UAVs Perching on the Time-Varying Attitude Moving Platform	516
Xin Dong, Zhan Tu, Daochun Li, Jinwu Xiang	
Optimization of Active Disturbance Rejection Control Parameters for Spacecraft Docking in Approach Phase	520
Xiaoguang Zhu, Qiyang Jiang, Weichang Xu, Jing Luo, Zhiqiang Chang	
Application of Improved SA-GA-BP in Structural Optimization of Expansion Device	526
Jinfei Cao, Jing Chen, Jianlong Xu, Zhiguang Bao, Wei Deng	
Performance Verification of Transcranial Magnetic Stimulation Robot Based on Spatial Feedback Control Model	532
Chaofu Xu, Jingna Jin, Xin Wang, Zhipeng Liu, Tao Yin, He Wang	

Current Status of Bridge Cable Climbing Robot Technology and Design of Cable Corrosion Detection Device	542
Li Bian, Wanli Yang, Xia Xie, Faming Huo, Dexiang Kong, Meng Zhou, Yanyan Huo, Hao Zhang	
Advisor-based Modeling and Simulation of Hybrid Electric Vehicle	548
Xianguo Huang	
Synchronous Jacking Control Method of Multi-Electric Cylinder based on Multivariate Synchronization Error Coupling	554
Pengpeng Liu, Sinian Song, Gangfeng Deng, Juan Chen	
Experimental Platform Design of Robotic Flexible Handling System with Vibration Suppression Function	559
Yufei Liu, Yangyang Chen, Jinyong Ju, Chuanhao Shao	
Research on a New Type of Three-Axis Precision Casting Stainless Steel Vacuum Mud Refining Machine	563
Haojie Yao, Sisi Hu, Jincheng Qiu, Yutong Xu, Yinglin Liang, Bojin Xie	
Design Methodology of a Flexible Contour Tracing Mobile Welding Robot for Complex Surface Welds	569
Shuyan Yao, Long Xue, Jiqiang Huang, Ruiying Zhang	
Analysis of the Influence of Track Spectrum on the Secondary Suspension of Heavy-Duty Locomotives	575
Shuang Liu, Peijing Cheng	
Lifetime Analysis of Anchor Bolt Torque Device Based on Workbench and nCode	580
Yanzun Zhang, Jiacheng Xiao, Yuxing Yin	
A Fabric Layer Grasping Robotic Hand Inspired by the Cooperative Mechanism of Human Fingertip-Fingerpad	585
Ziheng Wang, Lizhe Qi, Jiankun Ren, Xiaofei Gao, Yunquan Sun	
Development of Spraying Robot Based on Large Metal Tank Operation	592
Dingfeng Wei, Xin Du, Chenghua Wang, Wenqiang Wang	
Artificial Intelligence Applied to Control of DC Drives	598
Yiyang Cai	
Frequency response Analysis of Doubly-Fed Variable Speed Pumped Storage Unit Based on Simplified Mode	610
Chunyang Gao, Ye Ge, Xiangyang Yu, Haipeng Nan, Haoran Zhao, Luochang Wu	
Research on Object Localization and Grasping of Collaborative Robotic Arm Based on Deep Learning	616
Bin Lin, Denghua Fang	
Simulation Study on Postoperative Soft Robot for Moving	621
Minghang Yang, Chaofan Chai, Sheng Ling	
Active Noise Resistance and Time-Delay Control of Quadrotor UAVs Based on a Novel Composite Fractional-Order PID Controller	629
Zhiyuan Ning, Jingyu Wang, Yankai Feng	
Research on Secondary Equipment Configuration of Power System Suitable for New Energy Stations	636
Hailong Chen, Hongyue Zhang, Zhigang Xiao, Liming Xu, Zhe Zhang, Jianbin Hu, Qiaobing Zhang, Wei Huang, Ronghui Huang, Bin Chen	

Adaptive speed planning for Unmanned Vehicle Based on Deep Reinforcement Learning	642
Hao Liu, Yi Shen, Wenjing Zhou, Yuelin Zou, Chang Zhou, Shuyao He	
Research on Optimization Method for Storage Allocation of Multi aisle Warehouses	646
Jing Rui	
Mechanical Fault Diagnosis of Transformer Windings Based on VMD and DBO-SVM	651
Quan Zhou, Ziqing Ye, Sen Zhong, Yuru Pan	
Research on Manipulator Controlling based on Deep Reinforcement Learning	656
Qingling Geng	
Research on Flow Characteristics Optimization of Steam Turbine High-profile Valve Based on Piecewise Linear Representation Algorithm	660
Shuai Di	
Electronic IoT Technology and Cloud Computing in Intelligent Manufacturing Industry	664
Guannan Xiao	
Development of Robotic Arm Grasping Experimental Platform Based on Gesture Guidance	670
Zixuan Hui, Zhe Dong, Yue Yang, Zhao Gao	
Optimization Method for Joint Maintenance Work Order Scheduling of Power Grid Transmission and Distribution Equipment Based on Improved Bee Colony Algorithm	676
Guo Li, Pinlei Li, Qilin Li, Xujing Wu, Hong Sui, Beibei Zhou, Weijia Huang	
Multi-objective Optimization Design for the Carcass of Marine Flexible Pipes Based on BP Neural Network and Particle Swarm Algorithm	681
Shuting Liao, Hongfu Wang, Li Sun, Mingyu Zhang	
Bi-level Optimization Scheduling of Source Load Storage in Park Grids Based on niche APSO Algorithm	685
Peng Yu, Meng Guo, Zhaowei Ling, Shunjiang Wang, Qinghan Sun, Tianfeng Chu	
Optimization of Milling Paths for Engine Remanufacturing Cylinder Block External Attachment Mounting Surface Based on Improved Ant Colony Algorithm	691
Yu Zheng, Zhongdong Lu	
Construction of an Intelligent Fault Identification System for Power Grid under Adaptive Genetic Algorithm	697
Hangrui Cui	
Design and Implementation of Efficient Data Update for Graphical Display on Provincial Platform of the New Generation Substation Centralized Control System	702
Yiqiang Cheng, Wei Zhou, Yanghao Zhou, Yuying Lu, Hua Xu, Wenjing Chen, Yifan Wang, Guoqing Huang	
Leakage Verification and Analysis of the Fluid Swivel of the Single-Point Mooring System	708
Wei Lv, Chenxu Deng, Wensen Lin, Qi Gao, Shenghai Wang, Guangdong Han	
Finite Element Analysis of Key Components of a Turret in a Single-Point Mooring System	715
Qinghai Xiong, Minghui Zhao, He Pan, Qi Gao, Guangdong Han, Shenghai Wang	
Improving the Insulator and Self-Explosion Detection Algorithm of YOLOv5s	721
Hongzhi Liu, Minghui Fan	
Improved Cooperative Search Algorithm with Multi-Strategy Fusion	725
Kang Yan, Wei Cao	
Frontend Solutions for Micro Applications	729
Xiayu Cao, Rui Kang, Qi Zhang, Huafeng Zhang, Ningyuan Li	

Research on the Siting Selection Problem of Preposition Warehouse Based on Uncertainty Theory	737
Lijun Sun, Yufu Ning, Shuai Wang, Fengming Liu	
Research on Narrow Gap GMAW Side Wall Fusion State Identification Based on Arc Sound Signal	741
Jianlong Xu, Zhiguang Bao, Jinfei Cao, Wei Deng, Shaolan Zhu, Guangtian Yuan	
Analysis Method of Power Factor Fluctuation Based on Phase Compound Generator	746
Yu Liang, Jiaming Liu, Yun Dong, Kang Liu, Xin Wang	
Periodic Event-Triggered Sub-Optimal LQR Control of Disturbed System with a Dynamic Threshold Algorithm	752
Tao Huang, Mouquan Shen	
Research on DC Pantograph-Catenary Arc Recognition Method Based on PIO-LVQ	757
Diansong Du	
Temporal sequence Digital Image Correlation based on RNN-Conv3D	761
Hong Xiao, Yingxin Qin, Mingchi Feng, Kaixu Zou	
A Review of LSSVM Mathematical Models and Applications	766
Mengxiao Wei, Xinting Wang, Yuanyuan Fu, Duanyi Wang, Yuming Li	
Optimization of LSTM based on Gray Wolf Optimization Algorithm for Part Error Compensation	773
Chengju Yang, Wu Wang, Tao Lin, Shen Zhou, Ling Zhang, Junxiang Huang	
Optimization Algorithm for Data Transmission in the Vehicular Networking Based on Federated Edge Learning	778
Xuanjin Chen, Zhengwei Ni	
Trusted Power Load Management Communication Framework Using Topology Clustering and Blockchain Authentication	787
Ke Chen, Yinghui Liu, Zhong Zhuang, Huiling Su, Meimei Duan	
Design of LoRa-Based Environmental Monitoring Communication System	792
YanJun Wu, Qingpeng Xu, Xuehui Liang, Shaokun Geng, Hongpeng Chen, Lvshuo Wang, Yaolei Wang	
Lightweight Surface Defect Detection Algorithm Based on Improved YOLOv5	798
Kaijun Yang, Tao Chen	
Research on Harmonic Elimination Method for Permanent Magnet Synchronous Motors Based on Improved Particle Swarm Optimization Algorithm	803
Dongran Song, Huatong Pang, Jian Yang, Jingyang Zhou, Yifan Liu, Huarui Miao	
Distributed Energy Storage SOC Balancing Strategy Based on Adaptive Droop Control with Dynamic Correction Coefficients	810
Xiaoli Qi, Houlei Gao, Fang Peng, Rui Luo, Wanshuo Ma	
Obstacle Avoidance Planning Algorithm for Robotic Arm Motion Path Based on Fuzzy Variable Structure Compensation	814
Bin Lin, Shubin Hu	
Decentralised Event-Triggered Control of Multi-Agent Systems over Antagonistic Interactions	819
Dewei Pang, Che Xu	

Research on Intelligent Tool Setting Method for Complex Working Conditions Based on Combined Visual/Tactile Control	824
Song Gao, Sijie Cai, Zhihua Zhang, Pengcheng Guo, Heping Yuan, Shuixuan Chen	
Java Web Programming with ChatGPT	834
Muhan Guo	
Author Index	839