

# **2023 5th International Conference on Robotics, Intelligent Control and Artificial Intelligence (RICA I 2023)**

**Hangzhou, China  
1-3 December 2023**

**Pages 1-588**



**IEEE Catalog Number: CFP23BR9-POD  
ISBN: 979-8-3503-5796-7**

**Copyright © 2023 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:	CFP23BR9-POD
ISBN (Print-On-Demand):	979-8-3503-5796-7
ISBN (Online):	979-8-3503-5795-0

**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](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

CURRAN ASSOCIATES INC.  
**proceedings**  
.com

## Table of Contents

<b>Design of Autonomous Fire Hose Docking System for Intelligent Fire-fighting Robots</b> Zhiwei Yang, Fei Zhang, Weiwei Shang, Chenyu Chaoxia	1
<b>Research on mobile robot path planning based on A* algorithm with specific node priority</b> Zhenwu Zhou, Wenjie Yu, Ping Li, Hanbing Yan	7
<b>Dynamic simulation of magnetically controlled micro- and nanorobots in a blood vessel</b> Zhima Liu, Peng Yu, Meijuan Li, Xuebo Chen	12
<b>Multi-Ground-Robot System 3D Map Merging Method Based on Global Localization and Robust ICP</b> Siqi Yang, Hongshen Zhao, Xin Jiang, Jialiang Wang	18
<b>A Survey of Soft Robotic Grippers</b> Yuanzhu Wang, Zengcheng Chen, Grant Ty	23
<b>Trajectory tracking control based on improved nonlinear disturbance observer for mobile robots considering unknown skidding and slipping of wheels</b> Xiaoying Wang, Xiaoheng Chang	29
<b>Research on the Wall-climbing Robot of TOFD Inspection for Welding Seam of Spherical Tank</b> Xingji Du, Shuai Kong, Ping Tang, Yonggui Chen, Weican Guo	35
<b>Modeling and analysis of the segmented gas finger rehabilitation training actuator based on ABAQUS</b> Zhilin Zhang, Aldrin D. Calderon	39
<b>Development of a Novel Low-Cost Wheel-Legged Active Suspension</b> Shuaiyu Ding	44
<b>A nonsingular fast terminal sliding mode control scheme for Mecanum-wheels omnidirectional mobile robots</b> Zhuguang Li, Zhipeng Li, Zhe Sun, Bo Chen	50
<b>Robotic demonstration learning stability-accuracy trade-off: from an energy function learning viewpoint</b> Zhehao Jin, Andong Liu, Wenan Zhang, Li Yu	57
<b>The locomotion of a circular symmetrical wheel-foot integrated hexapod robot on complex terrain</b> Yichen Hu, Pinzhuang Long, Xiaoqing Zhu	66
<b>Thermal image based direct method visual-inertial odometry for robot navigation</b> Zhongyan Sun, Jing Yuan, Yang Wang, Guanming Qu, Hongzhi Yu	74
<b>Robot trajectory planning based on improved particle swarm optimization algorithm</b> Da Xu, Zhaoyang Wang	80
<b>Non-singular terminal sliding mode control based on finite-time extended state observer for robotic systems</b> Gengwei Dai, Guanfeng Zhufu, Shubo Wang	84

<b>Research on Automatic Parking System for Four-wheeled Logistics Robot</b>	90
Yongjie Zhang	
<b>A SAC-based deep reinforcement learning approach for autonomous underwater vehicle combat</b>	95
Kai Zhang, Yang Xu, Junjie Zhu	
<b>Autonomous Conscious Humanoid Robot System</b>	100
Zhijun Zhang, Haomin Yu, Wentong Wang, Yamei Luo	
<b>Wheel-Inertial Fusion Localization Strategy for Mobile Robots in Confined Pipeline Spaces</b>	108
Hongpeng Liang, Shuyue Zhang, Jianliang Mao, Chuanlin Zhang	
<b>A Mechanical Leg Compliant Control Scheme for Underwater Crawling-Swimming Robot</b>	114
Liwei Guo, Weidong Liu, Le Li, Jia Guo, Yu Wu, Jingming Xu	
<b>Trajectory control for wheeled mobile robots Robot with longitudinal slippage</b>	119
Tianlong Li, Mengwei Ren, Jian Du, Jianjun Bai, Tao Sun	
<b>Research on Robots Path Planning based on Recurrent Neural Network</b>	123
Weiming Liu	
<b>ROS2-based locator optimized autonomous navigation robot</b>	127
Haoxiao Liang, Yan Li, Qiuquan Guo, Jun Yang	
<b>Wheel design and motion analysis of a heavy-duty material handling robot</b>	131
Xiaoyu Shang, Yu Guo, Xiangbo Dai, Yiwen Zhang, Yue Liu, Yan Gao, Ergang Luo	
<b>Research on Computer Simulation of Pressure Difference of Tobacco Machinery Single-stage Axial Flow Vane Fan</b>	135
Dayong Guo, Yulong Zhang, Shaochun Fu, Pengyang Li, Shuai Guo, Dehai Zhang	
<b>Study on improved Dynamic Window Approach for mobile robot under narrow channel</b>	139
Xiru Wu, Kexin Tu, Junce Jiang	
<b>Aggregation Mechanisms in Federated Learning for Enhancing Robotic Visual Obstacle Avoidance</b>	143
Haizhou Zhang, Qianyu Cheng, Xiong Chen	
<b>Skid Steering Control and Wheel-centred Trajectory Planning for Wheel-legged Robots</b>	149
Weihe Hao, Lijin Han, Hui Liu, Xiaolei Ren, Jingshuo Xie, Jiayong Ma	
<b>Optimal Global Path Planning for Wheel-legged Robot on Mountain Terrain</b>	153
Yifan Zhang, Hui Liu, Lijin Han	
<b>Gaussian-based 3D-IoU for Multi-modal 3D Object Detection</b>	158
Ziyang Wu, Ziyu Wu	
<b>Research on trajectory planning of orchard robot</b>	163
Zhonghua Miao, Hao Lu, Nan Li, Dong Wang	
<b>Design of FIR Filter based on FPGA</b>	167
Yuan Li, Tian Jin, Yanrong Zhao, Xiaoxia Ma	

<b>Trajectory Tracking Method for Wheel-Leg Climbing Robot on complex facade</b> Jinpeng Zhao	171
<b>Design and analysis of flexible joints for robots based on module cells</b> Xiangyu Ma, Shuang Liang, Yang Li, Tingqiong Cui, Tianhong Luo	177
<b>Research on semantic segmentation model of codec lightweight road image based on deep separation and attention mechanism</b> Weimin Ma, Yian Su, Yong Lin	182
<b>An Improved A* Path Planning Algorithm for ROS Based Robots</b> Zhe Li, Mingchao Jia, Shengju Sang	189
<b>Design and Obstacle Crossing Research of Wheeled-Leg Hybrid Unmanned Robot</b> Bingwu Jia, Xiaolei Ren, Zishuo Liu, Xuanhu Zhao, Qingyi Shang, Hui Liu	195
<b>Design and Analysis of a Self-locking Passive Transformable Wheel Mobile Robot for Enhanced Mobility</b> Zimu Shi, Peng Liu	200
<b>Posture Detection Based on Kinect and YOLO Technologies</b> Yulin Li, Weijia Zhang, Haiping Ma, Feiyu Chen, Dongqin Sun, Xue Cheng, Yuan Zheng, Zhaowei Wang, Shaomin Cai	205
<b>Robotic Precision Force Control in Optical Machining A Fuzzy Admittance Approach</b> Yufan Liu, Jin Huang, Yong Jia, Liquan Zhou, Gang Li	210
<b>A Review of Underwater SLAM Technologies</b> Haibin Li, Guangwei Wang, Xiaohui Li, Yue Lian	215
<b>An Infrastructure Segmentation Neural Network for UAV Remote Sensing Images</b> Shuo Ma, Xiaokang Zhang, Haojia Fan, Teng Li	226
<b>Design and Implementation of an Automated Material Handling Robot</b> Feitian Zhu, Zhichao Feng, Chuang Zheng, Shijin Yan, Rongyao Ling	232
<b>CPG Motion Controller based on Van der Pol Nonlinear Oscillator for a Quadruped Robot</b> Fei Li, Long Pang, Tangbiao Dai	236
<b>Research on Pipeline Climbing Gait Control of Snake Robot Based on Compound Gait</b> Zhifan Liu, Wu Wei, Xiongding Liu, Siwei Han	240
<b>Consensus-Based Multi-UAV Partition Rendezvous in Formation</b> Zhaojun Wu, Yongfu Li, Hang Zhao	245
<b>Research on Improved ICP for 3D Reconstruction of Lightning Arrester</b> Senjian Lu, Beiping Hou, Qinlong Zhang, Yangbin Zheng, Fangkun Shao, Shihao Ge, Wen Zhu	253
<b>Hybrid Event-Triggered and Impulsive Control for Leader-Following Consensus of Second-Order Multiagent Systems with Switching Topologies</b> Zhuocheng Yin, Xin Wang	260
<b>Data-based Collaborative Control for Air Supply System of PEMFCs</b> Zhehan Guan, Chong Zhang, Xun Gong, Tiejia Zhang, Yunfeng Hu	269

<b>Predefined Performance Tracking Control Design for a VTOL Aircraft System</b>	275
Xiongfeng Deng, Binzi Xu, Liang Tao	
<b>Robust Fault-tolerant Event-triggered Model Predictive Control for IT2 T-S fuzzy Systems with Dynamic Output Feedback</b>	281
Rui Liu, Yueyang Li, Qin Zhang	
<b>Learning-Based Temporal Logic Control for Continuous POMDPs</b>	286
Keyi Zhang, Zhen Kan	
<b>Study on ultra-short-term prediction of solar irradiance based on multi-feature fusion</b>	293
Di Huang, Yumin Feng, Jianwei Gu, Chaoyue Zhu, Xixing Hu, Panxia Chen	
<b>Intelligent air combat maneuvering decision method of multi-UAV system based on TA-MASAC</b>	299
Kai Zhang, Yang Xu, Chaolun Liu, Yangyang Zhai	
<b>Finite-time bearing-based formation maneuver control of fixed-wing UAVs for dynamic target enclosing</b>	304
Yang Xu, Yangyang Zhai, Kai Zhang	
<b>Modeling and Simulation of the Suspension Guidance System for Passive Guided Maglev Trains</b>	311
Zejin Wu, Shangtai Jin, Chenkun Yin, Zeren Zhao	
<b>Adaptive Generalized Super-twisting Sliding Mode Control for PMSM Servo System</b>	317
Yiqing Ma, Shihong Ding, Gaoyong Xing, Yafei Chang	
<b>Based on Iterative Terminal Sliding Mode Aerial Manipulation Control</b>	322
Mengyang Zhao, Xincheng Tang, Shuguang Liu, Huaiyu Liu, Yueyuan Zhang	
<b>Research on collaborative control technology of multi-logistics vehicles</b>	328
Rong Qin, Yuxiao Tang, Xingzhi Lin, Xiang Pan	
<b>Scoring and Classification Multi-Functional Pose Matching Network Combining Alignment and Attention Mechanism</b>	332
Cheng Chen	
<b>Distributed Economic Model Predictive Control of Hybrid SNCR-SCR Systems</b>	337
Wenjun Zhan, Defeng He, Lianming Li	
<b>Multi-Kernel Maximum Correntropy Error State Kalman Filter For LiDAR-Inertial State Estimator</b>	341
Tingting Chang, Liang Zhao, Qingxi Zeng	
<b>Event-triggered <math>H_\infty</math> synchronization control for neural network with mixed delays and actuator saturation</b>	347
Mingyang Tian, Chunmei Duan	
<b>Reseach on Cooperative control of Intelligent Unmanned Cluster System</b>	352
Lei Meng, Peibei Ma, Chao Dong	
<b>Design and control of a New Coaxial Copter UAV</b>	356
Li He, Lihua Zhang, Zhiyan Dong	

<b>Resilient Control Strategy for Seaport Microgrid Against False Data Injection Attacks Based on Interactive System</b>	360
Kai Ma, Qiuhan Cao, Peng Zhao, Jie Yang	
<b>UAV formation centralized control method under cooperative flight missions</b>	366
Xiaoying Li, Huan Zhou	
<b>Interesting UAV Signal Acquisition Based on PID Algorithm</b>	370
Zhaoye Li, Lifei Man, Wenzheng Deng, Yu Wu	
<b>Intelligent human-machine interaction based on digital twin and virtual reality</b>	374
Chengyi Zhao, Xinhao Xu, Dongxing Zhang, Yimin Wei	
<b>A Path Planning Method for Comprehensive Area Coverage Utilizing Neuron Activity</b>	379
Jiacheng Luo, Hui Shun, Yuchi Hao	
<b>Experimental Study on Validation of Typical Human Machine Interaction Tasks Based on GOMS Modified Model</b>	384
Jinshou Shi, Linjie Li, Nan Chen, Chao Ma, Yaping Li	
<b>End-to-end UAV Intelligent Training via Deep Reinforcement Learning</b>	389
Xin Liu, Caizheng Wang, Qiuquan Guo, Jun Yang	
<b>Distributed collaborative control technology in multiple unmanned aerial vehicle operations</b>	393
Xin Zhao, Huan Zhou	
<b>Research on integrated environment of autonomous vehicle simulation based on Apollo</b>	397
Wenzhe Luan, Qingguo Ding, Yanxiu Wu	
<b>FA-YOLO: An Improved YOLOv5 Sonar Image Target Detection Model Based on Focal Attention</b>	402
Chengcheng Ding, Xiaoxia Liu	
<b>Lightweight Semantic Segmentation for Workshop Environments Incorporating Attention Mechanisms and Multiscale Features</b>	407
Yuyun Zhang, Hongbin Qin, Yiyang Wei, Xunjian Yang	
<b>A Multi-source Potential Field for Off-road Path Planning</b>	416
Yujia Xie, Shida Nie, Hui Liu, Lijin Han, Congshuai Guo, Fawang Zhang	
<b>Optimizing Cooperative Control Algorithms for Vehicles and Roads at Unsignalized Intersections Considering Communication Performance</b>	423
Xian Wu, Yiyang Wei, Lin Zou	
<b>Road Grid Segmentation in Desert with Geometry and Appearance Features</b>	429
Yinfeng Zhao, Tao Wu, Meiping Shi, Xueyan Liu, Xijun Zhao, Yanchen Hu	
<b>Research on unmanned surface vehicle collision avoidance based on deep reinforcement learning</b>	436
Hua Xiao, Qingnian Zhang	
<b>Deep Neural Network-Based Linear Quadratic Programming for Vehicle Path Tracking</b>	446
Mengyu Li, Hanbin Xu, Yiyang Wei, Aoyang Deng	

<b>Research on Underwater Weak Magnetic Target Detection Method Based on Unmanned Aircraft Cluster</b>	452
Xuemin Wang, Minghui Wu, Shuangyue Cui, Xiangyu Zhang	
<b>High Precision Control of Vehicle Based on Photometric Gaussian Direct Visual Servo without Global Positioning</b>	460
Mengjie Huang, Lei Ye, Junxiang Li, Fanxiao Yi, Qian Wang	
<b>RoboChat: A Unified LLM-Based Interactive Framework for Robotic Systems</b>	466
Guang Li, Xinzhe Han, Pengcheng Zhao, Pengju Hu, Lu Nie, Xiaoning Zhao	
<b>E-CVP-MVSNNet: Effective Hierarchical Multi-View 3D Reconstruction Based on light-weight network</b>	472
Xin Zhang, Hongbo Huang, Lu Lu, Xiaoxu Yan, Zhongman Bao, Qisheng Zhao, Meihui Gong	
<b>Active Sampling Planning by Attention-based Deep Neural Network for Environmental Field Mapping</b>	476
Kun Wang, Qingyuan Cheng, Xiaohang Lai, Teng Li	
<b>Fictitious Self-Play Reinforcement Learning with Expanding Value Estimation</b>	481
Chaohao Hu, Yunlong Cai, Weidong Li, Hongfei Li	
<b>A tensegrity robotic fish driven by a sliding crank-pendulum mechanism</b>	489
Lulu Han, Zhigang Wu, Jiahui Luo, Xiaoming Xu	
<b>A Hybrid Fault Diagnosis Method for Rolling Bearing Based on Attention and CNN</b>	494
Songtao Wang, Qianlong Liu, Jun Li, Kun Liang, Hui Cai, Hangwei Tian	
<b>Improved Residual Network and LSTM Hybrid Model based Tool Health Monitoring</b>	499
Qingchao Bian, Cunsong Wang, Cuimei Bo, Hao Peng	
<b>Classification Study of Collapse Accident Potentials Based on BERT Modeling</b>	504
Yuan Shen, Yifan Wu, Shuling Gan	
<b>Energy Consumption oriented Dynamic Flexible Job Shop Online Scheduling with GPHH</b>	508
Binzi Xu, Chun Wang, Dengchao Huang, Xiongfeng Deng	
<b>Insider threats risk warning and traceability based on user behavior entity analysis and knowledge graph</b>	513
Qi Ji, Xiaoshuang Xu, Chao Shen, Hongkai Xue, Yuhang Ma, Xiang Qiu	
<b>A Compensation-Based Polynomial Fuzzy Fault Detection Method for Single-Link Rigid Robot System</b>	519
Jingyu Ding, Jinyong Yu, Yu Liu, Xuebo Yang, Siyang Zhao	
<b>End-to-End Autonomous Driving Decision-Making Solution based on Pri-TD3</b>	525
Tao Xu, Qiang Wang, Yongyi Yang, Jiaxu Meng, Yindong Wang	
<b>Meshing Statics And Modification Analysis Of Spur Gear Based On ABAQUS</b>	530
Shengmao Zhou, Xin Yin, Hongshuai Hu, Guanglu Yang, Shuchao Bai, Dehai Zhang	
<b>Multi-Objective Heterogeneous Green Vehicle Routing Problem with Customer Service Constraints</b>	535
Xianghu Meng, Wei Gao, Jing Tang	



<b>Real-time Non-invasive Sleep Apnea Monitoring and Intervention System Based on Snoring</b>	539
Haolun Fang, Xianjun Yang, Daomin Zhu, Jiakuai Yu, Shuai Ding, Tianqin Xie, Baitao Lv, Yang Xu	
<b>Multi-Feature Fusion Transformer for Natural Language Inference</b>	545
Lei Sun, Xiangyang Li, Hengxin Yan	
<b>Interpretable fault diagnosis for industrial processes based on multi-task meta-feature learning</b>	549
Min Yin, Xin Ma, Yunqi Liu, Youqing Wang	
<b>A Lightweight-Model Based Federated Learning Approach for Fault Diagnosis in Intelligent Power Distribution Systems</b>	554
Zhiqing Sun, Yifang Chen, Yi Xuan, Yuanzhong Chen, Yinan Lou	
<b>Adaptive Control of PMSM based on Nonlinear Disturbance Observe</b>	560
Tongtong Li, Liang Tao, Xiongfeng Deng, Binzi Xu	
<b>A hand pressure sensing device for cable construction that can adjust exoskeleton assistance in real time</b>	565
Lei Liu, Hongwei Yang, Guoxin Han, Ge Xu, Zihao Xu, Xin Wang	
<b>Prediction of Output Pressure of Dredge Centrifugal Pumps Based on Machine Learning</b>	572
Chaozhe Yuan, Jiacheng Luo, Jiaming Qu, Ping Zhu	
<b>Lithium-ion battery remaining useful life prediction using variational mode decomposition and improved extreme learning machine model</b>	576
Yang Shen, Deyi Li	
<b>Multi-UAV Trajectory Planning and Tracking via Improved Informed-RRT* and MPC Algorithms</b>	583
Haosheng Jiang, Zexian Huang, Ziyue Ma, Zhenxing Zhang, Jian Wu, Xubin Ping	
<b>Fault Diagnosis and System Maintenance Based on Large Language Models and Knowledge Graphs</b>	589
Yujiao Li, Yanluo He, Runze Lian, Qiuquan Guo	
<b>A Hybrid Dynamic Modeling Method for External Torque Estimation of Robot Manipulators</b>	593
Hanqing Yuan, Shanrong Ren, Jun Yao, Jianliang Mao	
<b>An Improved YOLOv7 Model for Obstacle Recognition in Autonomous Driving</b>	599
Zhaomin Zhu, Qi Liu, Lu Lin	
<b>Modelling, Controller Design and Simulation of Quadrotor Aircraft Based on Cascade PID</b>	603
Qifeng Zhong, Caizheng Wang, Qiuquan Guo, Jun Yang	
<b>Study On Tobacco Mechanical Gear Modification Based On Computer Simulation And Monte Carlo Method</b>	607
Dayong Guo, Huan Wei, Shengmao Zhou, Liangshuo Yuan, Yanzheng Zhou, Dehai Zhang	
<b>Design of PMBus Controller for Digital Power Management Chip</b>	611
Zebin He, Benyuan Chen, Peng Xu	

<b>Diagnosis of Broken and Worn Traffic Markings Using a Hybrid Neural Network</b>	615
Lipeng Xu, Zhizhou Wu	
<b>Early Diagnosis and Progression of Alzheimer's Disease Based on Long Short-Term Memory Model</b>	620
Yilin Jiang, Zengyi Yu, Xuanyu Yin, Haidong Guo	
<b>Deep Learning-Based Predictive Maintenance Model for Air Cylinder in Manufacturing Systems</b>	625
Mengfei Yuan, Songsong Zhang, Pingbao Yang, Yao Deng	
<b>Continuum Manipulator Kinematics Based on Particle Filters</b>	630
Zihan Wang, Haoyu Dong, Zhe Kang	
<b>Steel Strips Surface Defect Detection Algorithm Combining Balance Mechanism and Dynamic Mechanism</b>	637
Shuwang Wang, Yiyang Wei	
<b>Traffic Accident Detection based on Multimodal Knowledge Graphs</b>	644
Lei Li, Yaowen Dou, Jiacheng Zhou	
<b>Damage detection and classification in CFRP Composites Based on GCN-LSTM Network for Ultrasonic Lamb Waves</b>	648
Zhenliang Li, Lei Li, Yaowen Dou, Yifan Mao, Mengguo Qin	
<b>Sensor Fault Detection for Wheel-legged Robot with Sliding Window Detector</b>	652
Hongyu Hou, Lijin Han, Hui Liu, Jingshuo Xie	
<b>Research on insulator defect detection by UAV based on deep learning</b>	657
Zhiwei Jiang, Xiaojin Fu, Wenbin Chen, Sha Li	
<b>Flexible Actuator Based on Dielectric Elastomer and Conductive PAM Hydrogel Electrodes</b>	662
Yang Hong, Tao Jiang, Zening Lin, Yun Yang, Zirong Luo, Yuan Gao	
<b>Crash Severity Prediction Based on Convolutional Neural Network</b>	666
Chen Zhang, Aihui Pei	
<b>Study method of blood mechanical damage based on a Taylor-Couette Device</b>	672
Wenqiang Yu, Youyuan Xu, Liudi Zhang, Hao Yang	
<b>A Hybrid Method of NARX and DS-Attention Applied for the State of Health Estimation of Lithium-ion Batteries</b>	676
Zhehao Xia, Yizhong Wu	
<b>Fault prediction of rail transit chiller based on genetic algorithm optimization of BP neural network</b>	684
Yucheng Zhang	
<b>A game-theory based collision-avoidance solution for two automated vehicles in lane-reduction scenario</b>	688
Zhiyong Zhang, Yang Wu, Fengdan Xu	
<b>Concrete Crack Segmentation Using UNet Algorithm with Swin Transformer Block &amp; CPAM</b>	694
Jie Liu	

<b>Research and Application of Obstacle Avoidance Path Planning Based on Hermite Curve Interpolation</b>	699
Xiaowei Chen, Qingxia Li, Ke Zheng, Yupeng Li	
<b>Surface Defect Detection of Medium and Thick Plates Based on Yolov8 Network</b>	703
Yutian Luo, Jinze Li, Jie Chen, Jian Liu	
<b>Research on Adaptive Forward-Looking Distance Unmanned Vehicle Path Tracking Algorithm Based on Road Curvature</b>	710
Shunxin Liu, Ping Li, Dongxing Qin, Wenjie Yu	
<b>Improved 2D LiDAR Adaptive Matching Localization Method Based on Gradient Features</b>	716
Wenyang Zhang, Ping Li, Wenjie Yu, Guoliang Zhang	
<b>Buoy Autonomous Depth Determination Control Algorithm Based on Improved Whale Optimization Algorithm</b>	723
Chenyang Yuan, Zhihong Li, Jiafu Yi, Yaxuan Lv, Lihao Deng, Xi Wang, Yue Gao, Long Xu, Jingjing Wang	
<b>A Noval Event-IMU Odometry based on Quadtree-accelerated Asynchronous Event Corner and Graph Optimization</b>	728
Xianwei Lv, Xiaoguang Ma	
<b>Few-shot Learning using Data Augmentation and Time-Frequency Transformation for Time Series Classification</b>	733
Hao Zhang, Zhendong Pang, Jiangpeng Wang, Teng Li	
<b>Traffic flow prediction of highway service area based on temporal convolution network and graph attention network</b>	739
Zeren Zhao, Shangtai Jin, Chenkun Yin, Yanqiu Wang	
<b>Distributed Optimal Scheduling of Integrated Energy Systems Based on Federated Reinforcement Learning</b>	745
Zhiqing Sun, Yifang Chen, Yi Xuan, Yuanzhong Chen, Yinan Lou	
<b>Unmanned Vehicle Positioning System Fusion of Radar and Inertial Navigation</b>	751
Jialiang Feng, Yiyang Zhou, Shilong Wang, Yiqun Liu	
<b>Knowledge-Graph-Driven Question-Answer System for Basketball</b>	757
Anning Li, Xiaonan Li, Bin Zhu, Guanyu Li	
<b>An Accumulated Error Based Self-Triggered MPC with Adaptive Prediction Horizon for Cyber Physical Systems</b>	762
Ning He, Wenqian Li, Hong Zhou, Zhongxian Xu	
<b>Development of Automotive Components Detection Experiment System based on Machine Vision</b>	768
Xuejun Li, Liyan Li, Liying Zhang, Dong Pan, Shuyou Yu, Jiyu Wang	
<b>Parameter tuning of PID intelligent control system based on information flow</b>	773
Junjie Liu, Jie Liu	
<b>Application of LSTM Networks in the Temporal Analysis and Prediction of Earth Pressure Balance Shield Parameter</b>	780
Runze Lian, Weixi Gu, Dongxing Zhang	

<b>A numerical method for the compliance analysis of continuum robots</b>	790
Yicheng Dai, Sheng Wang, Xin Wang, Han Yuan	
<b>Disturbance Rejection for Markovian Jump Systems Based on Equivalent Input Disturbance Approach</b>	796
Xinming Wang, Bo Li, Youwu Du, Junjie Zhao	
<b>EASATrack: Infrared Object Tracking Based on Edge Activation and Scale Adaptive Cross-Correlation</b>	801
Boran Wang, Jing Yuan, Xuebo Zhang, Yang Wang, Wenpeng Cui, Zhe Zheng	
<b>A Decimal Scaling Normalization Encoder-Decoder Deep Network for Modeling in the Nonlinear Systems</b>	806
Tingli Su, Bin Xue, Xuebo Jin, Jianlei Kong, Yuting Bai, Huijun Ma	
<b>Dynamics Knowledge Graph-based Digital Thread for Machine Tool Dynamics Digital Twin</b>	810
Lu Zhang, Songping He, Tao Ma, Lei Zhang	
<b>Design of Express Box System Based on Wireless Transmission</b>	815
Ping Mi, Zhaoye Li, Zhanfei Wei, Yaoqin Zhou	
<b>Research on Time Series Data Prediction Based on STP-GAN Algorithm</b>	819
Rui Zhang, Vladimir Y.Mariano	
<b>Resnet-BiLSTM Network for Multi-label Weather Image Classification</b>	825
Ge Peng, Senlin Huang	
<b>Implementation of an unmanned gas inspection system for coal mines</b>	829
Weiguo Zhang	
<b>DGSRC: A Recommendation system ranking model based on dynamic graph neural networks</b>	834
Wenqi Dong, Meng Bi	
<b>Design and Application of Intelligent Patrol Digital Twin System in Smart Power Plant</b>	838
Hui Sun, Zhan Wang, Quanjie Chen, Zhou Luo, Rongdong Yu, Hai Shang, Dan Wang	
<b>Outlier-Resistant Protocol-Based Distributed Fusion Estimator Design for Cyber-Physical Systems</b>	843
Yaping Guo, Lijuan Zha	
<b>An Estimation Strategy for Sideslip Angle Fusion Utilizing a Linear Adaptive Model</b>	848
Aoyang Deng, Lin Zou, Yiying Wei, Mengyu Li	
<b>Intelligent Cutter State Detection Platform based on Edge-Enhanced FCN</b>	854
Pan Wang, Liaomo Zheng, Mengjia Lian	
<b>Research on anomaly detection of offshore buoy water temperature data based on LSTM-DAE model</b>	858
Saiyu Gao, Miaomiao Song, Wei Hu, Wenqing Li, Shanshan Zheng, Lei Zhuo, Ru Liu, Jiuzhang Huang, Haihui Song, Kaiyu Cheng	
<b>CNN-BiLSTM Based Demand Prediction for Shared Bicycles</b>	864
Haipeng Li, Lan Shen, Ying Li, Yanhong Jing, Song Wang, Tian Lv	

<b>A Short-term Traffic Flow Forecasting Method Based on SVM-PSO-BP Combined Model</b>	869
Chunling Ding, Roben A. Juanatas	
<b>A Monocular Visual-Inertial SLAM System Through the Combination of Points and Line Segments</b>	874
Xunjian Yang, Hanbin Xu, Yiyi Wei, Yuyun Zhang	
<b>Rethinking the helmet wearing detection algorithm based on reinforcement feature and loss function in complex tunnel scenes</b>	880
Min Zhang, Hongliang Liu, Yuanfa Jia, Zhanzhi Su, Weitian Su, Hui Cai, Zongliang Hou, Qianlong Liu	
<b>DDoS detection and defense based on PSO optimized LSTM neural network</b>	885
Yaowen Dou, Zhenliang Li, Junhao Li, Yu Lu	
<b>A Trajectory Prediction Method for Drifting Buoy Based on GA-DNN Model</b>	889
Wei Hu, Miaomiao Song, Tong Hu, Xingkui Yan, Song Ge, Shanshan Zheng, Jiming Zhang, Zixuan Jiao, Haihui Song, Saiyu Gao	
<b>A Fully Digital Implementation of A Reward-Modulated STDP Synapse</b>	894
Chengyi Yang, Kainang Wang, Aili Wang	
<b>Performance Evaluation of Urban Intersection C-V2X Simulation System</b>	900
Huipeng Li, Hanbin Xu, Yiyi Wei, Jinlei Wang	
<b>A High-Precision SLAM System Based on Lidar, IMU and Wheel Encoders</b>	905
Daoding Hong, Wei Zhao, Qiyun Shen, Zengxiang Zhou, Congcong Du	
<b>Design of temperature control system based on fuzzy PID algorithm</b>	911
Kai Zhao, Lei Zhang, Gen Mi, Miao Cheng	
<b>The Research on Cloud Monitoring System Architecture of Flight Test</b>	915
Zhe Yang	
<b>Research on Mine Dust and Fire Detection System based on Recurrent Neural Network</b>	922
Baoyuan Chen	
<b>Feasibility analysis of state-of-the-art time series models for wind power forecasting with irregular missing data</b>	926
Shilei Dong, Honglei Zhao, Liyuan Gao, Zhifan Zhao, Peiyao Zhang	
<b>A Depth Estimation Network Integrated of Foreground Target Enhanced by Optical Flow and Binocular Vision</b>	931
Le Guan, Tianqi Zhang, Xinyang Wang, Li Zhu	
<b>A multi-target decentralized tracking method with multi-agents</b>	941
Guohao Wang, Peng Yu, Meijuan Li, Xuebo Chen	
<b>A Complete Feature Matching Fusion Method for Palmprint Recognition</b>	947
Hongxia Wang, Vladimir Y. Mariano	
<b>Student Behavior Recognition Using Video-based Deep Learning</b>	951
Xiangui Shi, Vladimir Y. Mariano	
<b>Dynamic Balancing-based Label Assignment for Object Detection</b>	955
Yue Liao, Zhaoyan Fang, Huan Li, Dong Jiang, Huadong Li, Niannian Chen	

<b>Research of Hybrid Collaborative Filtering Algorithm in Course Recommendation</b>	960
Meirong Wang, Vladimir Y. Mariano	
<b>Target Detection Algorithm based on Improved YOLOv5 for Edge Computing Devices</b>	965
Yanqiu Wang, Shangtai Jin, Chenkun Yin, Zejin Wu	
<b>A study of puncture target following based on K-nearest neighbor regression algorithm</b>	971
Jinghan Wang, Honghua Zhao, Jian Zhao, Zhaoguo Sun	
<b>Assessment of Perturbability in Module Parameters of Image Classification Networks</b>	975
Qitao Chen, Kuiyu Li, Dongfu Yin, F.Richard Yu	
<b>Research on defect recognition method of digital pipeline negatives based on improved YOLO algorithm</b>	980
Weijian Luo, Cong Deng, Jiayue Liu, Xufeng Li	
<b>Inverse-Huber Loss based PPO algorithm</b>	986
Haokun Zhang	
<b>A Novel Collaborative Imitation Learning Framework for Dual-Arm Flipping Tasks</b>	991
Weiyong Wang, Chao Zeng, Donghao Shi, Chenguang Yang	
<b>Indoor tracking algorithm of UWB based on SVM</b>	997
Xiaoxia Xue, Fengqing Han	
<b>Air Pollution Prediction Method Based on Deep Learning</b>	1002
Wang Qiang, Vladimir Y. Mariano	
<b>A multi-layer fusion method for infrared and visible images</b>	1009
Xiangzhi Zeng, Xiang Qiu, Zheming Wang, Jianbing Wang, Bo Chen	
<b>Knowledge Distillation For Spiking Neural Network</b>	1015
Fengzhao Zhang, Chengting Yu, Hanzhi Ma, Zheming Gu, Erping Li	
<b>A Method for Evaluating Explanation of Neural Networks Given in Heat Map</b>	1021
Binglin Liu, Haitian Liu, Qianchao Hu, Feng Wang	
<b>DgrCLR: Dual Gradient Reinforcement Contrastive Learning for coal gangue Classification</b>	1025
Hongxi Li, Wenbo Zhu, Zhen Zhu, Juqing Yang, Jianwen Chen, Haibing Li, Zhongbo Zhang	
<b>A model for underwater image restoration based on color information</b>	1031
Jiahang Wang, Lili Wang, Chun Yang, Jiayi Chen, Zhenbo Wang, Zizhao Yuan	
<b>Topic Mining of Alzheimer's Disease Field Based on BERTopic</b>	1039
Juan Shen, Vladimir Y. Mariano	
<b>Research On Unmanned Multi-vehicle Cooperative Path Planning Algorithm</b>	1044
Liye Mo, Sixuan Leng, Xingzhi Lin, Xiang Pan	
<b>Vision-based Air-writing Character Segmentation and Reproduction</b>	1048
Yi Zhang, Chao Zeng, Chenguang Yang	
<b>Research on Path Planning Based on Improved JPS Algorithm</b>	1052
Yilin li, Yi Li	

<b>Optimization Method of Roadside Unit Location for Information Propagation</b>	1057
Qiangbo Ye, Zhizhou Wu	
<b>Potato Disease Degree Recognition Model based on Image Processing and Contrast Learning</b>	1062
Liang Jia	
<b>Binocular Depth Estimation Method for Stereo Matching Based on Pyramid Transformer</b>	1066
Zhongyi Xia, Tianzhao Wu, Zengyuan Chen	
<b>Large-Scale Multi-Objective Evolutionary Algorithm Based on Multi-Group Co-Evolution</b>	1070
Changyong Zhang, Chunting Zhang	
<b>A Multimodal Named Entity Recognition Method with Dynamic Bidirectional Gating Mechanism</b>	1075
Hao Chen	
<b>YOLO-FE: A Lightweight Ship Detection Algorithm Based on Improved YOLOv8</b>	1082
Kaiyu Cheng, Miaomiao Song, Yuzhe Xu, Lei Zhuo, Xingkui Yan, Shanshan Zheng, Zhao Yang, Jiuzhang Huang, Haihui Song, Saiyu Gao	
<b>A novel multi-label learning approach for missing and noisy labels</b>	1088
Xiaolei Yang, Kai Liu, Shenming Gu, Anhui Tan	
<b>A Smart Contract Classification Method Based on Label Embedding and Collaborative Attention Mechanism</b>	1093
Xiaojin Wang, Yanna Zhang, Fangfang Chen	
<b>A Classification Algorithm for Breast Masses Based on the Combination of Bidirectional ConvLSTM Network and Coordinate Attention Module</b>	1097
Fangfang Chen, Xiaojin Wang, Yanna Zhang, Yanling Wang	
<b>Book Recommendation Algorithm Based on Time Information and Book Feature</b>	1101
Chen Yan, Eric Blancaflor, Mideth Abisado	
<b>Vegetable Disease and Pest Target Detection Algorithm Based on Improved YOLO v7</b>	1106
Wenbin Chen, Xiaojin Fu, Zhiwei Jiang, Weijia Li	
<b>Semiconductor Quality Prediction: Comprehensive Comparative Evaluation of Machine Learning Models</b>	1111
Peng Ge, Ruiping Wang	
<b>Deep learning methods for ship classification: from visible to infrared images</b>	1116
Tianci Liu, Hengjia Qin, Zhuo Zhan, Yunpeng Liu	
<b>Improved RRT * algorithm combined with an adaptive probability-adjusted goal-directed node strategy</b>	1121
Fuyong Liu, Ding Wang, Tong Zhao, Yuying Zhou	
<b>Multi-Modal Object Tracking with Vision-Language Adaptive Fusion and Alignment</b>	1125
Jixiang Zuo, Tao Wu, Meiping Shi, Xueyan Liu, Xijun Zhao	
<b>HiGOD: Hierarchical Multi-granularity Object Detection based on Prior Label Knowledge Structure for Open World Perception</b>	1134
Yanchen Hu, Tao Wu, Junxiang Li, Xin Xia, Yinfeng Zhao	

<b>Biometric Hash Authentication Algorithm Based on Random Orthogonal Projection and Signature Encryption</b>	1141
Miaomiao Hou, Yanchun Liu, Hexiang Hou, Caifeng Wang	
<b>Fast Algorithm for VVC Video Image Coding Based on Machine Learning</b>	1147
Ceyao Cao, Lei Chen, Yi Wu, Jian Mao, Jie Xu	
<b>A Secure Reinforcement Learning Dynamic Obstacle Avoidance Method Based on SSA-TD3</b>	1152
Gen Mi, Lei Zhang, Kai Zhao, Miao Cheng	
<b>Non-destructive identification of grape species based on Near-infrared spectroscopy and TLNET network</b>	1156
Zhilin Dong, Jiajia Wang, Penghui Sun	
<b>A continuous hand movement recognition method for sEMG signals based on BiLSTM network and attention mechanism</b>	1160
Jinghuan Guo, Zhuo Li	
<b>The detection method of rice seedling tray hole seeding quantity based on improved YOLOv5s</b>	1165
Shuxin Wang, Jin Chen, Yaoming Li, Zhiyou Pei	
<b>Research on Cesium monomerization algorithm for 3D model from oblique photogrammetry</b>	1170
Xinxin Du, Hongxia Cui, Yechen Yan, Hanqing Hu	
<b>Multimodal Fake News Detection Technology Based on Deep Learning</b>	1175
Xiaocui Wang, Yue Qi	
<b>Author Index</b>	