2024 6th International Conference on Robotics, Intelligent Control and Artificial Intelligence (RICAI 2024)

Nanjing, China 6-8 December 2024

Pages 1-686



IEEE Catalog Number: ISBN:

CFP24BR9-POD 979-8-3315-4170-5

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:
 CFP24BR9-POD

 ISBN (Print-On-Demand):
 979-8-3315-4170-5

 ISBN (Online):
 979-8-3315-4169-9

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 the Application of CIoU and CNN Joint Compression in Autonomous Driving Xintong Liu, Gu Gong, Fan Jiang, Gongyu Shang	1
Automatic Decision-Making for Unmanned Surface Vehicle Operation Based on CNN-RF Hybrid Model Yuting Bai, Xinyi Xue, Tingli Su, Xuebo Jin Four-Degree Digital Twin Robotic Arm in Webots Environment	6
Luis AníBal CóRdova, Juan Pablo Vaca, Jordi Fernando SáNchez, Viviana Moya, Andrea Pilco	11
Task-Oriented Language Grounding for Robot via Learning Object Mask Feng Ye, Yongjia Lin, Yizong Lai, Qijing Huang	16
Terminal sliding mode control of acupuncture robot based on RBF neural network Li Zheng, Ding Li, Yucheng Tao, Ye Xia	23
An anti-swing control method for crane robot with liquid container lifting Shourui Wang, Wuyin Jin, Guolong Chen, Qian Lin	32
Classical Mechanics-based Kinematic Analysis of a Specific Microrobot Xiao Zhang, Jingqi Wang, Kaiyun Zhu, Haiwang Li, Yanxin Zhai, Tiantong Xu	37
Fast Penetration Decision-making Technology for UAV based on Improved Case-based Reasoning Jing Zhang, Jiaju Wu	44
Tree Climbing Robot Utilizing FreeRTOS Real-Time Operating System Kaitao Deng, Dun Lin, Zhijing Sun, Jialin Lu, Ziwen Li, Lei Zhang	50
Locomotion of Microrobots Driven by Different Surface Velocities in Complex Fluids Zijian Wang	55
Obstacles Avoidance Path Planning for Mobile Robot Based on Cellular Automata Lili Li, Wenwei Li, Jinglun Huang	60
Design and experimental study of a bionic stingray robot Da Lv, Shukun Wang, Long Zheng	65
Attitude Balance Control of a Wheeled Quadruped Robot for Unilateral Obstacle Scenarios Xiyuan Li, Yunsong Li, Xuxu Zhang, Jiacheng Zhao	69
Sliding mode control for uncertain robot manipulators based on reinforcement learning Xuhong Li, Jifeng Zhao, Anyi Wang, Yirun Huang	74
Adaptive Fuzzy Sliding Mode Control for Coal Silo Cleaning Robots Simulation, and Performance Analysis Qiangqiang Qiang, Ningbiao Ji Research on the Dynamic Modeling and Fuzzy Control Strategy of cable-Driven Parallel	80
Cleaning Robot Yunpeng He, Guoyu Shao, Jianli Wang, Fengzhen Yang, Yang Ding, Tian Wu, Lei Zhao, Kunyong Yang	84

Research on Motion Control Technology of Quadruped Robot Arm Based on Visual Analysis Shuaibing Yao, Danyong Li, Tong Zhang, Mingxuan Ma	89
Real-time Frequency Offset Estimation and Demodulation Method of DroneID Signal Zhen Liu, Xinxing Zhou, Mei Rao, Yi Yang	95
Video Tracking and Auxiliary Obstacle Avoidance of Power Plant Inspection Robot based on Deep Learning and 3D Digital Twin System Quanjie Chen, Qing Lin, Weitao Liu, Xuanyi Liu, Xiaoyan Jia, Rongdong Yu, Zhan Wang Embodied Intelligence Applications in Assistive Technologies for the Visually Impaired Qianheng Zhang, Yiling Zhou	100 105
Precise motion control of omnidirectional mobile robots for nuclear power inspection Chao Ma, Yi Tan, Jianqiang Hu, Bo Tang	110
Endoscopic Path Planning in Robot-Assisted Ear Surgery Based on Improved A-Star Algorithm Qinglei Zhang, Zhiqi Ma, Ying Zhou, Huan Jia, Weiping Liu, Biao Shu Development of an Underwater Anticorrosion Coating Maintenance Robot	116
Heng Zhong, Yibiao Liu, Shilun Du, Jun Hu, Yukai Jin, Zhenghu Chen, Guangyao Chen, Jingxuan Meng, Yong Lei Design of an Arc-Wheel Robot Based on ROS System	121
Hao Zhang, Yibin Jin, Qing Guo	127
Collision detection method for industrial robots based on multi-channel information fusion Yue Xia, Bohu Zhang, Shangbin Long, Jionghao Mo	131
Design and Traversability Analysis of A Tracked Pipeline Cleaning Robot Junwei Lv, Fanghua Liu, Longyi Jiang	135
Design of an Adaptive Spiral-Loop Pipeline Robot Based on Laser SLAM Chengda Wang	142
Perception and Autonomous Navigation Framework for an Underwater Micro-Bionic Snail Robot Yuheng Kang, Qiong Wei	151
Design of arc welding robot workstation with dual station detection based on vision Hongliang Xu, Fukai Liu, Fuqiang Liu, Yan Li	156
Multi-target trapping method of swarm robots based on mean-shift Xiaoning Wang, Kun Qin, Weijie Yin, Chongqing Hao	161
Flight Control of Aerial Robots for Wire-Hanging Under Wind Disturbances Dazhi Wang, Zhong Yang, Xiantan Wang, Jiahui He	165
Neural Inertial Navigation Method for Wheeled Robots Based on Semi-supervised Cotraining Fengrong Hueng Menggi Goo Oinglin Liv Min Goo	170
Fengrong Huang, Mengqi Gao, Qinglin Liu, Min Gao Human-Computer Interactive Elderly Care System: Enhancing Emotional and Physical Well-being through the Pepper robot Suqi Yao, Jiabao Wei, Mintong Zhou, Yanyan Wang	175

A Covert Spoofing Method for Integrated Navigation Unmanned Aerial Vehicle Shi Pan, Zhiliang Fan, Zhongjie Yin, Xiaolong Jin, Bo Hou	180
Kinematics-Based Vibration Control of a Wheeled Quadruped Robot Traversing Speed	
Bumps Xiyuan Li, Yunsong Li, Shengkun Xu, Fangzheng Zhao	185
Research on Writing Robots Based on the XY Platform Huan Wang, Tengda Gu, Yuqi Li, Qi Zhang, Haitao Chen	190
A Novel Lightweight Hybrid Model for Drone Identification Leveraging RF Fingerprints Kaijie Zhou, Peipei Cao, Qingbo Li, Dongxu Wei, Jin Yang, Haichun Yu, Taobo Li	195
Lightweight Automatic Modulation Classification Method Using Filter Pruning via Geometric Median Chunying Shi, Wanyu Zhou, Xiangyong Wu, Xixi Zhang, Yu Wang, Guan Gui	200
Mixed-Domain Feature Fusion Network for Few-Sample Automatic Modulation Recognition Bilian Wang, Jingjing Lu	205
State Estimation of the Self-Balancing Lower Limb Exoskeleton Using Extended Kalman Filter	211
Yuanpei Zhu, Ziqiang Chen, Feng Li, Ming Yang, Wentao Li, Ansi Peng, Dingkui Tian, Xinyu Wu A simple data augmentation method for automatic modulation recognition via mixing signals	
Weiguo Shen, Dongwei Xu, Xinjie Xu, Zhuangzhi Chen, Qi Xuan, Wei Wang, Yun Lin, Xiaoniu Yang	219
Distributed mccKF based INS/UWB Integrated navigation for quadruped robot Kaixin Liu, Maosheng Yang, Jingwen Yu, Xiangpeng Wang, Yuan Xu	230
Long short-term memory assisted FIR filter for tracking human upper limb motion Rui Gao, Qingao Zhao, Yuan Xu	235
Nonlinear Dynamic Modeling and LQR Optimal Control of Wheel-Bipedal Robots Minchao Hu, Jianliang Mao, Xin Zhou, Chuanlin Zhang	239
Collaborative search and tracking based on dynamic map and information fusion for UAV swarm	245
Yuechen Ge, Jianjun Ni Automated Adaptive Navigation Leveraging Natural Language Models in Aerospace Robotics System	250
Zhenglin Li, Yangchen Huang, Mengran Zhu, Jingyu Zhang, Jinghao Chang, Houze Liu Boosting Adversarial Robustness through Channel Adversarial Distillation	255
Xiaolong Li, Yanming Guo, Chengsi Du, Dengjin Li, Jie Jiang, Mingrui Lao	233
Design of a Rigid-flexible and Multi-legged Robot Based on a Scorpion Tail Structure Xiaonuo Yang, Junhan Cheng, Guangyu Xu, Dongmin Li	260
Development of a massage robot based on vision-tactile fusion and adaptive force control Hongyu Yang, Wen Zhang, Haojun Si, Teng Sun	265
Mechanism design and performance analysis of tracked pipe robot Shuhai Wang, Nanfeng Zhang, Biao Jin, Qingan Li	270

An Automatic Control Method for the Number of Simulation Experiments based on Multivariable Steady-state Analysis	275
Feng Qi, Haiyan Zhang, Guozhen Xu, Mingxing Ke	2.0
Research on Graphene Thermoacoustic Speakers Based on a Sparse Autoencoder-Back Propagation Neural Network Model	281
Huabo Li, Debo Wang, Jie Chen, Huaxiang Liang Design of guidance law for hypersonic drone based on trajectory profile Dong Zhang, Lei Li, Zhiqi Zhang, Li Fang	289
Deep neural networks based Gravitational Field for Asteroid Landing Control Menglin Gong, Jiateng Long, Shengying Zhu	294
Multi-target point TSP and optimized path planning for AUV based on 3D underwater digital topography Bing Sun, Yingyao Li, Wei Zhang, Yuji Lu	299
Path Planning for Multi-UAV Target Coverage via Improved GA-PSO Algorithm Chenyang Zhang, Zhiling Jiang, Hui Tang, Guanghua Song	304
Research on the Planning Method of unmanned underwater vehicle Cluster Encirclement under Weak Connectivity Conditions	311
Jingwei Dong, Yazhe Li, Jingxiang Feng, Yao Yao, Fuming Wang A Digital and Intelligent Design Paradigm for Exhibition Space based on Knowledge Graph & Generative AI	320
Xinlan Yu, Linhui Hu, Tao Cheng Energy-Aware Distributed Sliding Mode Control for Heterogeneous Vehicle Platoons Chengzhi Sun, Yijun Zhang, Haliding Xiahedan	328
Human robot collaborative control of live working robotic arm in substations based on deep learning	335
Kang Wang, Yi Lu, Yanfeng Gao, Xu Zhang, Xiaoxuan Yang, Xiaolong Huang, Shuochao Fan Design of Wideband Electromagnetic Absorbers Based on Deep Learning Wan Ji, Yan Li, Erping Li	339
Assembly space optimization for linear actuator assembly process based on PSO: two-robot case Peiyu Ma, Zhiyao Liu, Yuanzheng Zhang, Ruidi Xu	343
Design and Application of a Multi-task Legal Large Language Model Mei Han, Jinlong Xu, Yingying Li, Fanjuan Zhu	351
Intelligent Obstacle Avoidance and Path Planning for Unmanned Vessels Based on an Improved Bug2 Algorithm	356
Zhiquan Zhou, Zhikuan Chen, Xinqian Mao, Bo Wang, Yi Lou Smart Home Control and Implementation for Elderly People Living Alone Based on STM32 Microcontroller	
Delong Zhu, Ye Wang	360
Dynamic Graph Neural Networks with Coordinate Attention for Human Activity Recognition in Manufacturing Industry	366
Haiquan Wang, Ruiqi Wang, Yueyi Yang, Jiabo Zhai, Kurkova Olga Petrovna, Lerui Chen	

Optimization Design of Elderly-oriented Pharmaceutical APP Based on Artificial Intelligence Background	372
Tianshuang Zhang, Yanlin Zhao	372
Research on ship path planning in ice area based on improved ant colony algorithm Yutong Lin, Yin Qi, Guoyu Shao, Lei Zhao	376
A Bearing Fault Diagnosis Model Based on SCSA-CNN-LSTM with Linear Deformable Convolution	381
Tao Wang, Wenliang Sun, Runze Ma, Wei He	
Research on multiple loading method for cigarette boxes loading machine	20-
Yonggui Lü, Jing Du, Bogang Wu, Fanwei Zhang, Yongshou Zhang, Junchen Zhu, Ronggui Dao	387
Path planning of warehouse UAV automatic inventory under multi-objective constraints Guozheng Du, Tao Li, Gang Cao, Pengfei Li, Xinyuan Xu, Yuyang Zhang	393
Intelligent Sorting Solution Design Based on Engine Cylinder Cover Casting Line Fukai Liu, Mengjun Zhang, Yan Li, Hongtao Yang	399
Path Planning for Platform AMR Loading Based on Particle Swarm Optimization Ming Lv, Ting Lan, Ming Huang	406
An Aaptive Sliding Mode Control Based on an Improved Reduced-Order Proportional- Integral Observer with an Improved Super-Twisting Oserver Bo Peng, Jiandong Shen, Qing Sun, Ying Huang	411
Fault diagnosis of CNC machine tool spindle based on SSA-CNN-Transformer Zhichao Sun, Baoyan Zhao, Yang Wang, Xiaobo Liu, Linsen Song, Chunfang Li, Anping Xiong, Zhaoxin Li, Yiwen Zhang, Xinming Zhang	416
A Review of Key Technologies for Monocular 3D Face Reconstruction Yuanyuan Zhao, Lu Chen	421
A New Smart Flying-Car Based on Intelligent Control	
Zhaoye Li, Chengfei Shen, Guanlin Zhu, Jiali Quan	426
Path planning of inventory UAV based on adaptive fireworks algorithm Zhongfeng Wang, Ligang Li, Zhiyuan Xu, Tao Li, Guozheng Du	431
Slave-Core Parallel Implementation of Two-Dimensional Coupled Markov Chains on Shenwei Processors	
Huaiyun Peng, Junyu Ye, Jiajing Wu, Luoyou Shan, Ziliang Wei, Xiaomei Zhao, Jingpeng Han, Shuqin Wu	436
Research on Unmanned Vehicle Material Security Path Planning Model in Plateau Area Haoran Li, Haiyan Zhang, Xiuhe Li, Rui Dong, Jinhe Ran, Hongguang Yang, Rongbin Dong	441
Mechanical arm assembly based on OpenMV visual perception and the 51 SCM Moxi Chen, Zhiying Wang, Yu Mei, Bin Gao, Qi Wang, Junlong Wang	450
Sliding Mode Control of Buck Converter Based on Disturbance Observation Haizhao Cong, Xiliang Huang, Zhe Zhang, Junhao Ren, Chuyuan Xu, Shuaizhi Cheng	455

Research on the collaborative control process of unmanned aerial vehicles in disaster rescue process Yubin Zhang	460
Research on Intelligent Diagnostic Techniques for Line Loss Based on Comprehensive Analysis Utilizing Machine Learning Methodologies	464
Moxin Ju, Lijun Liu, Baoming Liu, Zhaorui Liu, Yuan Li, Sen Hu Accurate Parameter Estimation Based on the Two-Sided KZ Filter in Low Signal-to-Noise Ratio Conditions	471
Liang Zhang, Qingguo Wang The Brain-Inspired Cooperative Shared Control Framework for Brain-Machine Interface Junjie Yang, Ling Liu, Shengjie Zheng, Lang Qian, Gang Gao, Xin Chen, Xiaojian Li	477
Synchronous Control of Bilateral Teleoperation under Hybrid Attacks Xiuzhu Lu, Yijun Zhang, Jingyuan Li	484
A Channel Pruning Method Using Subtraction-Average-Based Optimizer Zhoufeng Liu, Wentao Wu, Shumin Ding, Jiangtao Xi, Chunlei Li	489
Improved Trajectory-based LiDAR-INS Hand-Eye Calibration Method Jianzhong Wang, Fucong Liu, Cheng Cao, Haiyue Sun, Tongzhou Zhang, Lina Hu	496
Research on Bearing Fault Diagnosis Based on Few-shot Adversarial Domain Adaptation Weixuan Wang, Qitong Chen, Liang Chen	500
Study on Accuracy Degradation Experimental of RV Reducer* Liangbo Yao, Cheng Qiu, Yu Gong	504
Dynamic Locally Optimized Path Planning For Unmanned Surface Vehicle Under High Sea Conditions* Jiazhao Zhang, Rui Song, Jianjun Wu, Jianjian Liu	509
Autonomous Penetration Test Path Planning Based on OIPPO Huang Yan, Qiang Yang, Bo Yu, Mengqi Zhang	515
Data-efficient Iterative Learning Longitudinal Velocity Planning for Autonomous Logistics Vehicles	521
Peiyuan Lyu, Cheng Lin, Huimin Liu, Haoyu Wu, Bowen Wang Robust Control Methods for Vehicle Trajectory Tracking Amid Multi-Channel Network Attacks	527
Zigui Kang, Tao Li, Xiaofei Fan Discriminant Neighborhood Preserving Embedding with Autoencoder for fault diagnosis Ting Wang, Yisha Xie	532
Ground Station Software Design Based on Human Machine Hybrid Intelligence: A Command and Control Application of Human in the Loop	536
Qian Wang, Haoran Ji, Ziwei Wu, Pengde Ni, Lu Liu NWD-YOLOv5: A YOLOv5 Model for Small Target Detection Based on NWD Loss Liliang Zhou, Huaming Ran, Rongling Xiong, Ruijie Tan	542

Multi-condition Temperature Detection of UAV Batteries Based on Least Squares Fitting Algorithm	547
Junnan Liu, Miao Wang, Bojian Chen, Lihui Lin, Yuxi Du	
A Source Code Vulnerability Detection Method Based on Positive-Unlabeled Learning Zihan Kong, Yong Piao, Tianran Li	551
IOT Attack Type Detection and Classification Based on Multi-strategy Hybrid and Improved Sparrow Search Algorithm to Optimize Random Forest Model Qufang Wu	557
Forecasting Malaysian Palm Oil Futures Using Random Forest and LSTM Networks: Enhanced Predictive Modeling with Climate-Based Parameters	562
Meng Wu, Yi Wei, Yanhong Sun, Dengke Huang, Geetha Subramaniam, Zeyu Li A Comparative Study of Photovoltaic Power Prediction Models Based on BP and XGBoost Tao Li, Yuanxi Zhang, Zaixin Zhu, Lu Bai, Fei Meng, Guohua Yang	567
A Comparative Study of Photovoltaic Power Prediction Models Based on BP and SVR Feng Lu, Zhen Li, Xin Wang, Lei Zhao, Fei Meng, Guohua Yang	571
Defect detection of transmission lines based on SH-YOLOv8	
Changchun Zhao, Yongsheng Cheng, Chun Liu, Chuncheng Han, Weihe Ren	575
Multimodal Fake News Detection Based on TinyBert Pre-Training and BiLSTM-GATV2 Models	580
Shizhou Xu, Yuhao Zhang, Hong Yang Time Series Fusion Model for Predicting Electric power tools and equipment Liang Xue, Xinghong Ling, Lei Yang, Yang Yang	584
TCN-BiGRU: A Hybrid Deep Learning Architecture for Enhanced Temperature Time Series Forecasting	590
Tao Gu, Yajuan Zhang, Limin Wang Photovoltaic Random Scenario Prediction Based on Time Generative Adversarial Networks Zhongtao Chen, Yanli Yao, Xinyi Li	595
Lightweight detection method of distracted driving based on YOLO-SSC Wuxier Balatijiang, Xia Wei	601
The Object Detection in Remote Sensing Images Based on Improved YOLO11 with LDConv Yang Shi, Qian He, Cui Mao, Yunlong Ge, Huiping Du, Hao Wang	605
Research on Collision Detection Method Based on Feature Extraction Haodi Lv, Ting Lan, Jianye Shi, Ming Lv, Yue Wang	610
YOLOv5-CBAM: A Small Object Detection Model Based on YOLOv5 and CBAM Qi Ma	618
Research on the Prediction of Thick-Film Resistor Values Using Genetic Algorithm- Optimized Neural Network	624
Xingyao Zhang, Youyang Wang, Yefeng Yu, Wenhua Gu, Zhaoqi Deng, Meilin Duan, Wanbo He, Xiyi Liao	024

A Lightweight Knowledge Distillation-Based Network for Efficient Remote Sensing Change Detection	631
Xiaosuo Wu, Yuebing Teng	031
An Intrusion Detection Method Combining Coarse and Fine Classification for Industrial	
Internet	636
Xiangdong Hu, Hao Jiang	
Power line detection method based on hybrid attention mechanism	
Jun Li, Chunming Fu, Tengguang Jiang, Xinli Li, Zixin Zhang, Haoxue Min, Yingying Hou, Jihong Zhang	642
Prediction model of influencing factors of quality of life in middle-aged and elderly patients with chronic diseases based on machine learning	647
Mingzhe Guo, Xin Su, Zheng Xie	
A Triangular Descriptor with Distance Information for Loop Closure Detection in LiDAR SLAM	652
Yucheng Xie, Zhong Yang	
Research on Multi object Occlusion Tracking and Trajectory Prediction Method Based on Deep Reinforcement Learning	656
Yuan Tong, Shumin Fei	
Research on The Application of Object Detection and Tracking Technology in Abnormal Event Detection on Highways	660
Hai Zong, Wenbai Zhu, Chishe Wang, Jie Wang, Jun Chen, Qing Chen, Xiaowei Jiang	
Ice cover thickness detection based on CEEMDAN-WOA-BILSTM	
Song Yang, Shichen Li, Haolin Li, Chunyang Wang, Yuwen Sun	666
Reducing False alarm rate of Sonar image Detection via Self-training	
Jingqi Han, Chuanqi Liu, Zhenhang You, Zeyuan Zhang, Yizhong Jiao, Peng Zhang	670
Research on automatic identification and detection of plug seedlings based on machine vision	
Zhenghao Chen, Dafeng Lei, Yunde Shen, Mingge Wu, Zhenmu Chen	675
Research on Substation Equipment Defect Detection Technology Based on an Improved RT-	
DETR Model	680
Anran Lan, Wei He, Tao Wang	
Gait phase detection based on inception-self-attention	-0-
Chunbo Yang, Jianbin Zheng, Yifan Gao, Ruoxi Yan, Chaojie Wang, Yu Wang	687
Superpixel Edge Refinement and Differential Feature Enhancement for Transformer-Based	
Remote Sensing Image Change Detection	692
Jingjing Liang, Xinlin Xie, Tihao Cui, Haoxue Zhang	
MATeacher: Multi-scale Views Learning and Adaptive Unsupervised Weight for Semi-	
supervised Pest Region Detection	698
Xianwei Li, Junqing Zhang, Youqiang Sun, He Huang	
Research on Short-term Power Load Forecasting Based on APSO-SVR	704
Haoxiang Zhao, Ruichen Tang, Zongyi He	704
Scene Text Detection using Hyperbolic Tangent Binarization and CLIP Zhao Chen	710

Research on GNSS spoofing detection method based on tracking loop moving average processing	714
Xingjun Su, Shaoxiong Li, Yong Hu, Shen Zhao	
MixDACM and WMF-DAWHampel-Based FMCW Radar for Vital Sign Detection	
Wei Xiong, Xi Ma, Lin Xia, Fei Xia	724
Enhanced Transformer-LSTM Daily Sales Forecasting Model Based on Attention Mechanism Yining Liu, Ziyao Wang	730
The dynamic malicious code identification model based on the lambda attention mechanism Lixia Zhang, Liangliang Song, Wutong Feng, Cheng Chen	735
A Novel Approach to Malicious Code Detection Using CNN-BiLSTM and Feature Fusion Lixia Zhang, Tianxu Liu, Kaihui Shen, Cheng Chen	745
Object Detection on SAR Images Via YOLOv10 and Integrated ACmix Attention Mechanism Zhuo Wang, Fucheng Miao, Youxiang Huang, Zhiyi Lu, Tomoaki Ohtsuki, Guan Gui	756
Vehicle Trajectory Prediction Model under Attention Network Based on Goal Areas Estimation	761
Wei He, Haoxuan Li, Xiangrui Liu	
Efficient Collaborative Perception with Adaptive Communication in Bandwidth-Constrained Scenarios	765
Junbo Guo, Guiyang Luo, Quan Yuan, Jinglin Li	
Prediction of Insider Trading Behaviours through Highly Interconnected Core People Network with Graph Machine Learning	775
Yinghuai Sun, Dragos Gorduza	
GABP-TroNet: Enhance Air-Ground Channel Modeling by Improving GZTDS Model for GNSS	780
Bo Song, Yiming Wang, Tianyu Zhang, Jinlong Sun	
CTF-LIOM: Coarse-to-Fine Loop Closure Detection in Lidar-Inertial Odometry and Mapping	785
Shicheng Fan, Weimin Zhang, Fangxing Li, Yuhang Yang, Chengxiang Li, Xiaohai He	
A new perspective on face detection utilizing language modeling	791
Cai Feng, Zhihui Wang, Dan Zhao, Xinmei Zhu	791
A Dynamic Quality Weight Adjustment-Based Multi-source Fusion Method for Precipitation Forecasting	795
Jinwen Li, JianLong Zhang, Li Wu	
Design of tourism interpretation system based on intelligent light control	804
Luojing Shi, Azizan Marzuki, Hongrun Wang, Qi Zhang	004
An Improved Bidirectional RRT* Algorithm for UAV Path Planning Based on Energy Consumption Constraints	809
Haifeng Jiang, Weiwei Lv	
Research on multi-node gait information acquisition system and time synchronization based on BLE	816
Yuqi Gao, Chao Yu, Xu Zhou, Junjie Liu, Zhiming Yao, Ning Lin	

PRBJE: A Novel Pre-Relation Bidirectional Joint Extraction Model	
Qiang Yu, Wenhui Zhou, Shuai Dong, Dongyuan Li	821
A Spectral Clustering Algorithm for Similar Matrix Reconstruction based on Adaptive Neighborhood Standard Deviation	827
Xuwen Gao, Xinyan Su, Jinjie Yao	
Modeling the dynamics of Multi-agent systems in one-dimensional space and their stability analysis	834
Qian Wang, Peng Yu, Meijuan Li, Xuebo Chen	
Research on Multi-direction N-RGVs (N-Rail Guided Vehicles) Scheduling System Based on Bubble Sort Algorithm	839
Yuxuan Han, Jianqiao Xiong, Zongrong Wang, Ming Li, Yifan Wu	
Automatic Dexterous Functional Grasping Data Generation Based on Conditional Diffusion Model	846
Zijian Ma, Xiangbo Lin	
Research on intelligent lane-changing model based on multi-intelligent reinforcement learning	850
Jing Fang, Yongjie Zhang	
Design of maize disease monitoring system based on Beidou satellite positioning	854
Hongbo Yu, Yan Li, Yue Yu, Songrui Li	051
Compound AI System for Personalized Learning: Integrating LLM Agents with Knowledge Graphs	859
Eduard Antonov	
An improved meta-heuristic optimization algorithm based on chaotic mapping inspired by the football team training	866
Weishi Peng, Haopeng Li, Yijie Gu, Liang Shi, Lisha Pang, Lili Ma	
Research on Factors Affecting Weight Based on Machine Learning Algorithm Rujuan Huang, Qunqiang Chen, Mei Qian, Hao Zheng, Chen Chen, Shixiao Wu	871
A gene regulatory network method based on single-cell multi-omics data	
Xiong Li, Jiapeng Zhao, Longyu Zhang, Juan Zhou	876
Innovative Research on IoT Architecture and Robotic Operating Platforms: Applications of Large Language Models and Generative AI Huiwen Han	881
Research on the Sharpness Evaluation Function Based on GrabCut for Autonomous Focusing in the Fluid Physics Experimental Cabinet of the Tiangong Space Station	888
Yue Li, Yanmei Jia, Qilin Zeng, Xiaohua Wang	
Med-Chat: Tuning ChatGLM3-6B with Chinese Medical Dialogue	00.4
Jiqing Chu, Youqiang Sun, He Huang, Yuan Liu	894
Fault Monitoring of Electric Vehicle Motor Drive Systems: Effective Application of PLC Technology	899
Yuanhang Bao, Wenbao Lan, Jiazheng Zhang, Haoyang Zhang, Dongyang Li, Qincheng Zhang	
Investigating SLAM Algorithms for Robustness in Illumination-Varying Scenarios	002
Qiang Li, Liang Ma, Haobo Xu, Meng Cao	903

Intelligent tracking system based on composite algorithm fusion	
Jiajie Zhan, Peixuan Xu, Yuying Lin, Yuannan Lin	908
Emotion-Aware Systems for Hazardous Operations: Integrating Mobile Sensors with LLM Yiming Mao	913
Intelligent Recognition and Control System for Flexible Robotic Hands Based on Multi- channel Tactile Sensing	917
Kaibo Jin, Xiaoquan Ren	
National Cryptographic Algorithms based Personalized Federated Learning with Flight Data Aohan Sun, Yanrong Lu, Xinyu Liu	922
Dynamic scheduling method of computing resources in Internet of Vehicles based on an improved NSGA-II algorithm	926
Huiyong Li, Yang Yang, Shuhe Han, Xiaofeng Wu	
Research and Implementation of the Airport Stop Bar Control System	021
Hao Yang, Xiaolong Yang, Xiaodan Ma, Fei Chen	931
Exploration of the Relationship between the Six Methods of Forming Chinese Characters in Shuo Wen Jie Zi and AI Deep Learning of Chinese Characters	937
Zhiding Zhang, Zhenwei Zhang	
Distributed Fusion Estimation for Nonlinear Systems under Denial-of-Service Attacks using the Try-Once-Discard Protocol	948
Guangyuan Zhu, Xin Chen	
Multi class sea surface target dataset for autonomous navigation of ships He Wang, Weihua Shen, Ningbo Li, Xiyang Liu	956
Genetic algorithm optimization of terminal sliding mode multi-agent braking slip rate control Haolin Li, Xiaofang Zhang, Weize Xu, Xin Su, Hongbo Sun, Shuaizhi Cheng	961
An End-to-end Campus Fire Detection Algorithm Incorporating Priori Features Yu Liang, Xinlin Xie, Xuan Liu, Jie Wang	966
Design and Implementation of an Unmanned Aerial Vehicle Spoofing Effectiveness Evaluation System Haoyang Zhang, Bo Hou, Zhongjie Yin, Xiaolong Jin, Zhiliang Fan	972
Research on Driver Facial Expression Detection Algorithm Based on BBAN-Net Han Zheng, Jun Chen, Yiding Wang, Feng Yang	977
Research on Intelligent Vehicle Regulation Algorithm Based on Driving Intent Recognition Haiyan Wu	984
A New Path Planning Algorithm for Marine Engine Room Inspection Based on RA*-ADWA* Yao Gong, Rui Li, Jilong Guo, Enzhe Song	988
LCLB: Low Cross-Chain Transaction Ratio and Load Balancing for Blockchain Sharding Yu Wang, Xiaoming Wu, Qile Yuan, Yunfeng Dong, Xiangzhi Liu	994
Adaptive Zoom Active Object Tracking Based on Reinforcement Learning Biao Yang, Jun Hu, Zengping Chen	998

Communication Adaptive Multi-Task Coupled Multi-Agent Reinforcement Learning Framework	1005
Heng You, Xin Tang, Kehan Li, Tongqing Jing, Boyao Li, Zhenya Wang, Haidong Xie	1005
Temporal Alignment of Multi-Dimensional Asynchronous Data for Digital Twin	
Evolutionary Analysis	1013
Chenglong Fang, Jinlong Sun, Gaohe Liu, Jiaji Zhang, Shuqiang Gui, Qiankun Wang	1013
Enhanced Grid Map Correction Using an Improved ORB Algorithm	
Aofei Ye, Shengjun Wen, Hongjun Li, Yan Wang, Liang Liao, Xiaopeng Luo	1019
Research on Gesture Recognition Algorithms Based on Electromyographic Signals	1027
Shengzhi Guan, Minggang Xu, Zhen Wang, Zuhang Liu	
Energy Efficiency Evaluation and Optimization Methods in Electric Transportation Systems Han Wang	1031
A Calibration Method based on Heteroscedastic Evolutionary Bayesian Optimization for	
Simulation System of HVAC	1035
Zhe Tan, Bo Liu	
An Enhanced Generative Adversarial Network for 3D Point Cloud Upsampling	1040
Yizhou Shi, Jie Zhan, Fan Xu, Xiaofei Zhang	1040
Observability of Two-Time-Scale Multi-Agent Systems with Antagonistic Interactions	
Mengqi Gu, Qingbo Li, Kaijie Zhou, Jing Chen, Jin Yang	1045
Electronic Nose Coupled with Deep Learning Techniques for Tea Quality Assessment	
Mingfu Jiang, Shining Ding, Yi Xu, Tao Tan, Li Zhang, Yue Sun	1050
Adaptive Estimation of Observation Noise Covariance using Neural Network in Maximum Correntropy Criterion Extended Kalman Filter	1056
Xiangpeng Wang, Teng Li, Jingwen Yu, Xin Zang, Yuan Xu	
Adapting LLMs for Ballistocardiographic Signals: A Multi-Task Learning Framework for BCG to ECG Reconstruction	1060
Boyang Zuo, Kun Lei, Xingjun Wang	
An Enhanced Harris Hawks Optimization Algorithm for GRU Hyperparameter Tuning: Application to Mooring System Tension Prediction	1066
Yang An, Changsheng Zhang, Jintao Shao	
Optimizing the mathematical model of IoT data processing in smart cities using artificial intelligence algorithms	1070
Jiamin Deng	
Research on Commercial Cryptography Large Language Model Based on Retrieval Augmented Generation and Low-Rank Adaptation Technology	1074
Huihui Wen, Yijie Cao, Wenjun Zhang, Shuai Wang, Xiaoping Dai, Hui Fu	
Named Entity Recognition of E-commerce Texts Fusing Large Language Models and Lexical Knowledge	1080
Sitong Liu, Chunyu Zhang	
Text Classification of Sudden Public Health Events Based on Abstracts of Scientific Papers	1001
Yanshu Lei	1084

Research on the Recognition of ECG Signals based on Integrated LSTM-GRU Network Han Gao, Lihong Yan, Xun Li, Zhi Zhang	1088
Fiber Optic Vibration Signal Recognition Based on GOA-VMD and Weighted Reconstruction	1092
Xinyu Feng, Kangjian Mei, Yingjuan Xie, Haiyan Xu	
Research on Visual Localization of the Pallet Relative to the AGV Based on Image Matching	400=
Ziming Xiao, Zhiguo Wang, Xinyuan Zhang, Donghai Qian	1097
Intelligent Recognition and Integrated Navigation Technology for Typical Spacecraft Components	1103
Yuzhe Liu, Zhi Xiong, Guanhong Gao, Yitong Ren	
Error evaluation for RSINS errors based on covariance analysis	1110
Xingjun Su, Shaoxiong Li, Gongmin Yan, Hang Yu	1110
BiGRU-Attention-Based Specific Emitter Identification Method	
Rongling Xiong	1118
Radar Phrase Extraction Based on Deep Convolutional Conditional Random Fields Wenjing He, Yangyang Dong, Lidong Zhang, Chunxi Dong	1124
Intelligent Pursuit and Evasion Decision-Making in Active Defense Scenarios Yutong Chen, Zhen Yang, Bao Zhang, Xingyu Wang, Yuhe Zhang, Deyun Zhou	1129
Research on the emergence mechanism of group leaders Jianyong Guo, Yufei Yuan, Peng Yu, Xuebo Chen	1135
A Text Augmentation Method Based on Dual Diversity Generation Qingwu Fan, Xinyue Guo	1139
M-LIME: a marginalized local interpretable model-agnostic explanations Qingwu Fan, Jiayuan Li	1147
An Enhanced Hybrid Human-Computer Interaction Strategy Based on Online Classification of Motor Imagery and Eye Tracking	1153
Yisu Wang, Yangyang Li, Guangbin Sun, Xuzhi Li	
Research Progress and Knowledge Mapping Analysis of Smart Classrooms based on CiteSpace	1162
Chen Liu, Qingji Guo, Ying Zhu	
Combining Textual and Behavioral Features to Improve Method-Level Bug Localization Yaqiang Zhao, Xiaozhuo Li, Ying Fan, Qing Tian, Xinyu Gu, Jianbin Song	1169
An improved air situation assessment method based on intuitive fuzzy reasoning Huan Zhou, Yue Shen	1180
Vehicle Recognition Method Based on Multi-sensor Information Fusion Xuejun Li, Hongbo Li, Jiyu Wang, Lu Song	1188
Fully End-to-End Chinese-Tibetan Bilingual Speech Synthesis Dongliang Chen, Chao Wei, Guanyu Li, Runyu Zhe	1193

Propagation trend deduction model of major health emergencies in megacities based on Attention-Bi-LSTM	1198
Zaipeng Duan, Jiong Li, Junjie Zhu, Yeyue Wu	,
3D Information Perception of Earthworks Based on Machine Vision and LiDAR Fusion	
Ziyao Xu, Quancheng Dong, Chenyu Liu, Chunming Miao, Guangxiao Shen	1203
Research on Knowledge Creation of Large Language Models Based on the SECI Model	
Shiwei Wu, Ruishuang Wang, Chao Zhang, Yiming Zhan, Zhengyu Ju	1209
Galaxy Morphology Semantic Segmentation Based on K-Net	
Tengyu Li, Tao Hu, Dashu Zhang, Songtian Yu, Wentao Li	1214
Research on tree species identification method based on YOLOv8 and visible light images Shuaikang Zhang, Yingwei Wang, Sijia Zhang, Aojun Liu	1219
Small Sample Wireless Technology Identification Enhanced by Cyclic Shift and Attention Mechanism	1225
Yupeng Shen, Pengfei Liu, Chenqi Zhu, Wei Xun, Bangning Xu, Haitao Zhao	1223
A Pedestrian Re-Identification Method Integrating ResNet and Residual Self-Attention	
Mechanism	1231
Jianxing Deng, Hanzhao Pan, Huibin Luo, Zhansen Jiao	
Research on Stereo Vision Localization Method Based on Prior Semantic Map	1006
Xingmin Ma, Yu Shi, Zhounian Lai, Hui Fang	1236
A VMamba Attention Network for Efficient Deformable Image Registration in Lung 4DCT Mengyuan Bai, Xiaofang Liu, Zijun Meng, Jinfeng Yang	1242
Research on Fast Identification and Location of Disordered Objects Based on Binocular Vision	1246
Xunlin Chen, Guangwei Huang, Xiaoju Li, Sufeng Yin, Feng Huang	1210
Compressed Image Artifacts Removal with U-Net and Attention Mechanism Net	
Jianhua Hu, Guixiang Luo, Zhanjiang Yuan, Weimei Wu	1253
A Privacy-Preserving Scheme to Support Dual-agent Selection in Smart Grid	
Yuanyuan Wang, Liqiang Wu, Huiyu Xie, Shuai Yang, Haokang Feng, Ruifeng Li, Yu Li, Yiliang Han	1258
Image super-resolution reconstruction method based on improved attention mechanism	
Ruiyuan Liu, Guinan Hu, Siqi Zhao	1266
Semantic-Guided Pruning Approach for Large Language Model-based Class-Level Code Generation	1276
Mingyang Geng, Bo Duan, Yunlong Guo, Hongyang Chen, Zhenshun Shi	1270
A universal adversarial perturbations generation method based on feature aggregation	
Yuhang Liu, Weiguo Shen, Dongwei Xu, Jiaye Hou, Mingchang Jin, Jiangpeng Li, Qi Xuan, Wei Wang, Yun Lin, Xiaoniu Yang	1281
A Robust and Low-Complexity RF Fingerprinting Method Using Gated Multilayer Perceptron for Cross-Receiver Conditions	1288
Jinlong Zhang, Jiarui Zhang, Can Yang, Yu Wang	

PTrans: Transformer-Based HRRP Target Recognition Method with Patching	
Yichuan Jiang, Kejiang Chen, Weiming Zhang	1293
Identification and Resolution Technology Based on Multi-Layer Knowledge Graph for Industrial Internet of Things Qidi Wang, Jinlong Sun, Gaohe Liu, Jiaji Zhang, Shuqiang Gui, Qiankun Wang	1299
Open-set image segmentation based on an improved Segment Anything model Haiyang Wu, Lingyun Kong, Zhipeng Xue, Denghui Liu, Songyang Li, Qi Zhang	1305
Lightweight Two-Stream Convolution-Augmented Transformer for Multi-Task Human Activity Recognition Using Wi-Fi Sensing Jianfei Lu, Fucheng Miao, Hong Wan, Zhiyi Lu, Youxiang Huang, Guan Gui	1314
Prior Enhanced Diffusion Model for Low Light Image Enhancement Liangcan Li	1319
Hierarchical Distillation of SAM for Lightweight Insulator Defect Segmentation Guodong Wang, Yu Cao, Chuanyi Hu, Ruochen Wang, Zhenbo Song	1325
MiniSAM: A Lightweight Segmentation Model with Pruning and Knowledge Distillation Jiaqi Liu, Yu Wang, Chengji Zhang, Dong Wang, Jianbin Zheng, Jian Zhou, Yang Wang, Xinghao Wang, Yanxia Chai	1330
Enhancing Medical Image Super-Resolution with GANs and Residual Attention Mechanisms He Liu	1336
Modal Invariant Joint Representation Learning for Missing Multimodal Ship Image Classification Bing Zhao, Shihao Wang, Congan Xu, Yun Lin	1340
A transfer-based adversarial attack method Lu Li, Fengming Zhu, Zichen Yang	1344
A Robust Specific Emitter Identification Method Based on Frequency-Domain Amplitude Mixing for Enhanced Domain Generalization	1351
Xinyi Shi, Hong Wan, Fucheng Miao, Zhiyi Lu, Jianfei Lu, Guan Gui A Continual learning approach based on Gaussian process model Zhaoyang Wen, Changsong Yao, Liuhao Sheng, Shiyu Chen, Qian Cao, Jiabao Cui	1356
Semantic Segmentation of Vehicle Steering Column Pattern Image Based on K-Net Network Tingxuan Wu, Jing Li, Nanyan Shen, Xiaobo Tang, Xin Wang	1366
Author Index	