

2024 7th International Conference on Mechanical, Control and Computer Engineering (ICMCCE 2024)

**Hangzhou, China
25-27 October 2024**



**IEEE Catalog Number: CFP24O22-POD
ISBN: 979-8-3315-0656-8**

**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:	CFP24O22-POD
ISBN (Print-On-Demand):	979-8-3315-0656-8
ISBN (Online):	979-8-3315-0655-1

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

PID Anti-sway Control of Crane Based on Double-Step Acceleration	P IC
Wenbo Huang, Bochun Lu, Chaoyang Weng, Qian Gu	
Outdoor Industrial AGV Trajectory Tracking Control Algorithm Research	5
Ruyi Wang, Jianning Gong, Ju Cheng, Weiwei Sun	
Distribution Network Fault Localization with Distributed Power Supply Using Matlab	12
Shicheng Yang, Ding Luo, Han Zheng, Xitong Pang	
Energy Management Strategy for Power-Split Hybrid Electric Vehicle using an Improved DDPG Deep Reinforcement Learning	P IC
Bihai Deng, Huafeng Ding	
Duplex Diagnostic Model for Vibration Data of Tobacco Equipment	P IC
Chuan Tong, Sheng Chen, Ling Chen	
Tracking and Resonance Control for a Three-Degree-of-Freedom Compliant Tip-Tilt-Piston Stage Driven by Voice Coil Motors Based on Recursive Positive Position Feedback	34
Zhihao Xu, Leijie Lai	
Navigation of Visually Guided Miniature Magnetic Microrobot: Optimization of Path Planning and Real-time Feedback Mechanisms	39
Xiao Yan, Meidan Wang, Dejin Zhao	
Research on Electronic Differential Control Strategy of Mine Distributed Drive Articulated Vehicle	P IC
Tongjie Wang, Dening Liu	
Study on Single Point Mooring Failure Response of New Floating Fan Platform	P IC
Yi Sheng, Hua Shao, Sheng Li, Hong Yao, Zihao Sun	
Trajectory Tracking Using Frenet Coordinates with Deep Deterministic Policy Gradient	56
Tongzhou Jiang, Lipeng Liu, Junyue Jiang, Tianyao Zheng, Yuhui Jin, Kunpeng Xu	
Modeling and Control Characteristics Analysis of Uniaxial Omnidirectional Vector Propulsion Unmanned Underwater Vehicle	P IC
Xiang Zhang, Longfei Li, Fantai Lin, Yi He	
Characteristic Prediction Model TCN-Informer for Gasifier Furnace Temperature	P IC
Weihao You, Shubo Jiang, Junwei Diao	
Research on Satellite Earth Collaborative Networking and Management Technology	69
Lingzhi Zhang, Jie Bai, Wanzhen Li, Dan Wang	

A Wind Turbine Instance Segmentation Approach Based on Boundary Optimization	74
Huiqing Xu, Zhiyong Huang, Siheng Xiao, Wang Zhu	
Research on Humidity Control Method for Environmental Experiment	P IC
Guohui Yang, Huitao Fan, Biqi Wang, Yanheng Shi, Yanan Wang	
Research on the Application of Automatic Mooring Control for Ships	87
Minhao Zheng	
Research on the Suppression of Speed Fluctuations in Permanent Magnet Synchronous Motor Range Extenders Based on Repetitive Control Strategies	94
Ziheng Liu, Hua Tian, Wuqiang Long, Wenliang Lu	
Model of Disturbance Motion Differential Equation for UAV Pinpoint Delivery Based on ADRC Control Algorithm	99
Lei Cao, Yuhao Jiang, Guozhang Fan, Yanchen Li, Ziyu Ma, Kylin Zhang	
Study on Safety and Stability of Underwater Acoustic Beacon Launched by Unmanned Underwater Vehicle	104
Hua Shi, Yaxun Chen, Yingyuan Tian	
Automatic Calibration Method for Industrial Robots by Using MultiCal	109
Zheng Wang, Huapeng Yan	
Research on Steady Motion Modeling Method of Underwater Towing Cable	P IC
Fantai Lin, Dengjun Li, Xiang Zhang, Yi He	
Pre-removal of Short Stems on the Stem Screening and Stemming Production Line with Size-Controlled Spatial Screening	N/A
Changlei Ma, Dongcai Liu, Cunlong Yang, Binyang Yu, Cunhua Li	
Markov Model-Based Prediction of the Movement Trajectory of Invasive Rats in Grain Bins	126
Renru Wu, Yanxin Xie, Zixuan Zhao, Chunsheng Li	
Flexible Production Line CNC Machine Tool Machining Accuracy Control Method	N/A
Shirui Xiang, Qicheng Ding, Liangqiang Dai, Yijie Liao	
Algorithm and FPGA Realization of Fast All-Sky Region Star Identification Based on K-vector	141
Hongliang Liu, Rujin Zhao, Ling Lin, Jianyong Zhong	
An Enhanced Combined Bert and CNN Approach to Emotion Recognition	147
Donghang Xue, Yu Wu	
The Improved Branch and Bound Algorithm for the Resource-constrained Assembly Line Balancing Problem	152
Xiaojun Zhu, Zhigang Xu, Junyi Wang	
DB-GS: A Diffusion-Based 3D Gaussian Splatting Method for Scene Reconstruction	159
Wentao Hu, Huafeng Ding, Qiao Ren, Shaowang Xie	

Port Scanning Detection Method Based on Ensemble Learning	163
Ziqi Yan, Bin Wang, Zhihao Chen, Yingming Zeng, Xiaofei Wang, Quan Wen	
An Improved Coati Optimization Algorithm Based on Specular Reflection Learning	168
Yu Wang, Weishi Peng, Gang Yao, Ping Ren	
Improved JPS Algorithm for Safe and Efficient Path Planning	172
Botao Hu, Jian Wang, Xiaokun Zheng, Huawei Liang	
Multi-objective Scheduling for MTS Production with Lot Sizing in a Plastic Factory	N/A
Xili Chen	
An Electrical Equipment Identification Method Based Attention Mechanism for Infrared Image	186
Zhimin Li, Fan Yang, Xu Tan, Yan Li, Jie Tian	
A Knowledge Graph Construction Method for Substation Infrared Operation and Maintenance Data Retrieval and Statistical Analysis	191
Yuhuan Li, Fan Yang, Xu Tan, Yan Li, Yong Yi	
Few-shot Intent Recognition with an Adaptive Masking Strategy	198
Liming Feng	
A method for Constructing Domain Ontology Based on LLaMA 3	202
Mengzhen Du, Weiqin Chen, Yuandan Deng, Yanling Mao	
Research on the Reliability Evaluation Method of Interior Ballistic Performance in Ejection System	N/A
Shuli Chang, Zhihao Shi, Pengtao Li, Jian Xie	
Non-uniform Sampling-Based Path Planning Algorithm for Unmanned Vehicles in Unstructured Environments	212
Tianhao Jia, Yue Ma, Chongbing Zhang	
YOLOv10-StarNet: Enhancing Object Detection in Autonomous Driving	219
Biao Wang, Changming Zhu, Liju Han	
Research on Denoising of Low-frequency Noise Signals Based on Adaptive Filter	224
Chang Qu, Yuxuan Wang, Xiaojuan Chen	
A Study on Color Image Classification Technique for Websites Based on Improved CNN and SVM	231
Xue Shao	
Deep Learning-based Network Abnormal Behavior Analysis with Data Provenance Graph	236
Yongjian Cao, Qiuhan Tian, Huishui Li, Haotian Zhang, Yongming Cao	
Timing Prediction-Based Approach for Detecting Microservice Performance Anomaly	245
Guilin Wang, Jiangang Dong	
Enhancing Robustness and Interpretability in Transformer Networks through Fuzzification	251
Jinxin Cui, Jun Yang, Tao Gao	

A* Path Planning Algorithm for Autonomous Underwater Vehicles Based on Electronic Charts	N/A
Yi He, Xiang Zhang, Fantai Lin	
Implementation of Focused Beamforming Algorithm Based on OpenCL GPU	261
Yiqiang Xu	
Voice Performance Analysis Based on CNN-Mamba	266
Shuaifeng Chen, Yi Guo, Fuqiang Hu, Yuying Wang	
Vehicle Network Intrusion Detection Method Based on Deep Transfer Learning	270
Zhong Tian, Chenglong Pan, Yiqiao Li, Faxue Yang, Zhongyue Li	
Research on UAV Image Splicing Technology Based on Improved SIFT Algorithm	275
Xiaoqing Chen, Hanyu Lu, Daode He, Yongyi Yuan	
Crested Porcupine Optimizer-Based Feature Selection for Intrusion Detection System	279
Fanyu Li, Jiangang Dong	
C1 Natural Neighbor Galerkin Method for Couple-Stress Theory	287
Zhifeng Nie, Kai Wang	
A Probabilistic Shaping Multi-User MIMO Scheme Based on Signal Space Diversity	291
Weimin Kang	
Design Method for Two-mode Power-Split Hybrid Transmission Characteristic Parameters Using Multi-Objective Optimization Algorithm	296
Chen Gong, Huafeng Ding	
Design of Electrode Adaptive Charging Device for the Legged Robot	301
Xu Dong, Xiao Dong, Jian Meng, Peng Xiao	
Research on Rapid Generation of Three-Dimensional Reinforcement Design Models	N/A
Yuan Liu, Zhensheng Li, Meng Li, Zhenqin Zhou, Erkang Li, Yan Pu	
Design of Gateway Automation Testing System Solution	311
Lin Xiao, Wei Su, Lu Zhang, Bipeng Luo	
A Novel Synthesis Method for the Hydraulic Excavator Working Arm Based on Type Synthesis	317
Xiaoxiong Li, Huafeng Ding	
UAV Flight Control System Design Based on Ardupilot	321
Renjie Liang, Xin Hu, Wei Li, Hongli Li	
Architecture of Unmanned Construction System Based on Intelligent Engineering Machine	N/A
Kui Liu, Bin Mei, Qing Li	
Research on the Ventilation Mode of Grille in Equipment Compartment of High-Speed Train	N/A
Yanjing He, Nanling Xia, Ruixuan Yuan, Yongchang Zhang	
Underground Cable Anti-Damage Warning System Based on Wavelet Threshold Denoising	338
Jie Zhao	

Research on Marine Equipment Information Model Based on Unity3D	342
Haiyan Wang, Di Hou	
Complexity Measurement and Optimization for Electronic Equipment Manufacturing Systems	346
Yunji Zhou, Jiancheng Shi, Yang Chen, Siqiao Liu, Jingxin Guan, Miao Yu	
Numerical Simulation Study of Ship Based on Gyrostabilizer	N/A
Shuo Wu, Dawen Xue, Wenjie Zhao	
Optimization Design of Spaceborne Single Machine Structure Based on Octave Band Criterion	354
Wenxu Yao, Guanghui Wang	
High-Static-Low-Dynamic-Stiffness Vibration Isolator with Nonlinear Electromagnet Modifier	358
Jin Liu, Xiaoping Pang, Jikang Lv, Dian Huo, Shaoxiong Mo	
Design of Power Generation Floor	N/A
Shuaishuai Shi, Kaihui Tang, Yating Li, Shuchen Cao, Qi Wang, Junlong Wang	
Q Value Simulation of Diamond Micro Hemispherical Resonators Based on Finite Element Method	N/A
Wenyu Zhao, Tao Wang, Yansong Liu, Xiaoshan He, Zhibing He	
Design and Research of Logistics Handling Robot Based on Visual Recognition	372
Kaihui Tang, Shuaishuai Shi, Yandong Dai, Yang Liu, Junlong Wang	
Design and Performance Analysis of Axial Force Driving System of Inertia Friction Welder	N/A
Ruohan Wang, Zhuocheng Yu, Pengfei Chen, Yingjun Guan	
Research on the Real-time Monitoring System of Mouse Granary Based on the Improved YOLOv5	383
Jingjing Lu, Yanxin Xie, Jiaqi Ding, Haotong Wu	
Study on the Current Curve of Subway Screen Gate in High-Density Driving Condition	391
Yin Xia, Daoxiang Wei	
Design of Acceleration Feedforward PID Controller Based on BP Neural Network	396
Yingyu Chen, Qilong Zhang, Xiaoying Song, Tao Jiang	
Research on the External Characteristics Testing and Numerical Simulation Methods of Spiral Labyrinth Pumps	N/A
Xin Rong	
Author Index	407