

2026 12th International Conference on Electrical Engineering, Control and Robotics (EECR 2026)

**Suzhou, China
6-8 April 2026**

IEEE Catalog Number:
ISBN:

CFP26CT4-POD
979-8-3195-2933-6



Copyright © 2026, IEEE

All Rights Reserved

Copyright and Reprint Permissions:

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

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

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

IEEE Catalog Number:	CFP26CT4-POD
ISBN (Print-On-Demand):	979-8-3195-2933-6
ISBN (Online):	979-8-3195-2932-9

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

Adaptive PID Gain Tuning for Quadrotor Hover Control via Deep Reinforcement Learning	1
<i>Mohamed Amine Oumlik, WeiChen Dai</i>	
Two-Stage Auxiliary Model-Based Iterative Least Squares Parameter Estimation for a Class of Nonlinear Systems with Non-Uniform Sampling	11
<i>Hongchen Qin, Yan Ji, Wen Zheng</i>	
A Unified FPGA Time Base for Coordinated Control of Multi Link Photoelectric Sensing Systems	16
<i>RunZe Liu, Jihong Zhu</i>	
A Compact Vision-Guided PLC-CNC Gantry Platform for Automated Laboratory Liquid Handling	22
<i>Kuo Yu, Letian Hu, Taixi Zhu, Tong Li, Yueqi Liu, Yixuan Ma, Mark Leach, Quan Zhang</i>	
A Digital Metrology Framework for Needle Gauge Calibration Using Laser Scanning and Predictive Wear Analysis	32
<i>Jie Qin, Jun Chen, Zheng-xu Gu, Guoqiang Gao, Bo Zhao</i>	
Aerial Pursuit: Multi-Agent Swarm for Predator–Prey Games	39
<i>Wu Zining, Chen Haoran, Zhao Jinqiu, Peng Yifeng, Sutthiphong Srigrarom, Boo Cheong Khoo</i>	
Design of an Autonomous Agricultural Machine Integrating Mowing and Spraying Herbicide	46
<i>Runchen Jiang, Jie Cao, Lin Qiao, Lei Yu, Gumin Jin, Yuqing Chen</i>	
Online Detection of Droplet Transfer Modes in CuCrZr Alloy WAAM Based on CNN-LSTM	51
<i>Tianxiang Shi, Zhaowei Diao, Fei Yang, Haichen Li, Lin Chen, Yi Wu, Mingzhe Rong</i>	
A Robust Hybrid Ensemble for Tri-Axial Vibration-Based Running Speed Estimation With Leakage-Free Stacking	56
<i>Chenghang Liu, Haocheng Lyu, Bowen Wang, Wenbo Fan, Quan Zhang, Jie Sun, Mark Leach</i>	
Physics-Aware Deep Reinforcement Learning for High-Speed UUV Navigation in Chartless Environments with Max-Threat Logic and Minimalist Sensing	62
<i>Songlin Yang, Aigen Huang, Jiugen Lin, Chen Liang, Wensuo Liu</i>	
A Case-Density-Driven Closed-Loop Intelligent Strategy for Air-Ground-Human Collaborative Disinfection: An End-To-End Framework from Case Perception to Task Scheduling	70
<i>Liuhua Zhang, Xin Liao, Zhengquan Li, Nanfeng Zhang, Jingfeng Yang, Yingyi Wu</i>	
Construction of a Data-Driven Model for Boost Converter Loss Based on Convolutional Neural Networks and Current Spectrograms	77
<i>Guihua Liu, Xinyu Wang, Kun Liu, Ye Tao</i>	
Design and Simulation Research of Electron Beam High-Frequency Scanning Coil	83
<i>Daifang Zhang, Zhiwei Guo</i>	
A Static Reconfiguration Method for Thermoelectric Generator Arrays Integrated with Automotive Exhaust Muffler	89
<i>Qi Zhang, Jun Wang, Shihan Huang, Yuanzhuo Dai</i>	
Simulation Metal Particle Motion Characteristics Particle Tracking-Multibody Dynamics GIS	95
<i>Chen Cao, Xu Yang, HaoZhen Li, Ruifeng Hua, Xingwei Wang, Xichi Zhu, Hewei Huang</i>	

An LLM-Based Agent Framework for Intelligent Power Module Design	100
<i>Ruiting Ke, Jianfeng Tao, Xiaojian Ding, Chengliang Liu</i>	
Parameter Identification Method for Double-Sided Lcc Wireless Power Transfer Systems	105
<i>Xiaobo Wan, Haiyun Zhu</i>	
High Power Supply and Control Management Technology Based on SiC Devices	111
<i>Baolei Dong, Haoyue Deng, Xiao Wang, Lidong Shi, Xu Huang, Zirui Zhu</i>	
An Integrated Multimodal Energy Management Strategy for Hydrogen-Lithium Hybrid eVTOLs	116
<i>Ruiqing Luo, Xiaolong He, Yi Dong, Zezhi Tang, Zhen Dong</i>	
Energy Storage Integrated DC-AC Converter for Green Energy Petroleum Engineering System	122
<i>Haochen Shi, Kai Wei</i>	
Development and Validation of an LQR-Optimized State-Feedback Controller for DC Motor Position Control	128
<i>Anthony Abesado, Christian Arnel Alcantara, Edward Panganiban</i>	
The Dctnn With L2 Regularization for Parameter Identification of DC-Bus Capacitor in AC-DC Power Electronic Transformer	133
<i>Xiaohui Li, Qian Chen, Xu Han, Qian Guo</i>	
AI-Driven Fault Diagnosis of Induction Motors: A Fault-Type-Based Comparative Review	139
<i>Rudong Li, Tianru Zhang, Chenyu Lu, Jie Sun</i>	
Model-Free Adaptive Overvoltage Suppression Method for Grid-Forming SVG	145
<i>Ye Li, Yuhong Song, Guangyao Qiao, Qiuyu Shi, Kai Hu, Yongxin Zhang</i>	
Study on the Distribution Characteristics of UHF Signals Induced by Partial Discharge Inside Power Transformers*	151
<i>Qunying Yu, Saipeng Zhang, Hui Huang, Qiming Zhao, Haidan Lin, Ke Ding, Chen Cao</i>	
Mechanical State Assessment Method for Transformer Windings Under Multiple Short-Circuit Impacts Based on Gaussian Mixture Model Clustering	156
<i>Mingyang Xu, Chun Yang, Lei Zhang, Lu Chen, Feng Wang, Yuanming Shuai, Zhengyang Zhang Fan Zhang</i>	
Switch-Capacitor Based Differential Power Processing Converter with Mismatching Detection Method	162
<i>Xue Wang, Guansong Shan, Qinglei Bu, Ye Liang</i>	
Research on the Evaluation Criteria for the Impulse Degradation State of ZnO Varistors Based on the Ratio of Leakage Current and Resistive Component Harmonics	167
<i>Jie Zhang, Yong Wang, Junxiang Liu, Lu Zhu, Jun Xiong, Mengdie Li, Yongxia Han</i>	
A Method of Motor Signal Enhancement and Fault Diagnosis Based on Knowledge Embedding Deep Learning	172
<i>Shijie Wang, Jianfeng Tao, Chengliang Liu</i>	
A Multi-Segment Logarithmic Spiral Continuum Robot With a Stretchable Central Backbone: Design and Coupled Kinematic Modeling	178
<i>Huaicheng Huang, Pingsong Deng, Guolei Wang</i>	

Physics–Learning Hybrid Adaptive Control for Soft Continuum Robots via ANCF Model and Sparse Online Learning Methods	187
<i>Yu Rong, Guoying Gu</i>	
Motion Control of a Quadruped Bionic Robot	194
<i>Yuanjiang Duan, Chao Wang, Wentao Dai, Zhixian Wang, Minghua He, Yutao Zhou</i>	
Demonstration Augmented-DRL: An Architecture for Quadruped Robot Jumping on Lunar High-Relief Terrain	200
<i>Yidong Ye, Hanying Sang, Jun Li, Shuquan Wang</i>	
Safety-Critical and Task-Consistent Control for Proprioceptive Training of a Rehabilitation Robot Using High-Order Time-Varying CBFS	208
<i>Liziyi Hao, Zhaocheng Zhou, Weiqiang Song, Honghao Zheng, Jianda Han, Ningbo Yu</i>	
Practical Finite-Time Control of Nonholonomic Mobile Robots Subject to Multiple Constraints	215
<i>Binhan Liao, Pingting Luo, Kaijie Jin, Jiahong Liu, An-Min Zou</i>	
Energy Efficiency Research in Variable Stiffness Actuator-Based Exoskeletons	221
<i>Yang Liu, Guoyang Hong, Hesheng Han, Jianqing Peng, Lin Liu</i>	
A Vision-Guided Learning Framework for Robotic Pick-And-Place Based on Demonstrated Patterns	227
<i>Yeh Huann Goh, Max Wee Ming Liang, Yan Kai Tan, Tsung Heng Chiew, Sara Lee Kit Yee, Kar Mun Chin</i>	
Impulse-Robust Attitude Estimation for Hexapod Robots Using Adaptive Quaternion EKF with Chi-square Test	231
<i>Shijie Li, Chao Wang, Wentao Dai, Zhihao Li, Jiaqi Shi, Yuchen Qian</i>	
Robust Infrared Reflective Sensors in Low-Cost Leader-Follower Mobile Robots System	235
<i>Zhiheng Li, Yurui Jin, Yanhua Zhang</i>	
A LiDAR-Anchored Synchronization Framework for Robust LVI-SLAM	243
<i>Chenxi Gu, Huizhong Wu, Haolong Jiang, Jia He, Fanxin Wang</i>	
ViT-RatSLAM: Practical Integration of Vision Transformer-based Visual Place Recognition into Bio-inspired SLAM for Robust Topological Mapping	249
<i>Chen Liang, Yiming Zhao, Ruixun Yu, Kangcheng Ma, Weichen Dai</i>	
Data-Adaptive Vision + Multi-Sensor 3D-Relative Pose Estimation Method:: A Case Study of Relative Pose Estimation for Precise Landing of Quadrotor on Robotic Dog	256
<i>Dai Zhenxi, Huang Tianhao, Chen Shouyu, Sutthiphong Srigrarom, Khoo Boo Cheong</i>	
Composite Attention Multiscale Spatial-Frequency Network for Underwater Image Super-Resolution	266
<i>Jinpeng Zhang, Hao Wu, Maichen Xiong, Chengdong Wu, Xiuqing Gao, Yaoming Zhuang</i>	
Multi-Sensor Fusion Based Indoor Localization and Navigation System for Dual-Ackerman Steering Mobile Robots	273
<i>Yufei Lu, Qun Hao, Shaohui Zhang</i>	
Deterministic Temporal Abstraction for Quadrupedal Backflip: A Time-Scheduled Phase Decomposition Approach	280
<i>Jinze Tao, Muye Pang, Xinda Chen, Chenghan Zhang</i>	

Dynamic Obstacle Avoidance Motion Planning for a Robotic Manipulator with Maximum Manipulability Optimization	286
<i>Zekai Zhao, Yang Wang, Xin Peng, Mingxing Yuan, Xuebo Zhang</i>	
Sampling Strategy Design for Model Predictive Path Integral Control on Legged Robot Locomotion	293
<i>Chuyuan Tao, Fanxin Wang, Haolong Jiang, Jia He, Yiyang Chen, Qinglei Bu</i>	
A Smooth Path Planning Method for Manipulators Based on Improved RRT* Algorithm	299
<i>Qiaobin Yan, Jinglin Bao, Yanhu Pei, Ming Wu, Yunhao Bai, Jingjing Xu, Fengxu Chen</i>	
Mixed-Integer Programming for Multi-Agent Motion Planning and Encirclement of Moving Targets in 3D Space	305
<i>Runhui Long, Yun Wang, Hanyue Fan, Yifan Shen, Zhongqiang Ren, Sutthiphong Srigrarom</i>	
Vision-Based Liquid Feeding Robot System: A Feeding Solution for the Disabled Elderly	313
<i>Feichao Han, Jiangsheng Liu, Juan Qian, Rongcai Cui</i>	
Intelligent Rescue Robot Based on ROS Algorithm	319
<i>Fuhe Li, Guoliang Jiang, Xinkai Liang, Lingxiao Wang</i>	
Research on an Intent-Driven Autonomous Organizing Robot System for Home Environments	328
<i>Bingjie Xu, Mengdan Guo, Jianming Wu, Qinglei Bu, Jie Sun</i>	
In-Pipe Mobile Machining Robot Self-Calibration Considering Long-Term Accuracy Retention	334
<i>Shiyu Tian, Te Li, Chongbo Mao, Yijie Xu, Haibo Liu, Yongqing Wang</i>	
Unmanned Aerial Vehicle Navigation in Complex Environments: A Review	340
<i>Sai Htet Moe Swe, Loulin Huang, Achala Perera</i>	
Design and Simulation of Multi-UAV Cooperative Target Localization Algorithm Based on Multi-Source Sensors	349
<i>Yilin Dong, Jianyong Yang, Xiaozhou Guo, Yanling Ji, Xiaojun Xing</i>	
Prescribed Time Performance Attitude Geometric Tracking Control of Quadrotors	354
<i>Liping Wang, Xue Wang, Minghe Suo, Jian Zhang</i>	
Robust Fault-Tolerant Control for Dual-Drone Slung Load Systems Under Rotor Damage	359
<i>Xiaoyu Yi, Ziya Jiang, Yu Tian, Xiaolong Zhu</i>	
Real-Time UAV Trajectory Generation Guided by Explicit Avoidance	365
<i>Chen Yuhui, Lai Yiyang, Xiong Wen, Shi Zhaoqi, Liu Yufei, Cai Runqing</i>	
Vision-Based Visual Navigation and Control Fusion System for Water Rescue UAV	373
<i>Yige Yang, Chao Wang, Wentao Dai, Sian Zhu, Mingshuang Zhong</i>	