

2025 8th World Conference on Mechanical Engineering and Intelligent Manufacturing (WCMEIM 2025)

**Wuhan, China
28-30 November 2025**

IEEE Catalog Number: CFP25V71-POD
ISBN: 979-8-3315-5378-4



Copyright © 2025, 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:	CFP25V71-POD
ISBN (Print-On-Demand):	979-8-3315-5378-4
ISBN (Online):	979-8-3315-5377-7
ISSN:	2837-5254

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

Image Recognition based Blueberry Intelligent Picking Robot	1
<i>Shutao Guo, Shanchen Pang</i>	
Grasp-Envelope Guided 3D Shape Completion for In-Hand 6D Object Pose Estimation	5
<i>Enguang Wang, Yiping Gao, Xinyu Li</i>	
Study on Start-Stop Characteristics and Its Influencing Factors of Traveling Wave Ultrasonic Motor	9
<i>Huajie Qu, Mengdi Shi, Tangchun Zhao, Zhongpu Wen</i>	
Fall-Prevention Power-Assisted Climbing Robot with Force-Position Adaptive Control	16
<i>Yingdong Rao, Lijuan Guo, Jing Mo, Peng Zhou, Guoshan Xie</i>	
Research on Kinematic Inverse Solution for Four-Axis Robotic Arms Based on Gradient Descent Method	24
<i>Jianxi Li, Xuqiang Guo</i>	
Design of a Deep-Sea Laser Control System for the “Jiaolong” Manned Submersible at 7000-Meter Depth	30
<i>Jialing Tang, Qiangguo Niu, Kun Liu, Chao Li, Yugang Ren</i>	
Design and Implementation of Data Interaction between ZYNQ PS and PL Based on BRAM	35
<i>Zhongjie Wang, Guochu Chen</i>	
UAV Trajectory Tracking Based on Fuzzy Adaptive PID Control	40
<i>Hang Liu, Tenghuan Ding, Ruchang Huang, Guoqiang Wang, Haidong Wu, Shuang Hu</i>	
Research on Structural Design and Visual Recognition System of Golf Ball Picking Robot	45
<i>Jilan Yang, Wei Li, Xuan Sun, Xinjia Wei</i>	
Design and Implementation of a Citrus-Picking Robot Based on YOLOv8 Visual Recognition and Six-Degree-of-Freedom Robotic Arm	49
<i>Jilan Yang, Yuanwang Lei, Changzhi Li, Xuan Sun</i>	
An Object Feature Detection Method Based on an Image Quality Assessment Function	53
<i>Youxiang Cui, Anyun Wang</i>	
Temperature Control of Dissolving Solution in Circulating Tank based on Fuzzy PID Control	58
<i>Xiaosong An, Xiaoqiang Ma</i>	
Verification of Control Performance for Three-Level T-Type Inverters under Closed-Loop Current Control	64
<i>Guoliang Li, Yongming Zhang</i>	
Research on Common-Mode Voltage Suppression Strategy for NPC Three-Level Inverters	68
<i>Jinwen Guo, Zongwei Liu, Lingyan Lin, Fanlin Gong</i>	
Paper Advanced Control Techniques for High-Speed Magnetically Levitated Centrifugal Compressors	72
<i>Jinyong Wang, Lei Wang, He Lin, Hongliang Guan</i>	
Simulation Study on Grid-Connected T-Type Three-Level Inverter Based on SVPWM	77
<i>Mohan Li, Yongming Zhang</i>	

Zero-Sum Game-Based Approximate Optimal Control of Visual Servoing Manipulators with Uncertain Disturbances	81
<i>Xiaolin Ren, Yidi Liu, Zhenguo Zhang, Haobing Cui</i>	
Spatial-Aligned Graph-Mamba Fusion for Visible-Infrared Object Detection	85
<i>Ting Li, Guobao Yang, Hongkai Liu, Yu Zhao</i>	
Design and Simulation of Self-Organising Antenna Structures based on Computer-Integrated Manufacturing Platforms	89
<i>Junda Huang, Xiangzeng Kong, Zijian Li, Yanjie Tang, Dong Huang, Chuanyu Wu</i>	
Integrated Scheduling and Preventive Maintenance Optimization for Green Intelligent Flexible Job Shop Using Machine Learning	93
<i>Shuran Qian, Hao Yin, Yichen Wang, Aria Sadewa, Mingyao Qi</i>	
An Intelligent Optimization Algorithm for Electronic Manufacturing Assembly Line Proactive Material Distribution	98
<i>Weikang Fang, Ziyue Wang, Liang Xuan, Dan Luo, Fei Du</i>	
An Effective Hybrid Optimization Algorithm for Semiconductor Chips Packaging Line Scheduling	103
<i>Ziyue Wang, Weikang Fang, Liang Xuan, Fei Du</i>	
Research on Multi-Objective Energy-Efficient Scheduling for Wafer Photolithography Process	109
<i>Ziyue Wang, Weikang Fang, Liang Xuan, Yue Teng</i>	
Bearing Fault Recognition Method Integrating Multi-Scale Features and Attention Mechanism	114
<i>Yilin Yang, Yiqian Jia, Ruqing Wu, Sumin Guo</i>	
Research on Semi Automated Metrology Technology Based on Matrix Formula of Rotary Parts	118
<i>Dianliang Chen, Wenbiao Yang, Xianjian Tan, Yuanjun Gong, Yuanyuan Liu, Xu Zhang</i>	
A Gearbox Fault Diagnosis Network based on Continuous Wavelet Transform and Two-Dimensional Convolution	123
<i>Lang Tian, Qiang Zhang, Liang Xuan, Yifeng Li, Fen Wang</i>	
Graph Neural Networks Encoding-Based Structural Decomposition of Large-Scale Space Trusses	127
<i>Shihang Yin, Zeyuan Huang, Zixuan Hao, Yichen Tan, Gang Chen, Yifan Wang</i>	
Point Cloud Driven Strain Prediction in Precision Assemblies via Stress-Informed Sampling and Self-Supervised Learning	132
<i>Xiao Wang, Hao Gong, Jianhua Liu, Ruixiang Wang</i>	
Impact Conditions Prediction Based on Surface Damage Morphology of CFRP	141
<i>Yi Gong, Miao Li, Sheng Liu</i>	
Construction and Application of Knowledge Graph for Aviation Equipment Manufacturing Process	145
<i>Wen Lei</i>	
Bayesian Multi-Objective Optimization of a Radial Magnetic Bearing: A Trade-Off Analysis of Power Loss and Load Capacity	151
<i>Chuang Wang, Gang Rao</i>	
A Study on the Dynamic Characteristics of Viscoelastic Materials using Integrated Piezoelectric and Fiber Optic Sensing	158
<i>Wuxin Liu, Guangfu Zhou, Yutang Dai, Jiacheng Yu</i>	

A Probe Calibration Method for Coordinate Measuring Machines based on a Hybrid Temporal-Physical Constraint Model	162
<i>Xinfeng Lv, Weichao Guo, Xianpeng Zhang, Pengfei Qin</i>	
Metal Defect Detection based on an Improved YOLOv10 Network	168
<i>Qing Cao, Miao He, Yue Cao, Yuxuan Hu, Gurong Tian, Mengyuan Yi, Yingyu Liu, You Hu, Zhiyuan Guo</i>	
<i>Gongming Li, Xiaoling Lei</i>	
The Industrial Model Definition and Interaction Mechanism Research based on Formalization Approach	173
<i>Jiming Li, Jiadong Cao, Sipeng Cao, Xuan Liu</i>	
Research on Energy Consumption Prediction of Range-extended Hybrid Vehicles Based on Optuna Optimization of XGBoost	178
<i>Zhang Gao, Hang Liu, Guijin Xu</i>	
Dynamic Calibration of Non-Contact Voltage Measurement via Hybrid NRBO–WOA–BP Optimization	185
<i>Fanlin Gong, Zongwei Liu, Lingyan Lin, Jinwen Guo</i>	
Fault Analysis Research Experiment on the IEEE 9-Bus Model in RTDS	189
<i>Xujun Jiang, Guochu Chen</i>	
Large Language Model-Enhanced Sequential Recommendation for Human-Robot Collaborative Power Battery Disassembly Sequencing Planning	194
<i>Zhiwen Zhang, Guoxian Wang, Wu Ouyang, Jinhua Xiao</i>	
A Hardware-Friendly 16-Bit Fixed-Point Quantization Training Algorithm for CNNs	200
<i>Changhao Gao, Fang Zhou, Zhiqiang Xiang, Yichi Chen, Canyang Guo, Xin Chen</i>	
Cascade Optimization Based on Improved Multi-Objective Grey Wolf Optimizer	204
<i>Qianpeng Han, Afei Gao, Shouyue Dang, Xiaoling Li</i>	
CTMSA-ModernTCN Based Prediction Method for the Measurement Error of Current Transformer Automatic Verification Assembly Line	209
<i>Jing Fang, Yanlin Sun, Wenjun Luo, Xiong Gu, Huixuan Shi</i>	
The Research on the Prediction Method of Thermocouple Remaining Lifetime based on Reliability Analysis	214
<i>Yuchen Xie, Kang Xu, Yanhui Wang, Xianghui Chen, Linjiang Feng, Yan Ran</i>	