2023 5th International Conference on Control and Robotics (ICCR 2023)

Tokyo, Japan 23-25 November 2023



IEEE Catalog Number: CFP23R30-POD ISBN:

979-8-3503-0763-4

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:
 CFP23R30-POD

 ISBN (Print-On-Demand):
 979-8-3503-0763-4

 ISBN (Online):
 979-8-3503-0762-7

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



2023 the 5th International Conference on Control and Robotics

(ICCR 2023)

Table of Contents

Preface Committees	
Modern Electronic Technology and Control Systems	
LMI-based Robust State Feedback Control of A Water-powered Tethered Drone with Input Saturation	
Thinh Huynh, Dong-Hun Lee, Young-Bok Kim	
A Novel Three-axis Capacitive Force Sensor for Robot-assisted Surgery	7
An Unsteady Rotor Aerodynamics Analytical Model of Hybrid Compound High-speed Helicopter Xinfan Yin, Hongxu Ma, Honglei An, Qing Wei, Liangquan Wang, Bowen Nie	11
Yaw Motion Control System for Novel Unmanned Water-powered Aerial Vehicle: Design a Experiments	
Cao-Tri Dinh, Thinh Huynh, Dong-Hun Lee, Young-Bok Kim	
Securing Barrier Coverage in Camera Sensor Networks Through Optimization	23
Modern Control Theory and Control Technology	
High-Level Maintenance Plan Prediction for High-Speed EMUs Based on an Optimized Deep Bel Network	
Wei Hao, ShaoQing Liu, LongQing Fan, BaoJie Gao, DongLei Sha, XinChun Li	
Control of double integrators under input saturation and disturbances	35
Simulation Analysis of K-modification Adaptive Control for Remotely Operated Underwater Vehicles Praveen Amodya Ekanayake, Charita Darshana Makavita, Tadachika Nakayama	40
Workspace Analysis for Parameter Optimization of a Cable-driven Boat Motion Simulator	47

Transflection Near-infrared Spectroscopy Combined with Machine Learning for Mechanical Stability Time Evaluation in Concentrated Rubber Latex53
Pisit Suttho, Kittisak Phetpan, Panmanas Sirisomboon, Chin Hock Lim, Nuttapong Ruttanadech, Pramote Kuson
IMC-PID Controller Based on Indirect Design Approach for FOUTDP59
Bipin Singh, Bharat Verma, Prabin Kumar Padhy
Al Based Complex System Control Model and Reliability Evaluation
Fuzzy Neural Network Model Predictive Control Based on Dynamic Partial Least Squares Framework
64 Xuyue Li, Yongqiang Shi, Guorong Wang, Xin Jin
Multi-missile cooperative guidance law under communication delay and topological transformation in 3-D73
Yuxuan Dong, Zhen Yang, Shiyuan Chai, Yupeng He, Deyun Zhou
Nonlinear Predictive Control Based on ELM Neural Network and Dung Beetle Optimization Algorithm
YuTing Zhou, Ying Quan, Yue Wang, Xin Jin
Exploring Advanced Techniques for System Prediction: An in-depth review
A Pipeline Leakage Diagnosis Method Based on CNN-BiGRU Twin Network
Robot Function Control and Motion Planning
From Detection to Action Recognition: An Edge-Based Pipeline for Robot Human Perception94
Petros Toupas, Georgios Tsamis, Dimitrios Giakoumis, Konstantinos Votis, Dimitrios Tzovaras
A Novel Intelligent Inspection Robot Navigation Strategy for Autonomous Defect Search in Pipeline Anti-corrosion Coating
Shunxin Tian, Dexin Zhang
Development of an Augmented Reality User Interface for Collaborative Robotics in Quality Inspection for Manufacturing107
David Kötter, Gabriel Wiedon, Daniel Meierkord, Minh Trinh, Oliver Petrovic, Christian Brecher
Optimization of industrial robot grasping processes with Q-learning
RoboCon: A Modular Robotic Containerization, Orchestration, and Load Balancing Technique for Mixed Hierarchy Task Handling Across Computing Platforms

Spline-based Topology Generation for Path Planning of Mobile Robots under Kinematic Constraints130
Senanur Telli, Fabian Menebröker, Jonas Stenzel
Robotic Manipulator Control with Model-Independent Sliding Modes
Enhancing Robot Self-Localization Accuracy and Robustness: A Variational Autoencoder-Based Approach
Asuma Abe, Goragod Pongthanisorn, Shin-ichiro Kaneko, Genci Capi
Intelligent Image Detection Technology and Application
The Development of Mobile-Based Symptom Analysis for Early Detection of Diseases Using Hyper-Tuned C-Support Vector Classification Algorithm
Anne M. Borcelis
GUI-Based YOLOv8 License Plate Detection System Design
Machine-Learning-Based Profanity Detection and Removal in Cartoons Videos
A self-assessment framework for initial screening of human monkeypox
Research on the Video Detection Method of Smoke Flame Based on Improving YOLOv7-tiny174 Guorong Wang, Yongqiang Shi, Xuyue Li, Xin Jin, Yue Wang
Brain Tumor Detection and Classification by MRI using Hybrid Techniques with SVM Classifiers181 Shiv Sagar Singh, Rajneesh Sharma
Face Detection Approach to Classify Emotions Based on Facial Expression in Depressive Disorder
Rattapong Suwalak, Tuksina Sukkaeo, Thanawut Promwanrat, Satjalinee Satjawiso, Nisan Werachattawan, Jarurin Pitanupong
Vision Based System Control and Detection Technology
Research on Autonomous Charging Method for Quad-Rotor Drone Based on Magnetic Induction Coupling
Haoyi Zheng, Sen Zhang, Wendong Xiao
Compressing Multiple Sensor Signals for Distributed Sensing by Autoencoder Preprocessing194 Junming Wang, Jing Shu, Zheng Li, Hongliu Yu, Raymond Kai-Yu Tong

Real-Time Electro-Hydraulic Trajectory Tracking Using an Optimized Sliding Mode Control Design with PID Structure199
Rozaimi Ghazali, Muhamad Fadli Ghani, Mohd Saidi Hanaffi, Hazriq Izzuan Jaafar, Chong Chee Soon, Zulfatman Has
TRIZ-Driven Product Quality Enhancement and Competitiveness in Electronic Manufacturing: A Practical Case Study and Strategic Investigation
Shao-Dong Syu, Nhat-Luong Nhieu, Hoang Thi Hoan, Chia-Nan Wang, Gao-Min Lin, Ying-An Hung
Design and Image Tracking Control of Underwater Manipulator210
Tsung-Han Wu, Shun-Min Wang, Wen-Wei Chang
Fiducial Marker and Camera-Based Passive High-Accuracy 6-DoF Tracking for Mobile Objects215 Hideyuki Tanaka, Kunihiro Ogata
Machine Vision and Image Analysis
Pipeline Leak Diagnosis Based on SDAE221
Xianming Lang, Dongye Sui, Yuanhao Lv, Kaixin Yuan, He Zhang
Target Round Bar Detection and Two-stage Calibration for Automatic Label Attachment System225 Young Chul Lim, Minsung Kang
Research on the Recognition and Classification of Recyclable Garbage in a Complex Environment Based on Improved YOLOv8s
Yongqiang Shi, Xuyue Li, Guorong Wang, Xin Jin
Predicting Prostate Cancer Risk Stratification Based on PSA and Functional Subsets of Peripheral Lymphocyte
Yin Fang, Yan Jiang, Xinyu Cao, Hanshuo Xing, Peiyan Wu, Wenbo Song, Xinglong Wu
Facial Expression Recognition Based on Dual Scale Hybrid Attention mechanism240 Peng Yongjia, Jin Xin
System Model and Data Analysis Based on Machine Learning
Distributed Fault-Tolerant Average-Tracking for Linear Multi-Agent Systems
Multi-Modal Cross Attention Network for Predicting Pathological Complete Response in Breast Cancer MRI250
Jonghun Kim, Hyunjin Park
Predictive Data Analytics for Energy Incident Management (EIM) in Smart Buildings: A Data Science Approach
Mohamed Riduan Abid, Austin Lee, Thomas Merino, Kaleb Horvath, Ryan Zimmerman, Yesem Peker, Shamim Khan

of Biodiesel Using Near-infrared Spectra
Chitwadee Thongphut, Thatchapol Chungcharoen, Kittisak Phetpan
Using Manta Ray Foraging Mechanism to Improve Reptile Search Algorithm
The Survey for the Applications of Quantum Technology
Rotation-lossless Non-local Attention and Fine-grained Feature Enhancement based Fine-grained Oriented Object Detection in Remote Sensing Images
Homology-Rank-Informed Geometry Score for Configuration Space Reconstruction28 Jorge Ocampo Jimenez, Wael Suleiman
Data Selection Using Genetic Algorithm to Improve Transfer Learning Efficiency in Brain-Machine-Interface Systems
Ant Colony Algorithm Path Planning Based on Genetic Algorithm Fusion in 2D Grid Maps29 Yilin Zhang, Qiang Zhao
An Empirical Evaluation of Out-of-Distribution Detection Using Pretrained Language Models302 Byungmu Yoon, Jaeyoung Kim

Author Index