

2025 Australian & New Zealand Control Conference (ANZCC 2025)

**Gold Coast City, Australia
30-31 January 2025**



**IEEE Catalog Number: CFP25N23-POD
ISBN: 979-8-3315-3220-8**

**Copyright © 2025 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:	CFP25N23-POD
ISBN (Print-On-Demand):	979-8-3315-3220-8
ISBN (Online):	979-8-3315-3219-2
ISSN:	2767-7230

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

Employing a Relay-Feedback Oscillator for Resonance Tracking	1
<i>Shiang-Hwua Yu</i>	
Imbalanced Classification of Ultrahigh Carbon Steel Microstructures with Vision Transformers and Image Synthesis of Minority Class.....	7
<i>Xiu Liu, Chris Aldrich, Ke Liu</i>	
Adding Damping to Energy-Efficient Electro-Hydraulic Drives Using Observed Pressure	12
<i>Damiano Padovani</i>	
Distance-Adaptive High-Precision Sensing for Autonomous Modular Buses	18
<i>Hongyi Lin, Yiping Yan, Yang Liu, Ying Yang, Xiaobo Qu</i>	
SIFT Based on MediaPipe to Identify Athletic Posture.....	23
<i>Jim-Wei Wu, You-En Wang, Ping-Hsuan Hsueh, Chieh Yen</i>	
Recognition and Early Warning of Ride-Hailing Vehicle Aggregation Based on Multi-Source Spatiotemporal Data Fusion	29
<i>Yue Wu, Yuan Zhong, Haitao Yu, Jiong Wang, Huaimin Yan, Jingcheng Wang, Xingyuan Dai, Hongxia Zhao, Yisheng Lv</i>	
Static Output Feedback Pole Placement Control: Restoring State Space Algebraic Roots	35
<i>Abdulrahman H. Bajodah, Hassen Mibar</i>	
On Functional Estimator Design for Linear Discrete-Time Descriptor Systems.....	41
<i>Jaffar Ali Lone, Juhi Jaiswal, Shovan Bhaumik, Nutan K. Tomar</i>	
Model Order Reduction for System with Negative Imaginary Property: Structure-Preserving Approach	47
<i>Mohamed A. Mabrok, Nader Meskin, Tamer Khattab</i>	
Reducing Order Modelling of Zeta Converter Through Hurwitz Polynomial and Padé Approximation.....	53
<i>Khushboo Kumari, Deepak Kumar, Victor Sreeram</i>	
CFragHMM - A Traffic Accident Critical Fragments Evaluation and Recognition Model	58
<i>Qingwen Han, Mingdeng Tan, Xinyue Song, Lei Ye, Lingqiu Zeng, Ke Liu, Lingfeng Qi</i>	
Optimization of Partially Isolated Quantum Harmonic Oscillator Memory Systems by Mean Square Decoherence Time Criteria.....	64
<i>Igor G. Vladimirov, Ian R. Petersen</i>	
Real-Time System Identification of an Ill-Posed Nonlinear Spacecraft Thermal Mathematical Model	70
<i>Yuki Saito, Samir Khan, Seiji Tsutsumi</i>	
Performance Guaranteed Consensus Tracking of Networked Agents with Uncertainty	76
<i>Boda Ning, Qing-Long Han</i>	
Koopman Operator and Model Predictive Control Integration for Autonomous Underwater Vehicle Speed Regulation.....	81
<i>Bing Cong, Zhiliang Liu</i>	

Scalability and Stability Analysis of Networked Systems Using the Robotarium.....	87
<i>Joshua Lloyd, Guilherme Froes Silva</i>	
Sequential Overbounding Approximation Method for the Scaled H_∞ Control Problem	93
<i>Kento Yoshikami, Noboru Sebe</i>	
Robust NN-Based Path Tracking Control of Autonomous Vehicle-Trailer Combination	99
<i>Mohammad Hedayati, Navid Mohajer, Mohammad Rokonzaman, Douglas Creighton</i>	
Trajectory Tracking Using Sliding Mode Control with Obstacle Avoidance for a Ground Robot	105
<i>Insha Andrabi, Kiran Kumari, Niran S Narayanan, Aseem V Borkar</i>	
Fault Detection in Robust Control by Using Disturbance Observer and Test Signals.....	111
<i>Taichi Yuyama, Ibuki Tsuji, Kana Shikada, Noboru Sebe, Koichi Suyama</i>	
Data-Driven Customisable Control Design for an Adaptive Cruise Control System	117
<i>Jack Gregory, Mohammad Rokonzaman, Navid Mohajer, Matthew Watson</i>	
Exponential Stabilization of a Micro-Beam System with Infinite Memory-Type Controls	122
<i>Boumediène Chentouf, Sabeur Mansouri</i>	
Stabilizing Nonlinear Robust Control of Spacecraft Before and After Docking	126
<i>Yuichi Ikeda, Yuichi Takaku</i>	
Traffic Flow Impacts of Expressway Reconstruction and Expansion: A Simulation-Driven Study	132
<i>Yongkang Wang, Chenglong Yet, Songtao Liu, Yueyang Yao, Qiang Ding, Junyou Shang, Peizhe Gong, Xingyuan Dai, Hongxia Zhao, Gang Xiong, Yisheng Lv</i>	
ESO-Based Actor-Critic Structure for Optimal Velocity Control of an Autonomous Surface Vehicle with Partial Unknown Model Nonlinearities	138
<i>Nan Gu, Yongqi Yu, Runhuan Sun, Xiaohua Gel, Qing-Long Han</i>	

Author Index