

2025 5th International Conference on Robotics, Automation, and Artificial Intelligence (RAAI 2025)

**Singapore, Singapore
18-20 December 2025**

Pages 1–463

IEEE Catalog Number: CFP25AD3-POD
ISBN: 979-8-3315-5874-1



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:	CFP25AD3-POD
ISBN (Print-On-Demand):	979-8-3315-5874-1
ISBN (Online):	979-8-3315-5873-4

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

Dynamic Event-Based Model Predictive Control for Networked Systems with Hybrid Cyber Attacks	1
<i>Fan Wei, Xiongbo Wan</i>	
Data Driven Evasion Policy for Repeated Pursuit Evasion Problem with Unknown Imperfect Pursuer	6
<i>Linkun He, Ran Zhang, Huifeng Li</i>	
The D3QN Paradox: An Empirical Analysis of Why Combining Deep Q-Network Enhancements Fails in Intraday Financial Trading	11
<i>Adip Krishna Guduru, Aditya Jayaraman, Akshith Mynampati, Amrithesh Hiras, Jayaditya Reddy Yeruva</i>	
Hybrid-based Movie Recommendation System Using Machine Learning Techniques	17
<i>Cheng-Yung Lai, Su-Cheng Haw, Palanichamy Naveen</i>	
Deep Temporal Causal Discovery: A Framework for Uncovering Nonlinear and Time-Lagged Dynamics	24
<i>Jun Xiang Jordan Chan, Jun Yu Chai, Hong Liang Ong, Immanuel Jun Kai Loh, Zhong Hao Benson Tan Xiaorong Li, Elisa Ang Yun Mei, Victor Wang Peng Cheng</i>	
A Reinforcement Learning Framework for Autonomous Behavior Tree Construction in Door Traversal Tasks	33
<i>Hataitip Paoamnartrit, Kittit Thamrongaphichartkul, Bawornsak Sakulkueakulsuk, Supachai Vongbunyong</i>	
ML-Based Early Warning Systems for ERP-Integrated Loan Portfolios	40
<i>Sukumar Reddy Beereddy, Vijay M. Mane</i>	
Policy Real-Time Execution of Reinforcement Learning for Peg-in-Hole Assembly on Resource-Constrained System	47
<i>Xumiao Ma, De Xu</i>	
A User Aware Indian Music Recommendation System	53
<i>Mayur Parvatikar, Manoj Mukunda, Jayanth Chikkarangaiah, Mamatha G S, Shobha G</i>	
SuSEF: Summarized Section Embedding with Fusion for Scientific Paper Recommendation	61
<i>Jack Westmoreland, Huizhi Liang</i>	
Research on Accurate Photovoltaic Power Prediction Based on Multi-model Fusion and Spatial Downscaling Driven by Machine Learning	66
<i>Junyi Yu, Jiahao Li, Siyang Liao</i>	
A Multimodal Biosensing System for Real-Time Driver Monitoring and Adaptive Feedback	71
<i>Youssief Khalifa, Majd Abo Kalam, Kinan Ghaalrebat, Abhilasha Singh, Jinane Mounsef</i>	
Coherent Signal DOA Estimation for Coprime EMVS Array via TNN Minimization	77
<i>Mingcheng Fu, Xianpeng Wang, Yuehao Guo, Xiang Lan, Guilu Wu, Dandan Meng</i>	
SPROF: A Spatio-Temporal Probabilistic Fusion of 2D Lidar and Vision for Robust Distance Estimation	82
<i>Hai Ngoc Nguyen, Ngoc Pham Van Bach, Anh Tuan Giang, Quan Pham Hong, Thanh To Vu Thien Nguyen Luong, Nguyen Mai Thi Hong</i>	

Enhanced Redundant Measurement and Innovation-Based Adaptive Extended Kalman Filter for INS/GNSS Integrated Navigation	87
<i>Aiping Wang, Hai Zhang, Xuanqi Huang, Shuwen Chen</i>	
Latency Analysis in Internal Layers of Shared Memory Communication in ROS2	92
<i>Sho Kamiya, Miho Adachi, JunFeng Xue, Ryusuke Miyamoto</i>	
Autonomous Astronomical Positioning Method of Lunar Satellite with Error Analysis Based on Moon Phase Characteristics	97
<i>Ziqian Gao, Weihong Wang, Zhenghua Liu, Haiyong Wang</i>	
Design and Validation of an Autonomous IoT Collar for Bovine Monitoring in the Bolivian Altiplano	103
<i>Miguel Angel Silva Plata, Nayara Carminia Lara Ramos, Diego Samuel Guzmán Riveros Sharly Marian Ballón López, Leyla Bionda Lipa Huari, Gabriel Antonio Rojas Silva</i>	
From Ranking to Exact Prediction in Multi-Label Learning with Bipolar Networks	109
<i>Sourav Mishra, Keshav Moorthy, Srujan Sardeshmukh, Suresh Sundaram</i>	
Which Matters More: Model or Language? An Empirical Study in English-Bangla Mental Health Classification	114
<i>Apu Islam, Ishraque Arefin Rafi, Sudipta Mondal, Somaya Al Sadia Rahman, Golam Rabiul Alam</i>	
Quantitative Analysis of Layer-Wise Bias Weight Sensitivity Across Activation Functions in Deep Neural Networks	119
<i>Mithun Kumar PK, Darryl Ahner</i>	
Bipolar Joint Energy: Energy-Based Multi-Label OOD Detection with Bipolar Networks	125
<i>Sourav Mishra, Keshav Moorthy, Suresh Sundaram</i>	
Graph Your Way to Inspiration: Integrating Co-Author Graphs with Retrieval-Augmented Generation for Large Language Model Based Scientific Idea Generation	130
<i>Pengzhen Xie, Huizhi Liang</i>	
Industrial Process Root Cause Analysis Method Based on Graph Neural Networks and Knowledge Graphs	135
<i>Bing Yu, Hong Chen, Yang Yu, Zhiming Yang, Gang Xiang</i>	
An Automated Essay Scoring Model Based on Multi-Feature Design and Feature Refinement	141
<i>Parmonangan R. Togatorop, Indriana Hidayah, Teguh Bharata Adji</i>	
An LLM-Enabled Interactive Knowledge Check System for Personalised E-Learning	146
<i>Glenn Tham Guoxiang, Kerwin Loh, Chua Zhuo En, Chin Hui Min, Lye Wei Xuan Andrea, Xiaorong Li Wendy Hui Wan Yee</i>	
Discrete Functional Geometry of ReLU Networks via ReLU Transition Graphs	153
<i>Sahil Rajesh Dhayalkar</i>	
MVOD - A Multi-View Fusion Network for 3D Obstacle Detection with Point Clouds and Images	160
<i>Jie Wang, Zhangyu Wang, Haonan Mi, Aizemaitijiang Baoerhan, Wentao Liu, Guizhen Yu</i>	
Efficient Object Detection and Range Prediction in a Poorly Lit Environment Using a Modified GAN	168
<i>N. Ramsai, K. Satish, V.R. Hrishikesh, K. Sridharan</i>	
Eyes on Target: Gaze-Aware Object Detection in Egocentric Video	173
<i>Vishakha Lall, Yisi Liu</i>	

Design of Gaze Evaluation System in Driving Using Eye Tracking and Object Detection	181
<i>Jagat Thakulla, Hironori Hiraishi</i>	
YOLP: You Only Look Patches for Object Detection in UAV Remote Sensing Imagery	186
<i>Xudong Fan, Wei Zhao, Rufe Zhang, Nannan Li, Dongjin Li</i>	
Advanced Robotic Object Slip Detection for Neuromorphic GelSight Tactile Sensor	196
<i>Murana Awad, Musa Abdalla, Yahya Zweiri, Mohammad I. Awad, Kinda Khalaf</i>	
Deepfake Video Detection Using Swin Transformer and LSTM: A Hybrid Approach for Facial Feature Analysis	202
<i>Jameer Kotwal, Rahul Jawaharlal Pandit, Tanishka Sanjay Dhole, Priyanka Chetwani</i>	
<i>Bahar Aslam Inamdar, Sarang Dilip Pawar</i>	
RailDet: An End-to-End 3D Perception Network in Railway Environments	209
<i>Wentao Liu, Zhangyu Wang, Songyue Yang, Zhicheng Zhao</i>	
Person of Interest Detection Using Deep Learning in a Real-Time Faculty Receptionist Robot	215
<i>Christina Ku Pei San, Zati Hakim Azizul, Soo Jin Xue</i>	
A Systolic Architecture for Deep Learning-Based Fall Detection	220
<i>N. Ramsai, K. Ramana Reddy, J. Naveen Kumar, K. Sridharan</i>	
Human Motion Capture with Sparse IMUs and a Single RGB Camera: A Confidence-Based Fusion Framework with Physical Constraints	225
<i>Kaiwen Fang, Weichao Yan, Hao Ma, Zaiyue Yang</i>	
Implementing Real-Time Retail Shelf Monitoring via YOLOv8 on a ROS-Based Mobile Robot	233
<i>Dao Jing Hoong, Zati Hakim Azizul, Jing Hui Chia</i>	
Machine Vision-Based Surgical Lighting System: Design and Implementation	238
<i>Amir Gharghabi, Mahdi Hakiminezhad, Maryam Shafaei, Shaghayegh Gharghabi</i>	
Imagining the Rare: Diffusion-Augmented and Few-Shot Learning Approaches for Severely Imbalanced Mushroom Species Classification	243
<i>Varun Khurana, Cheng Siong Chin, Huizhi Liang, Boon Siong Wee</i>	
Automated Capsicum Grading Using Color-Edge Analysis and Machine Learning	248
<i>Revathi G P, Zainab Usman, Vaishnavi C Kamatagi, Tilak Matagunde, Raviprakash, Prasad B Honnavalli</i>	
A Dimension Reduction Approach for AI-Driven Human Presence Sensing via Hyperspectral Imaging	253
<i>W.A.D.U Wijesinghe, Chinthaka Premachandra, Lasith Gunawardena</i>	
A Survey for Scene Graph Generation Based on Pre-Trained Model	257
<i>Ziyan Fang, Zhitao Huang, Junhao Wei, Yufan Hua</i>	
Self Supervised Cerebrovascular Segmentation Using Shared Weight DDPM UNet with Adversarial Representation Learning	267
<i>Jae Eun Ko, Ji Yean Kwon, Sung Min Kim</i>	
A Multi-Object Tracking Approach Based on the Integration of Motion Information and Appearance Features	273
<i>Demeng Qian, Hanqi Yin, Chuanye Tang</i>	

Building Resilience to Out-of-Distribution Visual Data via Learned Input Preprocessing	279
<i>Christopher J. Holder</i>	
A Modified U-Net Based Approach for Human Contour Extraction and its Hardware Realization	288
<i>K. Suryanarayana, N. Ramsai, T. Murali Eshwar, K. Hruthik, K. Sridharan</i>	
Radar Odometry Using 3D Feature-Assisted ICP	293
<i>Yerang Mok, Hanyeol Lee, Chan Gook Park</i>	
Enhanced Robotic Framework for Object Recognition, Grasping, and Drawer Operation	297
<i>Anam Munir, Syed H. Shah, S. G. Khan, J. C. Halim, A. N. The, K. K. Al Biruni, Ying-Jen Chen</i>	
User Engagement-Aware Gesture Recognition for Human-Robot Interaction System in Multi-Person Settings	303
<i>Snehal Walunj, Pranav Walunj, Khalil Abuibaid, Tatjana Legler, Martin Ruskowski</i>	
Identification and Tracking of Multiple Objects on a Peristaltic Conveyor System	309
<i>Sai Preetham Sata, Markus Weidmann, Sebastian Frasch, Michael Albrecht, Hanna Westphal, Matthias Pusch, Benjamin Noack, Andreas Scholz, Elmar Woschke, André Katterfeld</i>	
ARTEMIS2 & ARTEMIS2-Mini: From Full-Scale to Distilled Real-Time Animal Behavior Recognition in a Robotic Dog	318
<i>Edoardo Fazzari, Donato Romano, Fabrizio Falchi, Cesare Stefanini</i>	
Partitioned EEG Model for Emotion Recognition and Lightweight Deployment	326
<i>Zhanyi Ruan, Bowen Yang, Sicheng Zhou, Jiaheng Li</i>	
An Ensemble Learning-Based Physics-Informed Neural Network Method for Deep Learning-Assisted Pipeline Leakage Detection	333
<i>Xiuquan Cai, Jinjiang Wang, Zheng Wang, Shiwei Yan</i>	
A Study of Visual-Language Model for Defect Detection in Manufacturing Industries	338
<i>Nik Azimah Zainab Nik Mohd Rahimi, Teo Yu Xuan, Muhammad Syukri Mohd Talib, Wong Chin Wee, Muhammad Hafiz Samsuri, Chan Yan Bin, Zulaikha Kadim</i>	
Design of a Real-Time System for Detecting Tire Trajectory Elevation Based on LiDAR-IMU Fusion	343
<i>Xinyu Li, Wenjie Wang, Qihui Ling, Shuyi Yang, Yong Guo</i>	
Optimizing Transformer-Based Intrusion Detection Through Binarization and Distillation for Efficient Deep Packet Inspection	350
<i>Voon Tao Tan, Wan Tze Vong, Colin Choon Lin Tan, Caslon Chua</i>	
An Edge-Cloud Collaborative Anomaly Detection Method for Rotating Machinery Based on Perceptual Vibration Hashing and Autoencoder	358
<i>Shiwei Yan, Fengli Zhang, Jinjiang Wang, Tiantian Liu</i>	
Real-Time Faulty Wiring Detection in Aircraft Using YOLO Framework with IoT-Enabled Thermal Infrared Imaging and Graph Algorithm for Shortest-Path Analysis	363
<i>Bishal Kumar Rauniyar, Bijay Prasad Shah Rauniyar, Ashish Gupta, Anurag Jaiswal, Santos Kumar Baliarsingh</i>	
CNN with Transfer Learning on RGB and Thermal Imaging for Epoxy Spill and Crack Detection in Glass Fiber Composites	368
<i>Syed Ali Hassan, Michail J. Beliatas</i>	

NLP Pipeline for Electronic Health Records and Predicting the Necessity of MRI Scan Requirement Using Graph Neural Network	373
<i>Vishalakshi Prabhu, Shobha G, Hugo Watanuki, Eshaan Mathur, Prashant Ronad, Nikhil Vasu</i>	
PatchNet-BiLSTM: Lightweight Sequential Model for Automated Diabetic Retinopathy Grading	380
<i>Tanzim Redwan, Dhanya Sudarsan</i>	
A Federated Multi-Task, Multi-View Metatransformer with Causal-Acoustic Attention for Infant Cry Classification	386
<i>Geofrey Owino, Bernard Shibwabo Kasamani, Edem Wornyo</i>	
Comparative Analysis of Gel and NiCu Textile Electrodes for Non-Invasive Fetal ECG Monitoring	392
<i>MKP Madushanka, Pandiyarasan Veluswamy, Subhashini JM</i>	
Deep Learning-Based Detection of Squamous Cell Carcinoma with Statistical Validation	397
<i>Swathi Prabhu, Keerthana Prasad</i>	
Comparative Analysis of 2D Deep Neural Network Architectures for Lung Nodule Detection	401
<i>Tanapon Kitmuti, Kanjanapan Sukvichai</i>	
Multi-Directional Cursor Control via Motor Imagery-Based BCI Using Scalp EEG: A Comparative Machine Learning Approach	406
<i>Sayem Bin Rafique, Zawwad Bin Saif, Saima Tasfia Roja, Shantanu Rahman, Nazmus Sakib Md. Kafiul Islam</i>	
Personalized EEG-Based Passthrough Authentication Using Custom-Fit Ear Devices: A Secure, Multi-Factor Approach	411
<i>Ezekiel Nwokolo, Tahmina Akter Anondi</i>	
Optimizing EEG Signal Quality and Streaming Performance in BCIs Using ADS1299EEG-FE	419
<i>Yslam Orazov, Mukam Ekayev, Kerim Ryzayev, Gurbanmyrat Mezilov</i>	
3D-Printed Hasel Actuators with Integrated Fluidic Piezoresistive Pressure Sensor for Cardiac Assist Applications	424
<i>Evan Zhang, Alex Chortos</i>	
Respiratory Rate Estimation from ECG-Derived Respiration and Accelerometer Signals Using Deep Learning in Dynamic Movement Environments	430
<i>SeungHui Kim, SungHun Lee, JiWoo Hwang, SeungBin Baek, SungMin Kim</i>	
An Improved Machine Learning Framework for Heart Disease Risk Prediction with Personalized Health Recommendations	434
<i>Warit Khantee, Suwit Somsuphaprunyos, Parinya Natho</i>	
EEG-Based Multi-Level Stress Screening Using Machine Learning	440
<i>Nazmus Sakib, Md. Kafiul Islam, Tasnuva Faruk</i>	
AI-Driven Peripheral Neural Interfaces for Decoding Movement Intent from EMG Signals	445
<i>Samuel George-White, Anil Bharath, Dario Farina</i>	
A Conceptual Model for Integrating Motion Intention Prediction and Reinforcement Learning into Front-Following Smart Walker Navigation	450
<i>Bong Jia Horng, Mark Tee Kit Tsun, Lau Bee Theng, Fu Swee Tee</i>	

Performance Dynamics in Big Data Cloud Streaming Systems	456
<i>Tahmina Akter Anondi, Ezekiel Nwokolo</i>	
Design and Development of a Human-Evaluation Platform for Large Language Model-Generated Datasets	464
<i>Youngho Lee</i>	
Leveraging Large Language Models for Malicious Packet Generation in Simulated V2X Frameworks	468
<i>Jong-Yih Kuo, Shih-Hao Chang, Shao-Jia Fang, Cheng-Hsuan Kuo</i>	
Design and Implementation of an Interactive Robotics Training Platform Using BlockMicc Programming	473
<i>Kridsada Wangkaew, Artit Suanprasert, Sathaporn Suprom, Sethakarn Prongnuch</i>	
Implementation of Speech Processing using Whisper AI and GPT in Real-Time Faculty Receptionist Robot	478
<i>Jin Xue Soo, Zati Hakim Azizul, Christina Pei San Ku</i>	
Towards a Digital Twin-Assisted Risk Assessment Approach for Experimental Robotic Workcell Design	483
<i>Jinha Park, Simon Chris Vinkel, Ole Wennerberg Nielsen, Christian Schlette</i>	
Feedback-Driven AI Workload Emulation for Big Data Cloud Systems	488
<i>Tahmina Akter Anondi</i>	
Benchmarking Offensive AI Agents Through the Autonomous Attack Chain	496
<i>Masike Malatji</i>	
Privacy Impact on AI Classifiers: Paper on Data Perturbation Feedback	503
<i>Milind Cherukuri</i>	
Securing Agentic AI Systems - A Multilayer Security Framework	509
<i>Sunil Arora, John Hastings</i>	
A Closed-Loop Multi-Agent System Driven by LLMs for Meal-Level Personalized Nutrition Management	515
<i>Muqing Xu</i>	
AI-Driven Real-Time Workplace Safety Monitoring System for Industrial Environments	521
<i>Tahmina Akter Anondi</i>	
Meta-Learning Enhanced Risk-Aware Adaptive Motion Planning in Unknown Environments	527
<i>Xiao-Yan Jiang, Huai-Ning Wu</i>	
AI-Driven Forecasting of Tourist Arrivals in Metro Manila: Limits of Aviation Operations and Seasonality	533
<i>Lucky Boy M. Alcala, Hendrick Dalhag, Laila D. Malabanan, Florenda J. de Vero</i>	
<i>Maria Rowena D. Espinosa, Joshar T. Obus</i>	
Art2Music: Generating Music for Art Images with Multi-Modal Feeling Alignment	538
<i>Jiaying Hong, Ting Zhu, Thanet Markchom, Huizhi Liang</i>	
XCAD: eXplainable Collusion and Adversary Detection Framework for Multi-Agent Systems	543
<i>Hariprasauth Ramamoorthy, Unnikrishnan Nair, Suresh Sundaram</i>	

Hyper-AI-Driven Acceleration of Multi-Database Integrated Genomic Analysis for Infectious Disease Response	548
<i>Sujin Son, Young Ho Cho, Sang Hak Kim, Suhyeon Kim, Hyewon Kim, Jiwoo Choi</i>	
A Virtual Reality Based Framework for Standardized Testing of Human Technology: Approach and Use Case	553
<i>Seyed Milad Mir Latifi, Rajal Nagwekar, Ramazan Gökay, Robert Weidner</i>	
Development of an Automatic Scraping Method Based on Disk Milling Cutter Technology	560
<i>Shuaishuai Fan, Liang Han, Mohammed Ali Abdulrahman Al-Shameri, Danaish</i>	
Edge-Cloud Collaborative Fault Classification of Mechanical Equipment Using Lightweight Deep Learning Models	565
<i>Xinwei Wang, Jinjiang Wang</i>	
Energy-Saving Control Method for Fully Electro-Hydraulic Positive Flow Excavators Based on Optimal Flow Distribution	571
<i>Yifan Sun, Yi Xi, Guoqiang Gao, Huzhao Ling, Chaofu Liu, Yuchao Liu, Shuyi Yang</i>	
LCDTwin: LLM-Driven Contextual Digital Twin for Actuator-Sensor Correlation in ICS	583
<i>Yooshin Kim, Wonje Heo, Eungyu Woo, Donghoon Shin</i>	
Explainable AI for Predictive Maintenance in Manufacturing Process Using RTDB Sensor Data	589
<i>Jae Yeong Jo, Taewook Heo, Seon Hyeog Kim</i>	
Comparative Evaluation of Machine Learning Algorithms for Predictive Modeling of Truck Cycle Time in Open-Pit Mining Operations	594
<i>Milka C I Madahana, Nkwane Phahlamohlaka, John E. D. Ekoru</i>	
Root Cause Tracing Method for Industrial Process Systems Based on Extended Convergent Cross Mapping	601
<i>Shuaihang Ji, Jinjiang Wang, Guanghong Song</i>	
Design and Preliminary Evaluation of a Variable Stiffness Knee Exoskeleton for Walking Assistance	609
<i>Yali Liu, Xiao Li, Qingwu Yang, Qiuzhi Song</i>	
Design and Motion Analysis of a Novel 12-DOF Bionic Lower Limb Exoskeleton	614
<i>Lingyu Bu, Hui Dong, Mingxing Lin, Cheng Feng</i>	
Feasibility of Robotic-Assisted Echocardiography in Patients: Reducing Sonographer Strain without Compromising Image Quality	619
<i>Kumaradevan Punithakumar, Ahmed Ahmed, Moath Ghanem, Michelle Noga, Bernadette Foster Pierre Boulanger, Harald Becher, Jonathan Windram</i>	
Design and Validation of an End-Effector for a Surgical Robot with an Automatic Multi-Tool Switching Function	624
<i>Zhenyi Li, Qingchuan Ma, Yuyao Liu, Zhiyuan Chai, Xuhang Li, Wenxin Pan, Minxuan Wang, Shaokang Qi</i>	
Design of the Medical Wheelchair Mountable Robot Arm (WMRA) and and Verification by ROS 2 & Gazebo Simulation	629
<i>Seo-yeon Jung, Su-hyeok Mun, Bo-hyeon Kim, Taehoon Han, Dong-Won Lim</i>	
A Wind Power Forecasting Paradigm Incorporating the Temporal-Frequency-Enhanced Training Strategy	633
<i>Yugui Tang</i>	

Adaptive Rule Based Energy Management System (EMS) for Battery-Supercapacitor Electric Vehicles Minimizing Battery Stress	638
<i>Ashruti Upadhyaya, Chitralkha Mahanta, Arghya Chakravarty</i>	
Autonomous Cleaning of Solar Panels in Floating Photovoltaic Systems	645
<i>Keerati Ubolmart, Boonyaporn Preechasuth, Natthapatch Lapsittiwong, Pawaris Tangtrakul</i> <i>Khunanon Sawetkhotchakul, Phuriwat Kasamesookphaisal, Saifa Meethong, Ponwalai Chalermwattanatrai</i> <i>Eakkachai Pengwang</i>	
Enabling Contextual Awareness for Automated Systems through Machine Learning on Electromagnetic Emissions	650
<i>Zhuoran Jiao</i>	
Hybrid Quantum-Classical Sensor Fusion for Accurate and Real-Time Smart Grid Current Monitoring	656
<i>Melek Walha, Joma Aldrini, Inès Chihi</i>	
Cloud-Based Smart Toilet System with an Integrated Soft Robotic Hand for Post-Defecation Anus Cleaning in Elderly Nursing Bed	663
<i>Mohammed Ali Abdulrahman AL-Shameri, Liang Han, Muhammad Sibtain, Arfan Ali Mohammed Qasem</i> <i>Shuaishuai Fan, Almogdad SalahEldeen Mohammed Hassan</i>	
Optimization of Ciliary Magnetic-Driven Soft Robot Based on Gradient Magnetization	670
<i>Yaoyuan Xu, Jingzhi Jia, Hao Zhang, Hui Xie</i>	
Watt Mechanism-Driven Fully Passive Robot Finger for Pinching and Scooping Tasks	675
<i>Xinru Yao, Tunan Zhangyu, Wenzeng Zhang</i>	
The TPL-Lambda Gripper: A Tendon-Driven Manipulator for Combined Pinching and Lifting Based on the Scott Linkage	681
<i>Shijie Qu, Wenzeng Zhang, Che Zhang</i>	
Hydraulic Soft Gripper for Human-Safe Manipulation: Design, Modeling, and Validation	688
<i>Dong Anh Khoa To, Mai Thanh Thai</i>	
An Underactuated Dual-Slide Adaptive Robotic Hand with Strong Environmental Adaptability*	697
<i>Haotong Luan, Wenzeng Zhang, Tao Yang</i>	
Development of an Autonomous Posture Controlled Robot for Assisting Water-Skipping	702
<i>Amane Inaba, Takeshi Sasaki</i>	
Adaptive Underactuated Robotic Gripper with Gear-Multi-Link Mechanism for Composite Grasping*	708
<i>Yiwei Sheng, Wenzeng Zhang</i>	
Q-Learning-Based Gripper Orientation Correction for a 6-DoF Robotic Manipulator	714
<i>P. Sri Sai Ashish Varma, Mary Aksa, Anam Munir, Syed H. Shah, J. L. Ordoñez-Avila</i>	
BA Hand: A Novel Gripper Based on Object Adaptability and Plane Environment Adaptability	719
<i>Wenjie Ma, Wenzeng Zhang</i>	
An Idle-Stroke Underactuated Gripper with Independent Double-Parallelogram Linkages for Pinching and Adaptive Grasping*	724
<i>Yizhe Chen, Haotong Luan, Haokai Ding, Wenzeng Zhang</i>	
Guaranteed Cost Consensus for Multi-Agent Systems Under Event/Self-Triggered Mechanism	729
<i>Tu Zhang, Guobao Zhang, Amr Alanwar, Yongming Huang</i>	

A Framework for Human-Reason-Based Trajectory Evaluation in Automated Vehicles	734
<i>Lucas Elbert Suryana, Saeed Rahmani, Simeon C. Calvert, Arkady Zgonnikov, Bart Van Arem</i>	
Autonomous Agent (AutoAgent) for Self Driving through Reinforcement Learning	742
<i>Jayabrata Chowdhury, Vishruth Veerendranath, Suresh Sundaram, Narasimman Sundararajan</i>	
Facilitating Shared Introspection in Hierarchical Multi-Agent Systems Using the Model Context Protocol	747
<i>Krishna Arun, Paras Goel</i>	
Generating Third-Person View from First-Person View in Driving	751
<i>Hiroki Tomura, Hironori Hiraishi</i>	
Comparative Analysis of JPDA and GM-PHD Methods for Dense Group Target Tracking	757
<i>Yan E. Pivnev, Vitaliy S. Antipenko</i>	
A Obstacle Avoidance Method for UAV Based on Velocity Obstacle Model and Improved Artificial Potential Field	762
<i>Jie Li, Yuanqing Xia</i>	
Energy-Efficient Quadrotor Missions Using Sliding Mode Control	769
<i>Paraj Ganchaudhuri, Sanjeev Ranjan, Chayan Bhawal</i>	
Bat-Grid SLAM: Bio-Inspired Active SLAM Approach Using Neural Grid Cells for Autonomous Navigation	775
<i>Chun Yu Lim, Henrik Hesse, Chee Kiat Seow</i>	
A System for UAV Obstacle Avoidance Control via Haptic Interface and Optical Tracking	781
<i>Kaiyuan Lu, Wenbin Liu, Mikhail Svinin, Kaiyuan Wang, Igor Goncharenko</i>	
Intelligent Multi-Operational RADAR (IMOR)-Based Soft Landing of UAVs on Unknown Terrain	787
<i>Sumant A Gunagi, Hrishikesh Hiremath, Samahith S A, Rudrashis Majumder, Suresh Sundaram</i>	
Linear Time-Varying Model Predictive Control for Emergency Collision Avoidance of Four-Wheel-Steering Vehicles	797
<i>Xiaochuan Zhou, Lin Li, Rui Wang, Chunyan Wang</i>	
SWingL1: A Smoothly-Fused Wing-L1 Loss for Small-Error Sensitivity in Visual-Inertial Odometry	802
<i>JunFeng Xue, Miho Adachi, Ryusuke Miyamoto</i>	
Implementation of Real-Time Proctoring Assistant Robot Route Planning for Exam Monitoring	807
<i>En Yi Phuah, Zati Hakim Azizul, Yee Taung Tee</i>	
Trajectory Tracking Control of Differential Tracked Robots Based on Three-Dimensional Interpolation and Model Predictive Control	812
<i>Pu Zhang, Jian Sun, Yongling Fu</i>	
ISOCAL-DDMR - Isostatic Calibration Platform for Differential Drive Mobile Robots	817
<i>Darci Luiz Tomasi, Eduardo Todt</i>	
Site-Specific Mechanical Weeding Robot with GPS-Based Feed-Forward Control	822
<i>Shafi Md. Istiak, Mohammad Aftabi Talami, Sulaymon Eshkabilov</i>	
Proposal and Evaluation for Warehouse Robot Control Method Based on Active Inference	830
<i>Atsuya Fukuyama, Shin'ichi Arakawa, Masayuki Murata</i>	

Magnetometer-Aided Proprioceptive Factor Graph for Legged Robot Localization	838
<i>Papinwich Asnapetch, Supun Dissanayaka, Dexin Xu, Poom Konghuayrob</i>	
Real-Time Robot Perception and Response for Luggage Carrying Service	844
<i>Reem Moumen Mohammed Idres, Zati Hakim Azizul, Nor Aniq Haqym Nor Azman</i>	
A Telemanipulation System with Constraint-Aware Shared-Control for Contact-Rich Robot Tasks	849
<i>Qilong Yuan, Keng Peng Tee</i>	
Multi-Robot Coordination and Simulation for Branched Deformable Linear Object Manipulation	855
<i>Annalena Hartmann, Simon Lamprecht, Ferdinand Ammon, Wenxin Wang, Patrick Bründl, Jörg Franke</i>	
HEART-Bot: A Human-Following Elderly Assistance Mobile Robot with Health Monitoring and Tracking	861
<i>Rajesh Patil, Magnus Löfstrand</i>	
Robotics: Machine Learning for Data-Driven Grasp Synthesis	866
<i>Tahmina Akter Anondi, Ezekiel Nwokolo</i>	
Self-Aware Risk Perception and Adaptive Safety Control for Autonomous Mining Trucks	873
<i>Qi Xia, Peng Chen, Xiao Chen, Guoyan Xu</i>	
Vehicle Lateral Control for Intelligent Driving Based on Dynamic Compensation of Stanley Algorithm	878
<i>Changliang Sun, Hongli Liu, Weichu Xiao, Xing Wen</i>	
Path Departure Risk Assessment and Hierarchical Longitudinal Control for Autonomous Mining Trucks	885
<i>Xiao Chen, Guizhen Yu, Peng Chen, Qi Xia, Han Li, Haoyuan Ni</i>	
FASA-PM: An Explainable Fuzzy-Adaptive System for Autonomous Portfolio Management	890
<i>Navya Sharma, Pandey Shourya Prasad, Chinmay Sultania, Madhav Rao</i>	
Cascade Disturbance Estimator for Disturbance Suppression in Spacecraft with Flywheels	895
<i>Haitao Wang, Zhong Wu</i>	
Dynamic Analysis and Control of a Segmented Mirror Telescope Prototype Model	902
<i>Michael A. Gunarso, Tua A. Tamba, Harry Septanto, Edwar Yazid, Jonathan Chandra, Ali Sadiyoko Ignatius A. Sandy</i>	
High-Precision Measurement of Load Position and Speed in Harmonic Servo Drives with Dual-Side Resolvers	907
<i>Peng Liu, Zhong Wu</i>	
AFC Rule Check Framework for Construction Integrity of Semiconductor FAB MEP: Case Study	913
<i>Yunhyung Lee, Seungwon Han, Sean Hay Kim</i>	
Reinforcement Learning-Based Motion Control for Successive Extremely Narrow Gate Traversal with a Quadrotor Tilt-Rotor	917
<i>Yiming Dai, Yanhui Zhang, Lei He, Changju Wu, Weifang Chen, Liang Zhuo</i>	