

# **2022 IEEE 18th International Conference on Automation Science and Engineering (CASE 2022)**

**Mexico City, Mexico  
20-24 August 2022**

**Pages 1-632**



**IEEE Catalog Number: CFP22ASE-POD  
ISBN: 978-1-6654-9043-6**

**Copyright © 2022 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:	CFP22ASE-POD
ISBN (Print-On-Demand):	978-1-6654-9043-6
ISBN (Online):	978-1-6654-9042-9
ISSN:	2161-8070

**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](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

CURRAN ASSOCIATES INC.  
**proceedings**  
.com

# TABLE OF CONTENTS

Bridging Scenarios in Reinforcement Learning with Continuously Generated Relaying Predictive Models.....	1
<i>Kuo Li, Qing-Shan Jia</i>	
A Data Fusion-Based LSTM Network for Degradation Modeling Under Multiple Operational Conditions .....	7
<i>Ying Wang, Di Wang</i>	
Multi-Sensor Fusion Based Indoor Mobile Robot Localization.....	13
<i>Rui Liu, Jun Xu, Yunjiang Lou, Haoyao Chen</i>	
A Machine Learning-Based Approach for Elevator Door System Fault Diagnosis .....	19
<i>Taiwang Liang, Chong Chen, Tao Wang, Ao Zhang, Jian Qin</i>	
A Hybrid Wafer Processing Cycle Prediction Model Based on DPC-Relief-F.....	25
<i>Jiabin Dai, Jie Zhang, Junliang Wang, Lihui Wu</i>	
A Convolutional Neural Network with Equal-Resolution Enhancement and Gradual Attention of Features for Tiny Target Detection.....	31
<i>Mingyang Cheng, Junliang Wang, Yaqin Zhou, Chuqiao Xu, Ying Liu, Jie Zhang</i>	
Cognition-Driven Robot Decision Making Method in Human-robot Collaboration Environment .....	37
<i>Rong Zhang, Xinyu Li, Yu Zheng, Jianhao Lv, Jie Li, Pai Zheng, Jinsong Bao</i>	
An Efficient Approach for Solving Robotic Task Sequencing Problems Considering Spatial Constraint .....	43
<i>Donghui Li, Qingbin Wang, Wei Zou, Hu Su, Xingang Wang, Xinyi Xu</i>	
Leader-Follower Based Two-AGV Cooperative Transportation System in 5G Environment .....	50
<i>Xuke Fu, Deming Wang, Jianchen Hu, Junhu Wei, Chao-Bo Yan</i>	
A Dynamic Programming-Based Slot Reservation Method for Non-clear Containers in Automated Container Terminals .....	56
<i>Jiyue Zhu, Wei Lian William Lee, Wei Qin</i>	
Collaborative Scheduling Optimization of Equipment in Multimodal Transport Harbor Considering Hybrid Operation Mode of "train-Yard-vessel" and "train-vessel" .....	62
<i>Wenfeng Li, Ziteng Wu, Pengfei Yang, Lei Cai</i>	
Data-Centric Workshop Digital Twin Conceptual Modeling Method and Application .....	68
<i>Jiqi Li, Guohua Liu</i>	
Digital Twin-Based Scheduling Method for Marine Equipment Material Transportation Vehicles .....	76
<i>Xingwang Shen, Shimin Liu, Bin Zhou, Yu Zheng, Jinsong Bao</i>	
A Novel Distributed Optimal Dynamic Duct Static Pressure Method in Multi-Zone Variable Air Volume Systems.....	82
<i>Xuetao Wang, Qianchuan Zhao, Yifan Wang, Hu Yan</i>	
Dynamic Task Reallocation in Human-Robot Collaborative Workshop Based on Online Biotic Fatigue Detection .....	90
<i>Xinyu Li, Wenjun Xu, Bitao Yao, Zhenrui Ji, Xuedong Liu</i>	

Early Prediction of Turn-Taking Based on Spiking Neuron Network to Facilitate Human-robot Collaborative Assembly .....	97
<i>Siqi Feng, Wenjun Xu, Bitao Yao, Zhihao Liu, Zhenrui Ji</i>	
Point Cloud Extraction of Aircraft Skin Butt Joint Based on Adaptive Matching Calibration Algorithm .....	104
<i>Wen Zhihui, Xia Guisuo, Liu Fang, Wei Mengjun, He Yizhen, Chen Feng, Liu Wandong</i>	
An Efficient Heuristic Algorithm for Flexible Job-Shop Scheduling Problem with Due Windows .....	110
<i>Yi Ai, Mengying Wang, Xiaoguang Xue, Chao-Bo Yan</i>	
Diversity Guided Production Inventory Control in Automobile Manufacturers .....	116
<i>Lue Tao, Weihua Chen, Gongshu Wang, Lijie Su, Yang Yang, Yun Dong</i>	
Balancing Production Capacity of Steelmaking by Considering the Demands of Downstream Processes .....	122
<i>Gongshu Wang, Sibao Liu, Yujun Lin</i>	
Capacitated Lot Sizing Problem with Family-Based Setup and Downstream-process-Based Demand .....	128
<i>Yuming Zhao, Gongshu Wang, Yang Yang, Lijie Su</i>	
Classification Based Hard Disk Drive Failure Prediction: Methodologies, Performance Evaluation and Comparison.....	134
<i>Ruiyu Xu, Xinming Wang, Jianguo Wu</i>	
Causality-Based Prediction Method for the Diesel Engine Assembly Line System.....	141
<i>Jin-Hua Hu, Yan-Ning Sun, Hong-Wei Xu, Zhan-Luo Zhang, Wei Qin, Xin-Yu Li</i>	
Skip Training for Multi-Agent Reinforcement Learning Controller for Industrial Wave Energy Converters .....	147
<i>Soumyendu Sarkar, Vineet Gundecha, Sahand Ghorbanpour, Alexander Shmakov, Ashwin Ramesh Babu, Alexandre Pichard, Mathieu Cocho</i>	
MetaGraspNet: A Large-Scale Benchmark Dataset for Scene-Aware Ambidextrous Bin Picking Via Physics-based Metaverse Synthesis.....	155
<i>Maximilian Gilles, Yuhao Chen, Tim Robin Winter, E. Zhixuan Zeng, Alexander Wong</i>	
Digital Twin-Based Virtual Reconfiguration Method for Mixed-model Robotic Assembly Line .....	163
<i>Zhihao Li, Wenjun Xu, Jiayi Liu, Jia Cui, Yang Hu</i>	
A Model-Based Multi-agent Framework to Enable an Agile Response to Supply Chain Disruptions .....	170
<i>Mingjie Bi, Gongyu Chen, Dawn M. Tilbury, Siqian Shen, Kira Barton</i>	
Automated Pruning of Polyculture Plants .....	177
<i>Mark Presten, Rishi Parikh, Shrey Aeron, Sandeep Mukherjee, Simeon Adebola, Satvik Sharma, Mark Theis, Walter Teitelbaum, Ken Goldberg</i>	
Small-Sample Learning of 3D Printed Thin-Wall Structures Using Printing Primitives .....	185
<i>Yuanxiang Wang, Qiang Huang</i>	
A Reeb Graph Approach for Faster 3D Printing .....	191
<i>Jayant Khatkar, Lee Clemon, Robert Fitch, Ramgopal Mettu</i>	

Investigating Statistical Correlation Between Multi-Modality In-Situ Monitoring Data for Powder Bed Fusion Additive Manufacturing .....	197
<i>Zhuo Yang, M. Adnan, Yan Lu, Fan-Tien Cheng, Haw-Ching Yang, Milica Perisic, Yande Ndiaye</i>	
Decentralized Factory Control Based on Multi-Agent Technologies.....	205
<i>J. Bidmead, S. Bhatiani, X. Xu</i>	
SWAP-IT: A Scalable and Lightweight Industry 4.0 Architecture for Cyber-Physical Production Systems.....	210
<i>Dennis Lünsch, Peter Detzner, Andreas Ebner, Sören Kerner</i>	
Identifying Inconsistencies in the Design of Large-Scale Casting Systems – an Ontology-based Approach .....	217
<i>Fan Ji, Felix Ocker, Minjie Zou, Birgit Vogel-Heuser, Marius Oligschläger</i>	
An Integrated Framework for Dynamic Manufacturing Planning to Obtain New Line Configurations .....	224
<i>Laxmi Poudel, Ilya Kovalenko, Ruijie Geng, Matsui Takaharu, Youichi Nonaka, Nakano Takahiro, Umeda Shota, Dawn M. Tilbury, Kira Barton</i>	
A Communication Architecture to Observe and Partially Preserve Efficiency in Automated Production Systems .....	231
<i>Jan Wilch, Birgit Vogel-Heuser, Yu-Ming Hsieh, Fan-Tien Cheng</i>	
Design of an Object Scanning System and a Calibration Method for a Fingertip-Mounted Dual-Modal and Dual Sensing Mechanisms (DMDSM)-based Pretouch Sensor for Grasping .....	237
<i>Di Wang, Fengzhi Guo, Cheng Fang, Jun Zou, Dezhen Song</i>	
An Easy Hand-Eye Calibration Method for Laser Profile Scanners in High Precision Applications Using Optimized View Poses.....	244
<i>Udo Paschke, Christian Landgraf, Kilian Ernst, Johannes T. Stoll, Werner Kraus</i>	
MuCaSLAM: CNN-Based Frame Quality Assessment for Mobile Robot with Omnidirectional Visual SLAM .....	252
<i>Pavel Karpyshev, Evgeny Krushkov, Evgeny Yudin, Alena Savinykh, Andrei Potapov, Mikhail Kurenkov, Anton Kolomeytsev, Ivan Kalinov, Dzmitry Tsetserukou</i>	
A Keypoint-Based Object Representation for Generating Task-specific Grasps .....	258
<i>Mark Robson, Mohan Sridharan</i>	
In-Hand Pose Estimation and Pin Inspection for Insertion of Through-Hole Components.....	266
<i>Frederik Hagelskjær, Dirk Kraft</i>	
SingleDemoGrasp: Learning to Grasp from a Single Image Demonstration .....	274
<i>Amir Mehman Sefat, Alexandre Angleraud, Esa Rahtu, Roel Pieters</i>	
Analysis of Paint Film Thickness Distribution Based on Particle Method Considering Time Series Change of Flow .....	281
<i>Yoshinobu Takahashi, Fangshou Chang, Fumihito Kato, Hiroyasu Iwata</i>	
Self-Supervised Deep Visual Servoing for High Precision Peg-in-hole Insertion.....	289
<i>Rasmus Laurvig Haugaard, Anders Glent Buch, Thorbjørn Mosekjær Iversen</i>	
Contrastive Learning of Features Between Images and LiDAR.....	295
<i>Peng Jiang, Srikanth Saripalli</i>	

Path Planning for 3-D In-hand Dexterous Micro-manipulation in Presence of Adhesion Forces .....	302
<i>Ivan Tchouatouat Kepseu, Michaël Gauthier, Redwan Dahmouche</i>	
Heterogeneous Multi-Robot Task Scheduling Heuristics for Garment Mass Customization.....	309
<i>Ranulfo Bezerra, Kazunori Ohno, Shotaro Kojima, Hanif A. Aryadi, Kenta Gunji, Masao Kuwahara, Yoshito Okada, Masashi Konyo, Satoshi Tadokoro</i>	
Load-Haul Cycle Segmentation with Hidden Semi-Markov Models.....	317
<i>Georgia Markham, Konstantin M. Seiler, Mehala Balamurali, Andrew J. Hill</i>	
A Low-Complexity and High-Performance Energy Management Strategy of a Hybrid Electric Vehicle by Model Approximation.....	325
<i>Tong Liu, Wenyao Zhu, Kaige Tan, Mingwei Liu, Lei Feng</i>	
Fruit Mapping with Shape Completion for Autonomous Crop Monitoring .....	333
<i>Salih Marangoz, Tobias Zaenker, Rohit Menon, Maren Bennewitz</i>	
Position-Agnostic Autonomous Navigation in Vineyards with Deep Reinforcement Learning .....	339
<i>Mauro Martini, Simone Cerrato, Francesco Salvetti, Simone Angarano, Marcello Chiaberge</i>	
Produce Harvesting by Laser Stem-Cutting .....	347
<i>Mohamed Sorour, Pål Johan From, Khaled Elgeneidy, Stratis Kanarachos, Mohamed Sallam</i>	
Environment-Aware Interactive Movement Primitives for Object Reaching in Clutter .....	353
<i>Sariah Mghames, Marc Hanheide</i>	
Scheduling Landing and Payload Switch of Unmanned Aerial Vehicles on a Single Automatic Platform.....	359
<i>Elena Ausonio, Patrizia Bagnnerini, Mauro Gaggero</i>	
FastPivot: An Algorithm for Inverse Problems .....	365
<i>Yuling Guan, Ang Li, Sven Koenig, Stephan Haas, T. K. Satish Kumar</i>	
Group-Based Control of Large-scale Micro-robot Swarms with On-Board Physical Finite-State Machines .....	372
<i>Siyu Li, Miloš Žefran, Igor Paprotny</i>	
A Reactive Energy-Aware Rendezvous Planning Approach for Multi-Vehicle Teams.....	379
<i>Kenny Chour, Jean-Paul Reddinger, James Dotterweich, Marshal Childers, James Humann, Sivakumar Rathinam, Swaroop Darbha</i>	
Scan Matching and Probabilistic Stationary Global Localization in an Airport Environment .....	385
<i>Henning S. Hoj, Henrik I. Christensen, Søren Hansen, Elo Svanebjerg</i>	
Priority Tracking of Pedestrians for Self-Driving Cars.....	391
<i>Jose Nino, Mark Campbell</i>	
Sliding Mode Control of an Autonomous Ground Vehicle Via Flatness Based Feedback Linearization.....	399
<i>Luca Bascetta, Gian Paolo Incremona, Fabio Della Rossa, Fabio Dercole</i>	
A Deep Q Learning-Model Predictive Control Approach to Vehicle Routing and Control with Platoon Constraints.....	405
<i>Francesco Giannini, Giancarlo Fortino, Giuseppe Franzè, Francesco Pupo</i>	
Autonomous Vision-Based Navigation and Control for Intra-Row Weeding .....	411
<i>Jorge E. Avilés-Mejia, Daniel Soto, Joanny Stéphant, Ouiddad Labbani-Igbida</i>	

HueCode2: An Illumination-Robust Meta-Marker Overlaying Multiple Fiducial Markers Using Optimal Color Scheme .....	419
<i>Yoshiki Yokota, Daiki Fujikura, Yoshito Okada, Kazunori Ohno, Kenjiro Tadakuma, Satoshi Tadokoro</i>	
Multiview Object and View Sequence Recognition Using Hidden Markov Models .....	425
<i>Lorena Nuñez, Marco Negrete, Jesus Savage, Luis Contreras, Miguel Moctezuma</i>	
Synthetic-To-Real Domain Adaptation Using Contrastive Unpaired Translation.....	431
<i>Benedikt T. Imbusch, Max Schwarz, Sven Behnke</i>	
Parameterized B-Rep-Based Surface Correspondence Estimation for Category-Level 3D Object Matching Applicable to Multi-Part Items.....	439
<i>Taiki Yano, Daisuke Hagihara, Nobutaka Kimura, Nobuhiro Chihara, Kiyoto Ito</i>	
Robust Human Identity Anonymization Using Pose Estimation.....	447
<i>Hengyuan Zhang, Jing-Yan Liao, David Paz, Henrik I. Christensen</i>	
Understanding a Robot's Guiding Ethical Principles Via Automatically Generated Explanations.....	455
<i>Benjamin Krarup, Felix Lindner, Senka Krivic, Derek Long</i>	
Selecting Objects on Conveyor Belts Using Pointing Gestures Sensed by a Wrist-Worn Inertial Measurement Unit .....	461
<i>Gabriele Abbate, Alessandro Giusti, Antonio Paolillo, Luca Maria Gambardella, Andrea Emilio Rizzoli, Jérôme Guzzi</i>	
Exploring the Role of Electro-Tactile and Kinesthetic Feedback in Telemanipulation Task.....	469
<i>Daria Trinitatova, Miguel Altamirano Cabrera, Polina Ponomareva, Aleksey Fedoseev, Dzmityr Tsetserukou</i>	
LinkGlide-S: A Wearable Multi-Contact Tactile Display Aimed at Rendering Object Softness at the Palm with Impedance Control in VR and Telemanipulation .....	475
<i>Miguel Altamirano Cabrera, Jonathan Tirado, Juan Heredia, Dzmityr Tsetserukou</i>	
Adaptive Shared Control with Human Intention Estimation for Human Agent Collaboration .....	481
<i>Negin Amirshirzad, Emre Ugur, Ozkan Bebek, Erhan Oztop</i>	
Time Pressure Based Human Workload and Productivity Compatible System for Human-Robot Collaboration .....	487
<i>Naoki Shirakura, Ryuichi Takase, Natsuki Yamanobe, Yukiyasu Domae, Tetsuya Ogata</i>	
Leveraging Neural Networks to Guide Path Planning: Improving Dataset Generation and Planning Efficiency .....	495
<i>Philip Baldoni, James McMahon, Erion Plaku</i>	
A Reinforcement Learning Path Planning Approach for Range-Only Underwater Target Localization with Autonomous Vehicles.....	503
<i>Ivan Masmitja, Mario Martin, Kakani Katija, Spartacus Gomariz, Joan Navarro</i>	
Centralized Versus Distributed Nonlinear Model Predictive Control for Online Robot Fleet Trajectory Planning .....	511
<i>Filip Bertilsson, Martin Gordon, Johan Hansson, Daniel Möller, Daniel Söderberg, Ze Zhang, Knut Åkesson</i>	
Towards Online Socially Acceptable Robot Navigation .....	517
<i>Steven Silva, Dennys Paillacho, Nervo Verdezoto, Juan David Hernández</i>	

Learning-Based Adaptive Sampling for Manipulator Motion Planning.....	525
<i>Carl Gaebert, Ulrike Thomas</i>	
Optimal Deformation Control Framework for Elastic Linear Objects .....	532
<i>Omid Aghajanzadeh, Guillaume Picard, Juan Antonio Corrales Ramon, Christophe Cariou, Roland Lenain, Youcef Mezouar</i>	
Optimization of a State Feedback Controller Using a PSO Algorithm .....	539
<i>Diego Tristán-Rodríguez, Rubén Garridoa, Efrén Mezura-Montesb</i>	
Simultaneous Parameter Estimation and Tracking Control Without Persistence of Excitation with Application in Ink-Jet Deposition.....	545
<i>Bashir Hosseini Jafari, Mohammadreza Davoodi, Nicholas R. Gans</i>	
A Game Benchmark for Real-Time Human-Swarm Control .....	553
<i>Joel Meyer, Allison Pinosky, Thomas Trzpit, Ed Colgate, Todd D. Murphey</i>	
Safe Online Gain Optimization for Cartesian Space Variable Impedance Control .....	561
<i>Changhao Wang, Xiang Zhang, Zhian Kuang, Masayoshi Tomizuka</i>	
A Novel Robot Skill Learning Framework Based on Bilateral Teleoperation .....	568
<i>Weiyong Si, Tianqi Yue, Yuan Guan, Ning Wang, Chenguang Yang</i>	
A Dynamic Programming-Based Heuristic Algorithm for a Flexible Job Shop Scheduling Problem of a Matrix System in Automotive Industry .....	574
<i>Min-Soo Kim, Seog-Chan Oh, Eun Hyo Chang, Sangheon Lee, James W. Wells, Jorge Arinez, Young Jae Jang</i>	
Impacts of Proton Accelerator Upgrade on System Level Performance of Proton Therapy Systems .....	580
<i>Feifan Wang, Yu-Li Huang</i>	
Ensemble Generative Adversarial Imputation Network with Selective Multi-Generator (ESM-GAIN) for Missing Data Imputation .....	586
<i>Yuxuan Li, Ayse Dogan, Chenang Liu</i>	
An Enhanced Imputation Approach for Spatio-Temporal Clinical Data.....	592
<i>Yilin Yin, Chun-An Chou</i>	
Keypoint Localization Based on Convolutional Neural Network for Robotic Implantation of Flexible Micro-Electrodes .....	598
<i>Wenliang Liang, Fangbo Qin, Xinyong Han, Dapeng Zhang</i>	
Self-Recalibrating Micromanipulator System for Resilient Robotic Vision-Based Control .....	604
<i>Tiexin Wang, Haoyu Li, Tanhong Pu, Jingjing Ding, Shoukang Du, Zhong Hoo Chau, U-Xuan Tan, Ting Gang Chew, Liangjing Yang</i>	
Learning Collision-Freed Trajectory of Welding Manipulator Based on Safe Reinforcement Learning .....	612
<i>Yintao Xu, Tao Wang, Chong Chen, Bo Hu</i>	
On the Way from Lightweight to Powerful Intelligence: A Heterogeneous Multi-Robot Social System with IoT Devices.....	618
<i>Qian Zhang, Ruiyang Quan, Siqin Qimuge, Rui Wei, Xin Zan, Fangshi Wang, Changchuan Chen, Qi Wei, Xinjun Liu, Fei Qiao</i>	
Quasi-Static Walking for Biped Robots with a Sinusoidal Gait.....	625
<i>Shuangfei Wu, Changliang Wang, Linqi Ye, Xueqian Wang, Houde Liu, Bin Liang</i>	



A Logit Adjusting Transformer for Class Imbalance in Surface Defect Recognition .....	633
<i>Zhaofu Li, Liang Gao, Xinyu Li</i>	
Position Encoding Enhanced Feature Mapping for Image Anomaly Detection .....	639
<i>Qian Wan, Yunkang Cao, Liang Gao, Weiming Shen, Xinyu Li</i>	
Semi-Supervised Bolt Anomaly Detection in Haphazard Environment.....	645
<i>Chuangwei Liu, Yi Yan, Nachuan Ma, Yun Peng, Chengju Liu, Qijun Chen</i>	
An Enhanced EWMA for Alert Reduction and Situation Awareness in Industrial Control Networks .....	651
<i>Baoxiang Jiang, Yang Liu, Huixiang Liu, Zehua Ren, Yun Wang, Yuanyi Bao, Wenqing Wang</i>	
Flexible 3D Object Appearance Observation Based on Pose Regression and Active Motion .....	658
<i>Shaohu Wang, Fangbo Qin, Fei Shen, Zhengtao Zhang</i>	
A Lagrangian Relaxation Heuristic Approach for Coordinated Global Intermodal Transportation.....	664
<i>Wenjing Guo, Rudy R. Negenborn, Bilge Atasoy</i>	
Design, Control and Experiments of an Agile Omnidirectional Mobile Robot with Active Suspension.....	670
<i>Shixing Jiang, Zhuolun Li, Shiyuan Lin, Wujie Shi, Zheng Zhu, Haichuan Che, Siyuan Yin, Chi Zhang, Zhenzhong Jia</i>	
UDE-Based Robust Control of Robot Manipulator Using Dual Quaternion.....	676
<i>Zhiheng Huang, Qi Lu, Xiangyun Li, Kang Li</i>	
A New Error Model Based on Adjustable Exponential Basis for Image-Based Visual Servoing.....	682
<i>Xiangfei Li, Huan Zhao, Dong Liu, Yecan Yin, Han Ding</i>	
Optimal Model of Cloud-Based Multi-Agent System for Trade-off Between Trustworthiness of Data and Cost of Data Usage.....	688
<i>Chen Hou, Cangqi Zhou, Chu-Ge Wu, Rui Cong, Kun Li</i>	
A Physiological Status Diagnosis Method Using Tensor-Based Regularization.....	694
<i>Yu An, Shanen Chen, Xi Zhang</i>	
Prediction of Diabetic Retinopathy Using Longitudinal Electronic Health Records.....	700
<i>Suhao Chen, Zekai Wang, Bing Yao, Tieming Liu</i>	
Generating Counterfactual Explanations for Causal Inference in Breast Cancer Treatment Response.....	706
<i>Siqiong Zhou, Nicholas Pfeiffer, Upala J. Islam, Imon Banerjee, Bhavika K. Patel, Ashif S. Iquebal</i>	
Towards Object Agnostic and Robust 4-DoF Table-Top Grasping .....	712
<i>Prem Raj, Ashish Kumar, Vipul Sanap, Tushar Sandhan, Laxmidhar Behera</i>	
Robust Physics Guided Data-Driven Fleet Battery Pack Fault Detection Under Dynamic Operating Conditions .....	720
<i>Xiaomeng Peng, Shiming Duan, Chaitanya Sankvaram, Xiaoning Jin</i>	
3D Pose Identification of Moving Micro- and Nanowires in Fluid Suspensions Under Bright-Field Microscopy .....	728
<i>Jiaxu Song, Juan Wu, Kaiyan Yu</i>	
Optimal Shelf Arrangement to Minimize Robot Retrieval Time .....	734
<i>Lawrence Yunliang Chen, Huang Huang, Michael Danielczuk, Jeffrey Ichnowski, Ken Goldberg</i>	

Dual Constraint-Based Controllers for Wheeled Mobile Manipulators .....	742
<i>Umut Caliskan, Federico Ulloa Rios, Wilm Decré, Erwin Aertbeliën</i>	
Bayesian Optimization-Based Nonlinear Adaptive PID Controller Design for Robust Mobile Manipulation .....	750
<i>Hadi Hajieghrary, Marc Peter Deisenroth, Yasemin Bekiroglu</i>	
Observer-Free Output Feedback Tracking Control for Collaborative Robotics .....	758
<i>Moath Alqatamin, Nazita Taghavi, Sumit K. Das, Dan O. Popa</i>	
Active Disturbance Rejection Control of a Strongly Nonlinear and Disturbed Piezoelectric Actuator Devoted to Robotic Hand .....	764
<i>Sofiane Khadraoui, Micky Rakotondrabe, Gerardo Flores</i>	
An Adaptive Model Predictive Control Approach for Position Tracking and Force Control of a Hydraulic Actuator .....	770
<i>Augusto Bozza, Bahman Askari, Graziana Cavone, Raffaele Carli, Mariagrazia Dotoli</i>	
A Detection Strategy for Setpoint Attacks Against Differential-Drive Robots .....	776
<i>Mattia Cersullo, Cristian Tiriolo, Giuseppe Franzè, Walter Lucia</i>	
A Dynamic Cascading Failure Model in Power Grid with Renewable Energy Generation .....	782
<i>Yujie Yang, Yadong Zhou, Jiang Wu, Ting Liu, Zhanbo Xu, Xiaohong Guan</i>	
Cost-Minimized User Association and Partial Offloading for Dependent Tasks in Hybrid Cloud-edge Systems .....	788
<i>Haitao Yuan, Qinglong Hu, Meijia Wang, Jing Bi, Mengchu Zhou</i>	
A Voltage Deviation Threat Via Distributed Load Perturbation in Distribution Network .....	794
<i>Hao Huang, Chenyang Yang, Yi Tang, Qinqin Wu, Famao Mei, Zhenwei Gu, Yadong Zhou</i>	
A Bi-Level Optimization Method for Integrated Production Scheduling Between Continuous Casting and Hot Rolling Processes .....	800
<i>Wei Tang, Lingling Cao, Yaomin Wen, Sheng-Long Jiang</i>	
GUM: A Guided Undersampling Method to Preprocess Imbalanced Datasets for Classification .....	806
<i>Kisuk Sung, W. Eric Brown, Erick Moreno-Centeno, Yu Ding</i>	
Object Goal Navigation Using Data Regularized Q-Learning .....	812
<i>Nandiraju Gireesh, D. A. Sasi Kiran, Snehasis Banerjee, Mohan Sridharan, Brojeshwar Bhowmick, Madhava Krishna</i>	
MultiROS: ROS-Based Robot Simulation Environment for Concurrent Deep Reinforcement Learning .....	818
<i>Jayasekara Kapukotuwa, Brian Lee, Declan Devine, Yuansong Qiao</i>	
FRobs_RL: A Flexible Robotics Reinforcement Learning Library .....	824
<i>Jose Manuel Fajardo, Felipe González Roldan, Sebastian Realpe, Juan D. Hernández, Ze Ji, Pedro-F. Cardenas</i>	
Multimodal Motion Prediction Based on Adaptive and Swarm Sampling Loss Functions for Reactive Mobile Robots .....	830
<i>Ze Zhang, Emmanuel Dean, Yiannis Karayiannidis, Knut Åkesson</i>	
Learning Switching Criteria for Sim2Real Transfer of Robotic Fabric Manipulation Policies .....	836
<i>Satvik Sharma, Ellen Novoseller, Vainavi Viswanath, Zaynah Javed, Rishi Parikh, Ryan Hoque, Ashwin Balakrishna, Daniel S. Brown, Ken Goldberg</i>	

Augmented Visual Localization Using a Monocular Camera for Autonomous Mobile Robots .....	844
<i>Ali Salimzadeh, Neel P. Bhatt, Ehsan Hashemi</i>	
Efficient WiFi LiDAR SLAM for Autonomous Robots in Large Environments .....	852
<i>Khairuldanial Ismail, Ran Liu, Zhenghong Qin, Achala Athukorala, Billy Pik Lik Lau, Muhammad Shalihan, Chau Yuen, U-Xuan Tan</i>	
Dynamical Scene Representation and Control with Keypoint-Conditioned Neural Radiance Field.....	858
<i>Weiyao Wang, Andrew S. Morgan, Aaron M. Dollar, Gregory D. Hager</i>	
Extremal Point Tracking on Smooth Surfaces.....	864
<i>Steffen Madsen, Milad Jami, Henrik G. Petersen</i>	
Penetration State Identification from Stereo Image Pair of Weld Pool in GMAW Process by Deep Learning .....	871
<i>Zhimin Liang, Xu Gao, Kun Zhang, Dianlong Wang, Liwei Wang</i>	
Directed Data Association for Single Object Tracking in Point Clouds.....	877
<i>Yongchang Zhang, Yue Guo, Hanbing Niu, Wenhao He</i>	
Deadlock Avoidance Algorithm for AGVs on a Tessellated Layout .....	883
<i>K. J. C. Fransen, M. A. Reniers, J. A. W. M. Van Eekelen</i>	
Solving Stochastic Orienteering Problems with Chance Constraints Using Monte Carlo Tree Search .....	890
<i>Stefano Carpin, Thomas C. Thayer</i>	
Rendezvous Scheduling for Charging Coordination Between Aerial Robot - Mobile Ground Robot .....	898
<i>A. Harun Eker, Ahmet Öncü, H. Isil Bozma</i>	
Pareto Frontier Approximation Network (PA-Net) to Solve Bi-objective TSP .....	904
<i>Ishaan Mehta, Sharareh Taghipour, Sajad Saeedi</i>	
On Controlling Battery Degradation in Vehicle-To-Grid Energy Markets .....	912
<i>Paolo Scarabaggio, Raffaele Carli, Alessandra Parisio, Mariagrazia Dotoli</i>	
Towards Infield Navigation: Leveraging Simulated Data for Crop Row Detection.....	918
<i>Rajitha De Silva, Grzegorz Cielniak, Junfeng Gao</i>	
Introducing Multispectral-Depth (MS-D): Sensor Fusion for Close Range Multispectral Imaging.....	924
<i>Jelena Vuletic, Marsela Polic, Matko Orsag</i>	
Distributed Mission Planning of Complex Tasks for Heterogeneous Multi-Robot Systems .....	930
<i>Barbara Arbanas Ferreira, Tamara Petrovic, Stjepan Bogdan</i>	
Automatic Lighting Control and IoT Monitoring on an Indoor-Greenhouse .....	938
<i>C. Contreras, O. Begovich</i>	
Development and Testing of a Smart Bin Toward Automated Rearing of Black Soldier Fly Larvae.....	944
<i>Kevin Urrutia Avila, Merrick Campbell, Kerry Mauck, Marco Gebiola, Konstantinos Karydis</i>	
Digital Twin-Based Collision Avoidance System for Autonomous Excavator with Automatic 3D LiDAR Sensor Calibration .....	950
<i>Mineto Satoh</i>	
Neural Network Predictive Schemes for Building Temperature Control: A Comparative Study .....	957
<i>Luca Ferrarini, Soroush Rastegarpour</i>	

Smartphone-Based Real-Time Indoor Positioning Using BLE Beacons.....	964
<i>Robert Riesebos, Viktoriya Degeler, Andrés Tello</i>	
Analysis of Process Data for Remote Health Prediction in Distributed Automation Systems .....	972
<i>Yu-Ming Hsieh, Jan Wilch, Chin-Yi Lin, Birgit Vogel-Heuser, Fan-Tien Cheng</i>	
A Laser Intensity Based Autonomous Docking Approach with Application to Mobile Robot Recharging in Unstructured Environments .....	978
<i>Yugang Liu</i>	
Handling-Design Method by Multi-primitive Recognition of Object Shape.....	984
<i>Kosuke Watanabe, Shunsuke Sato, Yasumichi Aiyama</i>	
Towards Autonomous Soft Grasping of Deformable Objects Using Flexible Thin-Film Electro- adhesive Gripper.....	990
<i>Salvatore D'Avella, Marco Fontana, Rocco Vertechy, Paolo Tripicchio</i>	
Robust Position Regulation of a Seesaw Actuated by a Humanoid .....	996
<i>Santos M. Orozco-Soto, Juan M. Ibarra-Zannatha, Abderrahmane Kheddar</i>	
A Digital Twin Framework for Telesurgery in the Presence of Varying Network Quality of Service .....	1002
<i>Sophea Bonne, Will Panitch, Karthik Dharmarajan, Kishore Srinivas, Jerri-Lynn Kincade, Thomas Low, Bruce Knoth, Cregg Cowan, Danyal Fer, Brijen Thananjeyan, Justin Kerr, Jeffrey Ichnowski, Ken Goldberg</i>	
Ellipsoid SLAM with Novel Object Initialization.....	1010
<i>Yongqi Meng, Benchun Zhou</i>	
Flow Synthesis Based Visual Servoing Frameworks for Monocular Obstacle Avoidance Amidst High-Rises .....	1016
<i>Harshit K. Sankhla, M. Nomaan Qureshi, Shankara Narayanan V., Vedansh Mittal, Gunjan Gupta, Harit Pandya, K. Madhava Krishna</i>	
Object-Based Loop Closure with Directional Histogram Descriptor .....	1023
<i>Benchun Zhou, Yongqi Meng, Furmans Kai</i>	
Deep Learning Based Sustainable Material Attribution for Apparels .....	1029
<i>Yaswanth Kumar Nicherala, Srikrishna Sadula, V. Prasanna Shrinivas</i>	
Detection of Camera Model Inconsistency and the Existence of Optical Image Stabilization System .....	1035
<i>Shu-Hao Yeh, Di Wang, Wei Yan, Dezhen Song</i>	
NLOS Ranging Mitigation with Neural Network Model for UWB Localization.....	1041
<i>Muhammad Shalihan, Ran Liu, Chau Yuen</i>	
Non-Parametric Stochastic Policy Gradient with Strategic Retreat for Non-Stationary Environment.....	1048
<i>Apan Dastider, Mingjie Lin</i>	
Deep Reinforcement Learning Toward Robust Multi-Echelon Supply Chain Inventory Optimization.....	1056
<i>Ibrahim El Shar, Wenhuan Sun, Haiyan Wang, Chetan Gupta</i>	
Spatial Relation Graph and Graph Convolutional Network for Object Goal Navigation.....	1063
<i>D. A. Sasi Kiran, Kritika Anand, Chaitanya Kharyal, Gulshan Kumar, Nandiraju Gireesh, Snehasis Banerjee, Ruddra Dev Roychoudhury, Mohan Sridharan, Brojeshwar Bhowmick, Madhava Krishna</i>	

High-Level Reward Deep Reinforcement Learning Approach for a Novel Physical-Logical Hybrid Factory Line Robot Vehicle Simulation .....	1070
<i>Ryota Higa, Shinji Nakadai</i>	
Expert Initialized Reinforcement Learning with Application to Robotic Assembly .....	1076
<i>Jeppe Langaa, Christoffer Sloth</i>	
Kinematically-Constrained Continuous-Path Polynomial Trajectories for Quadrotors .....	1082
<i>Hassan Alkomy, Jinjun Shan</i>	
Smooth Spline-Based Trajectory Planning for Semi-Rigid Multi-Robot Formations .....	1088
<i>Tobias Recker, Henrik Lurz, Annika Raatz</i>	
Real-Time OF-based Trajectory Control of a UAS Rotorcraft Based on Integral Extended-State LQG.....	1094
<i>Tariq Zioud, Juan Escareno, Ouiddad Labbani-Igbida</i>	
Complete, Decomposition-Free Coverage Path Planning .....	1102
<i>Tushar Kusnur, Maxim Likhachev</i>	
An Adaptive, Repeatable and Rapid Auto-Reconfiguration Process in a Smart Manufacturing System for Small Box Assembly.....	1109
<i>Zi Wang, Peter Kendall, Kevin Gumma, Alison Turner, Svetan Ratchev</i>	
The AGV Battery Swapping Policy Based on Reinforcement Learning.....	1116
<i>Min Seok Lee, Young Jae Jang</i>	
Learning Skill-Based Industrial Robot Tasks with User Priors.....	1122
<i>Matthias Mayr, Carl Hvarfner, Konstantinos Chatzilygeroudis, Luigi Nardi, Volker Krueger</i>	
UV Grid Generation on 3D Freeform Surfaces for Constrained Robotic Coverage Path Planning .....	1130
<i>Sean McGovern, Jing Xiao</i>	
Collaborative Discrimination-Enabled Generative Adversarial Network (CoD-GAN) for the Data Augmentation in Imbalanced Classification.....	1137
<i>Ziyang Zhang, Yuxuan Li, Chenang Liu</i>	
Robotic Control of the Deformation of Soft Linear Objects Using Deep Reinforcement Learning.....	1143
<i>Mélodie Hani Daniel Zakaria, Miguel Aranda, Laurent Lequière, Sébastien Lengagne, Juan Antonio Corrales Ramón, Youcef Mezouar</i>	
Multi-Level Multi-channel Bio-signal Analysis for Health Telemonitoring.....	1150
<i>Wesam Alramadeen, Salahaldeen Rababa, Carlos Costa, Bing Si</i>	
Performance Objective Extraction of Optimal Controllers: A Hippocampal Learning Approach .....	1156
<i>Adolfo Ferrusquía, Weisi Guo</i>	
Improved Representations for Continual Learning of Novel Motor Health Conditions Through Few-Shot Prototypical Networks.....	1162
<i>Matthew Russell, Peng Wang</i>	
A Reinforcement Learning Decentralized Multi-Agent Control Approach Exploiting Cognitive Cooperation on Continuous Environments.....	1168
<i>Gerardo Camacho-Gonzalez, Salvatore D'Avella, Carlo A. Avizzano, Paolo Tripicchio</i>	
Learn Proportional Derivative Controllable Latent Space from Pixels .....	1174
<i>Weiyao Wang, Marin Kobilarov, Gregory D. Hager</i>	

FastATDC: Fast Anomalous Trajectory Detection and Classification.....	1181
<i>Tianle Ni, Jingwei Wang, Yunlong Ma, Shuang Wang, Min Liu, Weiming Shen</i>	
Deep Reinforcement Learning-Based Dynamic Bandwidth Allocation in Weighted Fair Queues of Routers .....	1187
<i>Jinyan Pan, Gang Chen, Haoran Wu, Xi Peng, Li Xia</i>	
Efficiency Analysis of a High-Bay Container Storage System – BoxBay .....	1195
<i>Ioanna O Alexandri, Mengxue Yuan, Chenhao Zhou, Li Xue</i>	
Noise Optimization in Artificial Neural Networks.....	1202
<i>Li Xiao, Zeliang Zhang, Jinyang Jiang, Yijie Peng</i>	
Integrated Inventory Placement and Transportation Vehicle Selection Using Neural Network .....	1208
<i>Junyan Qiu, Jun Xia, Jun Luo, Yang Liu, Yuxin Liu</i>	
A Feature Selection Algorithm Based on Genetic Algorithm and Ordinal Optimization for Regression Problems .....	1216
<i>Zhaojie Wang, Zhen Shen, Feng Gao, Mu Sun, Junda Li, Qian Zhou</i>	
Safety-Critical Components Analysis Using Knowledge Graph for CNC Machine .....	1224
<i>Xuhai Duan, Yong Chen, Zuzhen Ji, Zhi Pei, Wenchao Yi</i>	
Design of Petri Net Supervisors for Discrete Event Systems with Two Control Specifications .....	1229
<i>Chengzong Li, Yufeng Chen, Zhiwu Li, Li Yin</i>	
A Novel Cyclic Scheduling Approach to Time-Constrained Single-Arm-Robot Multi-Cluster Tools .....	1235
<i>Jipeng Wang, Huan Xue, Qibiao Yang, Chunrong Pan</i>	
Efficient Approach to Scheduling of High Throughput Screening Systems: A Case Study .....	1241
<i>Naiqi Wu, Yan Qiao, Zhiwu Li</i>	
Design of Robust Optimization Petri Net Controller for Automated Manufacturing Systems with Unreliable Resources.....	1247
<i>Ziliang Zhang, Gaiyun Liu, Yu Sun</i>	
Fusing Panoptic Segmentation and Geometry Information for Robust Visual SLAM in Dynamic Environments.....	1253
<i>Hu Zhu, Chen Yao, Zheng Zhu, Zhengtao Liu, Zhenzhong Jia</i>	
A Point-Based Neural Network for Real-Scenario Deformation Prediction in Additive Manufacturing .....	1259
<i>Meihua Zhao, Gang Xiong, Weixing Wang, Qihang Fang, Zhen Shen, Li Wan, Fenghua Zhu</i>	
Anchor-Based Detection and Height Estimation Framework for Particle Defects on Cathodic Copper Plate Surface .....	1265
<i>Chen Sun, Qian Wan, Zhaofu Li, Liang Gao, Xinyu Li, Yiping Gao</i>	
An Activity Management System for Office Workers Using Multimodal Data .....	1271
<i>Xiangying Zhang, Pai Zheng, Qiqi He, Tao Peng, Wangchujun Tang, Hongling Ye, Renzhong Tang</i>	
What Drives Patients to Choose a Physician Online? a Study Based on Tree Models and SHAP Values.....	1277
<i>Yanzhi Wang, Yue Zhao, Jie Song, Hongju Liu</i>	

Assembly State Detection Based on Deep Learning and Object Matching.....	1285
<i>Shiwen Zhao, Junfeng Wang, Wang Li, Maoding Liu</i>	
Analysis and Improvement of Batch-Batch Production Systems .....	1291
<i>Lingchen Liu, Chao-Bo Yan</i>	
Efficient and Accurate Simulation of Origin-Destination Flow in Telecommunication Systems.....	1297
<i>Mingsheng Ma, ShuaiPeng Li, Yuanlin Chang, Sheng Zhang, Chenhong Li, Xu Gong, Huiying Xu, Feng Gao, Xiaoyu Cao, Chao-Bo Yan</i>	
A Multi-Stage Algorithm for the Capacitated Vehicle Routing Problem with Two-dimensional Loading and Time Windows .....	1303
<i>Shunqian Zhou, Junhu Wei, Chao-Bo Yan</i>	
Robust Lane Detection and Tracking for Autonomous Driving of Rubber-Tired Gantry Cranes in a Container Yard .....	1309
<i>Yunjian Feng, Jun Li</i>	
Electric Vehicles Routing Including Smart-Charging Method and Energy Constraints .....	1315
<i>María A. Del Cacho Estil-Les, Maria Pia Fanti, Agostino M. Mangini, Michele Roccotelli</i>	
A Learning-Based Iterated Local Search Algorithm for Order Batching and Sequencing Problems.....	1321
<i>Lijie Zhou, Chengran Lin, Qian Ma, Zhengcai Cao</i>	
AggCrack: An Aggregated Attention Model for Robotic Crack Detection in Challenging Airport Runway Environment.....	1327
<i>Haifeng Li, Jianping Zong, Rui Huang, Zhongcheng Gui, Dezhen Song</i>	
Social-Aware Decision Algorithm for On-ramp Merging Based on Level-k Gaming .....	1333
<i>Daofei Li, Hao Pan, Yang Xiao, Bo Li, Linhui Chen, Houjian Li, Hao Lyu</i>	
Lifetime Learning-Enabled Modelling Framework for Digital Twin.....	1339
<i>Chunsheng Yang, Rahatara Ferdousi, Abdulmotaleb El Saddik, Yifeng Li, Zheng Liu, Min Liao</i>	
RailTwin: A Digital Twin Framework for Railway .....	1345
<i>Rahatara Ferdousi, Fedwa Laamarti, Chunsheng Yang, Abdulmotaleb El Saddik</i>	
A Weak Magnetic Detection Method for Surface Defects of 304 Stainless Steel.....	1351
<i>Ruiyan Xia, Qiangqiang Cheng, Guisuo Xia, Dongfang Cheng</i>	
DFBVS: Deep Feature-Based Visual Servo .....	1355
<i>Nicholas Adrian, Van-Thach Do, Quang-Cuong Pham</i>	
Human-Like Multimodal Perception and Purposeful Manipulation for Deformable Objects .....	1362
<i>Upinder Kaur, Xin Ma, Yuanmeng Huang, Richard M. Voyles</i>	
Digital Twin Framework for Reconfiguration Management.....	1370
<i>Birte Caesar, Dawn M. Tilbury, Kira Barton, Alexander Fay</i>	
Imbalanced Wafer Map Dataset Classification with Semi-Supervised Learning Method and Optimized Loss Function .....	1377
<i>Jianchuan Huang, Kuo-Yi Lin, Jia Xu, Lili</i>	
Understanding Context of Use from Online Customer Reviews Using BERT .....	1382
<i>Yanzhang Tong, Yan Liang, Ying Liu, Irena Spasic, Yulia Hicks</i>	

Cross-Domain Fault Diagnosis Via Meta-Learning-Based Domain Generalization .....	1388
<i>Fengyu Yue, Yong Wang</i>	
Attention-Based Representation Learning for Time Series with Principal and Residual Space Monitoring.....	1395
<i>Botao Wang, Fugee Tsung, Hao Yan</i>	
Evolution Mechanism Analysis and Stability Evaluation of Machining Process Based on Minimum Entropy Space State.....	1402
<i>Bohao Li, Liping Zhao, Yiyong Yao, Yinqing Zhi</i>	
A Novel Approach to Modeling of Production System: A Case Study at a Small/medium-Sized Manufacturer .....	1408
<i>Yuting Sun, Liang Zhang</i>	
Detection and Correction of Buffer Occupancy Data Error in Two-Machine Bernoulli Serial Lines.....	1414
<i>Tianyu Zhu, Liang Zhang</i>	
Simulation-Based Real-time Production Control with Different Classes of Residence Time Constraints.....	1420
<i>Feifan Wang, Feng Ju</i>	
Motion Planning for Human-Robot Collaboration Based on Reinforcement Learning .....	1426
<i>Tian Yu, Qing Chang</i>	
An Adaptive Method for Flexible Configurations of Single-Arm Cluster Tools: Modeling and Scheduling.....	1432
<i>Wenqing Xiong, Yan Qiao, Liping Bai, Baoying Huang, Naiqi Wu, Siwei Zhang</i>	
Exploration on Industrial System-Aware Dataspace Towards Smart Manufacturing .....	1438
<i>Yanying Wang, Ying Cheng, Yuanzhe Zhu, Fei Tao</i>	
Optimising the Supply and Demand Decisions in High-End Equipment Manufacturing Based on Stackelberg Game .....	1445
<i>Tiaojuan Han, Jianfeng Lu, Hao Zhang</i>	
Rotational Slippage Minimization in Object Manipulation.....	1451
<i>Jiaming Hu, Henrik I. Christensen</i>	
Augmenting Vision-Based Grasp Plans for Soft Robotic Grippers Using Reinforcement Learning .....	1459
<i>Vighnesh Vatsal, Nijil George</i>	
Manipulation of Deformable Linear Objects in Benchmark Task Spaces.....	1465
<i>Peng Chang, Rui Luo, Mark Zolotas, Taskin Padir</i>	
Reducing Time in Active Visual Target Search with Bayesian Optimization for Robotic Manipulation .....	1472
<i>Tatsuya Kittaka</i>	
Dynamics Modeling and Verification of Parallel Extensible Soft Robot Based on Cosserat Rod Theory .....	1480
<i>Xiaocheng Wang, Changliang Wang, Xueqian Wang, Deshan Meng, Bin Liang, Hejie Xu</i>	
Online Modeling and Control of Soft Multi-Fingered Grippers Via Koopman Operator Theory.....	1487
<i>Lu Shi, Caio Mucchiani, Konstantinos Karydis</i>	



Real-Time Sliding Mode Fault Diagnosis for a Three-Wheeled Omnidirectional Mobile Robot.....	1494
<i>Adrian Lizarraga, Ofelia Begovich, Antonio Ramírez</i>	
Posture Stabilization Control for a Quadruped Robot Walking on Swaying Platforms .....	1500
<i>Jiayi Li, Linqi Ye, Zongxiang Jin, Houde Liu, Bin Liang</i>	
Deep Direct Visual Servoing of Tendon-Driven Continuum Robots .....	1506
<i>Ibrahim Abdulhafiz, Ali A. Nazari, Taha Abbasi-Hashemi, Amir Jalali, Kourosh Zareinia, Sajad Saeedi, Farrokh Janabi-Sharifi</i>	
An Efficient Bi-Fidelity Method for Continuous Simulation Optimization .....	1514
<i>Gengchen Wang, Xiao Jin, Loo Hay Lee</i>	
A Simulation Optimization-Aided Learning Method for Design Automation of Scheduling Rules .....	1520
<i>Hang Ma, Cheng Zhang, Zhongshun Shi</i>	
Comprehensive Review of Intelligent Modeling and Control of Smart Building .....	1526
<i>Diego Peredo, Wen Yu</i>	
Hybrid Approach for Anticipating Human Activities in Ambient Intelligence Environments .....	1532
<i>Koussaila Moulouel, Abdelghani Chibani, Hazem Abdelkawy, Yacine Amirat</i>	
Robot Learning of Assembly Tasks from Non-Expert Demonstrations Using Functional Object-Oriented Network .....	1538
<i>Yi Chen, David Paulius, Yu Sun, Yunyi Jia</i>	
Context-Dependent Anomaly Detection with Knowledge Graph Embedding Models .....	1546
<i>Nathan Vaska, Kevin Leahy, Victoria Helus</i>	
Knowledge Graph-Based Approach to Trace the Full Life Cycle Information of Decommissioned Electromechanical Products .....	1554
<i>Longzhou Ma, Xiuli Wu, Yuan Kuang, Ying Tang, Dong Xiang</i>	
Wind Energy Forecasting Using Multiple ARIMA Models.....	1560
<i>Xiaou Li, Juan Francisco Sabas, Vicente Duarte Mendéz</i>	
Threat-Aware Selection for Target Engagement .....	1566
<i>Daniel Biediger, Aaron T. Becker</i>	
Closed Form HJB Solution for Path Planning of a Robot Manipulator with Warehousing Applications.....	1573
<i>Ravi Prakash, Jayant Kumar Mohanta, Laxmidhar Behera</i>	
Minimalist Coverage and Energy-Aware Tour Planning for a Mobile Robot.....	1580
<i>Anirban Ghosh, Ayan Dutta, Brian Sotolongo</i>	
Simulation Aided Anticipatory Congestion Avoidance for Warehouses .....	1586
<i>Hardik Bhati, Garvit Suri, Rahul Kala, Gora Chand Nandi</i>	
A Multi-Objective Optimization Approach for Trajectory Planning in a Safe and Ergonomic Human-Robot Collaboration .....	1592
<i>Silvia Proia, Graziana Cavone, Raffaele Carli, Mariagrazia Dotoli</i>	
Safe Motion Planning for a Mobile Robot Navigating in Environments Shared with Humans .....	1598
<i>Basak Sakcak, Luca Bascetta</i>	

A New Nested Partition Algorithm for Parallel Machine Scheduling Problem with Hard Q-Times and Setup Times .....	1604
<i>Chaoran Wang, Leyuan Shi</i>	
Congestion-Aware Routing for Multi-Class Mobility-on-Demand Service .....	1610
<i>Niharika Shrivastava, Malika Meghiani</i>	
A MIP-Based Approach for Multi-Robot Geometric Task-and-Motion Planning .....	1617
<i>Hejia Zhang, Shao-Hung Chan, Jie Zhong, Jiaoyang Li, Sven Koenig, Stefanos Nikolaidis</i>	
Reactive Task Allocation and Planning for Quadrupedal and Wheeled Robot Teaming .....	1625
<i>Ziyi Zhou, Dong Jae Lee, Yuki Yoshinaga, Stephen Balakirsky, Dejun Guo, Ye Zhao</i>	
Multi-Branching Neural Network for Myocardial Infarction Prediction.....	1633
<i>Zekai Wang, Chenang Liu, Bing Yao</i>	
CIPCaD-Bench: Continuous Industrial Process Datasets for Benchmarking Causal Discovery Methods .....	1639
<i>Giovanni Menegozzo, Diego Dall’Alba, Paolo Fiorini</i>	
Performance Evaluation of AI Algorithms on Heterogeneous Edge Devices for Manufacturing .....	1647
<i>Bernhard Rupprecht, Dominik Hujo, Birgit Vogel-Heuser</i>	
Data Uncertainty Learning for Single Image Camera Calibration .....	1655
<i>Zhiqiang Hu, Yoshitaka Mikuni, Koji Arata</i>	
Skill Transfer for Surface Finishing Tasks Based on Estimation of Key Parameters.....	1663
<i>Yitaeq Kim, Christoffer Sloth, Aljaz Kramberger</i>	
Directed Explorations During Flood Disasters Using Multi-UAV System .....	1669
<i>Armaan Garg, Shashi Shekhar Jha</i>	
Stress-Aware Optimal Placement of Actuators for Ultra-High Precision Quality Control of Composite Structures Assembly.....	1677
<i>Areej Albahar, Inyoung Kim, Tim Lutz, Xiaowei Yue</i>	
Educate Complex C Programming Artefacts for Robotics to Mechanical Engineers Freshmen – Array, Pointer, Loop .....	1683
<i>B. Vogel-Heuser, K. Land, D. Hujo, M. Krüger</i>	
Towards Distributed Real-Time Capable Robotic Control Using ROS2 .....	1690
<i>C. Plasberg, H. Nessau, D. Timmermann, C. Eichmann, A. Roennau, R. Dillmann</i>	
Putting Away the Groceries with Precise Semantic Placements .....	1696
<i>Akanimoh Adeleye, Jiaming Hu, Henrik I. Christensen</i>	
Design of a Conveyor Belt Manipulator for Reposition of Boxes in Logistics Centers.....	1702
<i>Francisco Yumbla, Juan Medrano, Edwin Valarezo, Hong-Ryul Jung, Tuan Luong, Sungwon Seo, Jinjae Shin, Hyungpil Moon</i>	
A Walking Space Robot for On-Orbit Satellite Servicing: The ReCoBot.....	1708
<i>Stefan Scherzinger, Jakob Weinland, Robert Wilbrandt, Pascal Becker, Arne Roennau, Rüdiger Dillmann</i>	
Replicating Human Skill for Robotic Deep-Micro-hole Drilling .....	1715
<i>Bruno Maric, Frano Petric, Dario Stuhne, Vanja Ranogajec, Matko Orsag</i>	

Global Safety Characteristics of Wheeled Mobile Manipulators .....	1722
<i>Nico Mansfeld, Guillermo Gómez Peña, Mazin Hamad, Alexander Kurdas, Saeed Abdolshah, Sami Haddadin</i>	
Sizing of a Fleet of Cooperative and Reconfigurable Robots for the Transport of Heterogeneous Loads .....	1730
<i>Mari Chaikovskaia, Jean-Philippe Gayon, Mairtin Marjolle</i>	
Robot Cartesian Compliance Variation for Safe Kinesthetic Teaching Using Safety Control Barrier Functions .....	1736
<i>Julian M. Salt Ducaju, Björn Olofsson, Anders Robertsson, Rolf Johansson</i>	
A Passivity-Based Adaptive Admittance Control Strategy for Physical Human-robot Interaction in Hands-on Tasks .....	1744
<i>Luca Bascetta</i>	
Relevant Safety Falsification by Automata Constrained Reinforcement Learning .....	1750
<i>Constantin Cronrath, Tom P. Huck, Christoph Ledermann, Torsten Kröger, Bengt Lennartson</i>	
An Autonomous Mobile Robot for Quality Assurance of Car Body.....	1758
<i>Matthias Karl, Marc Forstehäusler, Trinh Nguyen-Cong, Klaus Dietmayer, Carsten Glasenapp</i>	
Programming Abstractions for Simulation and Testing on Smart Manufacturing Systems .....	1764
<i>Chiao Hsieh, Daniel Wu, Yubin Koh, Sayan Mitra</i>	
Trajectory Tracking Kinematic Control of Omnidirectional Mobile Robots Via Active Disturbance Rejection Control with Anti-Peaking Mechanism.....	1770
<i>M. Ramírez-Neria, A. Luviano-Juárez, R. Madonski, E. G. Hernández-Martínez, G. Fernández-Anaya, N. Lozada-Castillo</i>	
Deep Learning Based Litter Identification and Adaptive Cleaning Using Self-Reconfigurable Pavement Sweeping Robot.....	1776
<i>Braulio Félix Gómez, Lim Yi, Balakrishnan Ramalingam, Madan M. Rayguru, Abdullah A. Hayat, Pathmakumar Thejus, Kristor Leong, Mohan R. Elara</i>	
Bio-Inspired Obstacle Avoidance Using Wavelet-Based Element Analysis.....	1782
<i>Shakeeb Ahmad, Zoe Turin, J. Sean Humbert</i>	
Dual-Arm Object Transportation Via Model Predictive Control and External Disturbance Estimation.....	1789
<i>Maolin Lei, Mario Selvaggio, Ting Wang, Fabio Ruggiero, Cheng Zhou, Chen Yao, Yu Zheng</i>	
Constrained Time-Optimal Adaptive Robust Control of Linear Motors Using an Indirect Method .....	1796
<i>Yingqiang Liu, Zheng Chen, Bin Yao</i>	
Motion Control of an Autonomous Wheel-Leg Bikebot .....	1802
<i>Xinyan Huang, Feng Han, Yi Han, Shuoyu Wang, Tao Liu, Jingang Yi</i>	
Leveraging Distributional Bias for Reactive Collision Avoidance Under Uncertainty: A Kernel Embedding Approach.....	1808
<i>Anish Gupta, Arun Kumar Singh, K. Madhava Krishna</i>	
Capability-Based Frameworks for Industrial Robot Skills: A Survey.....	1816
<i>Matteo Pantano, Thomas Eiband, Dongheui Lee</i>	

A Flexible Collision-Free Trajectory Planning for Multiple Robot Arms by Combining Q-Learning and RRT .....	1824
<i>Tomoya Kawabe, Tatsushi Nishi</i>	
Acoustic Based GMAW Penetration Depth Identification Using Droplet Transfer Monitoring .....	1830
<i>Mitchell Cullen, Jc Ji, Sipei Zhao</i>	
Process Dynamics-Aware Flexible Manufacturing for Industry 4.0 .....	1836
<i>Michael Balszun, Clara Hobbs, Enrico Fraccaroli, Debayan Roy, Franco Fummi, Samarjit Chakraborty</i>	
Wearable Sensing and Knee Exoskeleton Control for Awkward Gaits Assistance.....	1844
<i>Chunchu Zhu, Feng Han, Jingang Yi</i>	
Adaptive Quasi-Static Motion Control of a Soft Robotic Exo-Digit in Physical Human-Wearable-Soft-Robot-Interaction.....	1850
<i>Mahdi Haghshenas-Jaryani</i>	
Robotic Fabric Fusing Using a Novel Electroadhesion Gripper.....	1856
<i>Honglu He, Glenn Saunders, John T. Wen</i>	
Force Sensing Based on Nail Deformation for Measurement of Fingertip Force in Detailed Work.....	1864
<i>Kimitoshi Yamazaki, Yuto Nakagawa, Akihisa Ishikawa, Motoki Hirayama</i>	
Automated Sample Pretreatment and Measurement of Benzodiazepines in Serum Using a Biomek I7 Hybrid Workstation and LC-MS/MS .....	1870
<i>H. Fleischer, A. Bach, A. Reichelt, B. Wijayawardena, M. Kheradmand, K. Thurow</i>	
Supervised Adaptive Fuzzy Control of LVAD with Pulsatility Ratio Modulation .....	1876
<i>Milad Azizkhani, Yue Chen</i>	
Identify Bottlenecks of Patient Flow in Emergency Departments.....	1882
<i>Yuansi Hu, Jiacun Wang, Guanjun Liu</i>	
To Collaborate or Not to Collaborate: Understanding Human-Robot Collaboration .....	1888
<i>Valeria Villani, Angela Ciaramidaro, Cristina Iani, Sandro Rubichi, Lorenzo Sabattini</i>	

**Author Index**