# 2023 7th International Conference on Robotics, Control and Automation (ICRCA 2023)

Taizhou, China 5-7 January 2023



IEEE Catalog Number: CFF ISBN: 979-

CFP23BU7-POD 979-8-3503-4579-7

## 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:
 CFP23BU7-POD

 ISBN (Print-On-Demand):
 979-8-3503-4579-7

 ISBN (Online):
 979-8-3503-4578-0

#### **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 7th International Conference on Robotics, Control and Automation (ICRCA 2023)

### **Table of Contents**

|         | Prefacevi   |  |
|---------|---|--|
| <u></u> | New Motor Design and Structure Optimization   |  |
| Res     | search on Matching of Motor Control System Based on Electric Drive of Engineering Vehicle1  Zongjun Feng  |  |
| Res     | search on BIM and Numerical Control Technology Based on Mechatronics6  Dawei Qiao   |  |
| Opt     | timization and Development of Marine Engineering Technology Based on Intelligent Control11  Jinliang Zhang  |  |
| Res     | search on Motor Control Technology of New Energy Vehicle Based on MATLAB16  Kai Ma, Lige Ma, Chunhua Kong   |  |
| k       | Signal Perception and Detection   |  |
|         | sign and Implementation of an Embedded System for Water Quality Monitoring (WQM) Based on Internet of ngs (IOT)   |  |
|         | Mozdalifah Ali, Guo Ling, Hisham Elmouazen search on Methods of Expressway Vehicle Detection under Abnormal Weather Conditions Based on Deep arning26                       |  |
|         | Rong Cao, Xiaogang Ma, Xinyi Ma, Liru Hua, Chihang Zhao, Teng Ma, Xinliang Wang   |  |
| Res     | search Progress on Detection Technology of Small Magnetic Targets on Moving Platforms31  Ming Chang, Lei Xu, Xiong Xiong, Jianqiang Zhang, Xu Li                            |  |
| k       | Intelligent Robot Design and Control  |  |
|         | ual Potential Field-Based Motion Planning for Human-Robot Collaboration via Kinesthetically Guided  |  |
|         | Yunze Shi, Tengyue Wang, Jiawei Yu, Songjie Xiao, Linfei Xiong, Liangjing Yang  |  |
| Glo     | bally Perceived Obstacle Avoidance for Robots Based on Virtual Twin and Deep Reinforcement Learning45  Rongxin Jiang, Fengkang Ying, Guojing Zhang, Yifei Xing, Huashan Liu |  |

| The Mobility and High Load-to-weight Ratio Oriented Design Criteria of Hybrid Robots  | 50 |
|---|----|
| Bingbing Yuan, Hongguang Wang, Xinan Pan  |    |
| Inference about Transient States of Innovative RCM Structure for Soft Tissue Surgery Using FEM Taking in Account Inputs from in Vitro Experiment on Cardiovascular Tissue |    |
| Grzegorz Ilewicz  |    |
| Efficient Policy Learning for General Robotic Tasks with Adaptive Dual-memory Hindsight Experience Replaced on Deep Reinforcement Learning                                | •  |
| Menghua Dong, Fengkang Ying, Xiangjian Li, Huashan Liu  |    |
| № Modern Control Theory and System  |    |
| I <sub>1</sub> PID Controller Synthesis via Delta Operator Approach   | 67 |
| Rui Li, Kairui Cao, Jinmei Xie, Hairui Du, Ming Zeng  |    |
| Research on Force Transmission Control of Bowden Cable-Fabrics Based on FEM and Fuzzy ADRC  | 73 |
| Donghao Wang, Xin Li, Guanjun Ma, Zhaojie Xu  |    |
| Deep Reinforcement Learning in Maximum Entropy Framework with Automatic Adjustment of Mixed Temperature Parameters for Path Planning                                      |    |
| Yingying Chen, Fengkang Ying, Xiangjian Li, Huashan Liu   |    |
| Design of an Automated Dosing and Mixing System for the Production of Biodegradable Biomass Based of Sweet Potato Starch and Sugar Cane Fiber                             |    |
| Brayan R. Izarra-Cano, Lesly G. Castro-Osores, Cesar A. Blas-Yaringaño, Deyby Huamanchahua  |    |
| Research on Intelligent Automatic Operating System of Marine Concrete Coating Aided by Computer Technology  | gy |
|   | 87 |
| Zhangfeng Guo   |    |
| Design of A Portable Elevator Balance Coefficient Test Device   | 91 |
| Jie Chen  |    |
|   |    |

**Author Index**