2022 International Conference on Machine Learning, Control, and **Robotics (MLCR 2022)**

Suzhou, China 29 – 31 October 2022



IEEE Catalog Number: CFP22CZ7-POD ISBN:

978-1-6654-5460-5

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:
 CFP22CZ7-POD

 ISBN (Print-On-Demand):
 978-1-6654-5460-5

 ISBN (Online):
 978-1-6654-5459-9

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



2022 International Conference on Machine Learning, Control, and Robotics (MLCR)

MLCR 2022

Table of Contents

Welcome Speech	
Organizing Committee	
Program Committee	
Keynote Lectures	
Sponsorsx	xiii
Machine Learning	
Neuromorphic Building Blocks for Locomotion Pattern Generation Vaibhav Gandhi (Faculty of Science and Technology, Middlesex University, United Kingdom) and Zhijun Yang (Central Institute for Technology Innovation, Jack Technology Co. Ltd, China)	3
Multiple Inputs Neural Networks for Fraud Detection	8
Mansour Zoubeirou A Mayaki (Institut national de recherche en sciences	
et technologies du numérique, France) and Michel Riveill (Institut	
national de recherche en sciences et technologies du numérique,	
France)	
Chinese Dialect Speech Recognition Based on End-to-end Machine Learning	. 14
Continuous Control for Autonomous Underwater Vehicle Path Following Using Deep Interacti	ve
Reinforcement Learning	
Qilei Zhang (Ocean University of China, China), Chunxi Cheng (Ocean	
University of China, China), Zheng Fang (Ocean University of China,	
China), Dong Jiang (Ocean University of China, China), Bo He (Ocean	
University of China, China), and Guangliang Li (Ocean University of	
China, China)	
End-to-end Oriental Language Speech Recognition with Integrated Language Identification Anbin Qi (Beijing Institute of Technology, China), Xiang Xie (Beijing Institute of Technology, China), Qingran Zhan (Beijing Institute of Technology, China), Chenguang Hu (Beijing Institute of Technology, China), and Xinmei Su (Beijing Institute of Technology, China)	. 27
Improved Clustering Algorithm Based on Hypercube	32
Yingying Xia (Nanjing University of Aeronautics and Astronautics,	
China) and Liang Zhou (Nanjing University of Aeronautics and	
Astronautics, China)	

The RBF Hyperparameter in Evolutionary Surrogate-Assisted Optimization	
A New Emotion Recognition Method Based on Low-Rank Representation and Nonnegative Matrix Factorization	
Movie Trailer Scene Classification Based on Audio VGGish Features	
A Face Mask Detection Algorithm Based on YOLOv555 Jiahui Yin (University of Manchester, United Kingdom; Nanjing Tech University, China) and Jing Jin (Nanjing Tech University, China)	
Multi-Attribute Graph Based Mixed Integer Linear Programming Model for a Job Shop Scheduling Problem Considering Intelligent Vehicle Transport	
Classification of Knee Osteoarthritis Based on Transfer Learning Model and Magnetic Resonance Images	
Frequency Domain Feature Extraction and Long Short-Term Memory for Rolling Bearing Fault Diagnosis	
Crowd Counting Method Based on Deep Neural Network	
Multi-Population Quantum Genetic Algorithm Based on Optimal Computational Distribution 86 Xiangming Yang (Liaoning University of Science and Technology, China), Guanjie Jiang (Liaoning University of Science and Technology, China), and Xiaoxiao Liu (Liaoning University of Science and Technology, China)	
Research on Lightweight Pedestrian Detection Model in Complex Background	
The Quality Evaluation of Academic Papers in Carbon Capture, Utilization, and Storage 96 Hangyue Zhang (Sun Yat-sen University, China) and Jie Bai (State Key Laboratory of Management and Control for Complex Systems, Institute of Automation, Chinese Academy of Sciences, China)	

Attention-Based Mechanism of LSTM Network for Speech Emotion Recognition
Deep Learning Techniques Applied to Skin Lesion Classification: A Review
Track Prediction Model and Algorithm Based on Temporal Convolutional Network
A Decision Support System for the Insurance Industry in Benin Republic
Edge Detection with the Cross-Layer Fusion Feature Based on RCF
RLF: Directed Fuzzing Based on Deep Reinforcement Learning
Named Entity Recognition for Smart Grid Operation and Inspection Domain Using Attention Mechanism
Robotics
Load Estimation and Optimal Energy Efficiency Configuration Determination of an Aerial Cable Towed Robot: A Preliminary Study

Optimization Design of Electromagnetic Actuator for Bionic Robotic Fish Based on Genetic Algorithm	148
Hongxiu Zhu (China University of Mining and Technology, China), Zhu Zhang (China University of Mining and Technology, China), Ran Zhang (China University of Mining and Technology, China), Yawen Gao (China University of Mining and Technology, China), Mingxi Yang (China University of Mining and Technology, China), Yinan Li (China University of Mining and Technology, China), Xing Ni (China University of Mining and Technology, China), Tianyu Zhou (China University of Mining and Technology, China), Sai Zhang (China University of Mining and Technology, China), and Chenjun Zhu (China University of Mining and Technology, China)	140
Intelligent Polygraph Based on Fusion of Electrocardiogram and Electroencephalogram	
Sensors Xiujie Zhao (Dalian Neusoft University of Information, China), Shutian Liu (Dalian Neusoft University of Information, China), Changyun Ge (Dalian Neusoft University of Information, China), and Wei Huang (Dalian Neusoft University of Information, China)	
Action Guidance-Based Deep Interactive Reinforcement Learning for AUV Path Planning Dong Jiang (Ocean University of China, China), Zheng Fang (Ocean University of China, China), Chunxi Cheng (Ocean University of China, China), Bo He (Ocean University of China, China), and Guangliang Li (Ocean University of China, China)	158
Study on the Comfort of the Nursing Mattress Based on Analysis of Body Pressure Data Weiliang Zeng (JI HUA LABORATORY & Guangdong University of Technology, China), Xinzui Wang (JI HUA LABORATORY & Suzhou Institute of Biomedical Engineering and Technology Chinese Academy of Sciences, China), Fucheng Cao (JI HUA LABORATORY, China), Zhaobo Li (JI HUA LABORATORY, China), and Hui Fu (Guangdong University of Technology, China)	. 166
Vision-Based Conveyor Belt Workpiece Grabbing Using the SCARA Robotic Arm Jian Wang (South China Agricultural University, China), Heyang Xu (Alchip Electronic Technology(Guangzhou)Co. Ltd., China), and Ziting Chen (Guangzhou Sytrons Technology Co. Ltd., China)	. 172
An Efficient Pick-and-Place Pipeline Based on Quantized Segmentation	177
Design of Current Ripple Measurement System for Highly Stabilized Magnet Power Supply Can Wang (High Magnetic Field Laboratory, Chinese Academy of Science, China), Minhui Song (High Magnetic Field Laboratory, Chinese Academy of Science, China), Wei Fei (High Magnetic Field Laboratory, Chinese Academy of Science, China), Tao Zhao (High Magnetic Field Laboratory, Chinese Academy of Science, China), Xiaoning Liu (High Magnetic Field Laboratory, Chinese Academy of Science, China), and Yanhong Xu (High Magnetic Field Laboratory, Chinese Academy of Science, China)	183
Passing Strategy Optimization Based on Kernel Density Negative Example Learning Within RoboCup 2D Simulation	188

Author Index	195
Allinoringer	197