2018 3rd International Conference on Robotics and Automation **Engineering (ICRAE 2018)**

Guangzhou, China 17 – 19 November 2018



IEEE Catalog Number: CFP18G57-POD ISBN:

978-1-5386-9595-1

Copyright © 2018 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:
 CFP18G57-POD

 ISBN (Print-On-Demand):
 978-1-5386-9595-1

 ISBN (Online):
 978-1-5386-9594-4

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



2018 3rd International Conference on Robotics and Automation Engineering (ICRAE 2018)

Table of Contents

Preface	
Conference Committee	vii
Robot Control and Design	
The Grasping Force Control for Force Sensor-less Robot through Point Clouds Mask Segmentation	1
Design and Analysis of Intelligent Data Acquisition System Based on Robotic Arms	5
Walking Mechanism and Gait Design of a Novel Compound Quadruped Robot	10
Design of a Soft Robot Using Pneumatic Muscles for Elbow Rehabilitation	14
Design and Control of the Lower Part of Humanoid Biped Robot	19
Static Balancing of Robotic Bicycle through Nonlinear Modeling and Control	24
Robotic Grasp Control Policy with Target Pre-detection Based on Deep Q-learning	29
Robot Path Planning and Algorithm	
A Novel Hybrid Path Planning Algorithm at Macroscopic Level for Autonomous Climbing Robot	34
Simultaneous Localization and Mapping of Mobile Robot Based on Image Enhancement	39
Time-Energy-Jerk Dynamic Optimal Trajectory Planning for Manipulators Based on Quintic NURBS	44
Motion Planning of Robot Manipulator for Cucumber Picking	50

Artificial Intelligence and Robot

Configuration Optimization of a Dual-Arm Rehabilitation Robot	55
Guofeng Li, Siqi Cai, Longhan Xie	
Octree-Based Repetitive Pose Detection of Large-Scale Cyclic Environments	60
Yibo Wang, Hongbiao Zhu, Weidong Wang	
Incremental Mapping Based on Line-Segments Relation for Mobile Robot	65
Xiuzhong Wang, Jian Song, Mingqi Feng, Mina Chong, Jun Li	
Simulation Research on Direct-Drive SCARA Robot	71
Qi Shen, Jizhu Liu, Xueshi Wang, Yongchao Pei, Liguo Chen	
Joint Robot and Aircraft Carriers Combinatorial Systems in the Sea in 5G OGCE	76
Zhi Lü, ZhongFeng Wany, Yi Lü, Mingzhe Yuan	
Challenges of Dynamic Environment for Visual-Inertial Odometry	82
Tao Zhu, Huimin Ma	
Performance Comparison of Typical Spatial Domain Image Enhancement for a Mobile Rob Environment	
Longzhi Zhang, Dongmei Wu	
Global Loop Closure Detection of Multi-Robot Based on Particle Filter	92
Guangchuan Yin, Zhenping Sun, Yongjie Dai	
Indoor Robot Visual Positioning System Based on Floor Features	97
F. Xiao, Z. Wu, Z. Huang, Y. Jie, X. Li, Y. Liu, E. X. Wang	
Highly Maneuverable Ground Reconnaissance Robot Based on Machine Learning	102
Peixuan Wang, Xiaorui Peng, Jiayu Chen, Jiacheng Chen	
Control Engineering and Intelligent System Design	
Event-Triggered Finite-Time H ∞ Control for Discrete-Time Markov Jump Systems with Nonhor	nogeneous Processes
	107
Xiaobin Gao, Xiao-Meng Li, Wenshuai Lin, Renquan Lu	
Research on Intelligent Instrument Character Location Technology Based on Computer Vision	112
Qinghui Zhang, Chenxia Wan, Shanfeng Bian, Shuying Qin	
Remote Control and Tracking Dual Mode Smart Suitcas	117
Peixuan Wang, Tianlong Zhang, Sunbo Wang	
A Real-Time Traffic Detection Method Based on Improved Kalman Filter	122
Li Xun, Nan Kaikai, Liu Yao, Zuo Tao	
Joint Training Simulation Platform Study	127
Yan Guo-Oiang, Mao Shao-Jie, Li Yu-Ping, Zhang Jie-Yong	

Evaluation of Mental Stress in Automated Following Driving
Toru Kobayashi, Tetsushi Ikeda, Yumiko O. Kato, Akira Utsumi, Isamu Nagasawa, Satoshi Iwaki
Parameter Solving of DC Servo Motor PID Controller Based on Improved Firefly Algorithm
Mechanical Engineering
Application of Parameterized FEA and Moment Method in Structural Fatigue Life Reliability Estimation
Design and Experimental Research of Underwater Maintenance Vehicle for Seabed Pipelines
A Design and Modeling of the Bionic Variable Stiffness Unit Based on the Elbow Joint
Sensor Fault Tolerant Algorithm for 7.2Nm Class SPMSM Applied Electro-Hydraulic Power Steering System for Medium and Heavy Commercial Vehicle
Kinematics Analysis of Generalized SRU Manipulator Based on Screw Theory
Workspace Analysis Based on Manipulator Pose Dexterity Map
Design and Mechanical Analysis of a Deepwater Sample Collection for Double-Body Unmanned Surface Vehicle . 171 Yimin Liu, Yulong Xiao, Zuhao Zhang, Huayan Pu, Yan Peng, Shaorong Xie, Jun Luo
Study on Deformation Technology of Virtual Surgery Simulator Based on Liver Puncture
Aerospace Engineering and Technology
Design of BeiDou Simulator Based on Original Pseudorange Data
Research and Application of Laser Projection Technology Used in Spacecraft Assembly
UKF Based Two Time-Scale Control for a Quadrotor with Wind-Gust Disturbances
Adaptive Control for UAV Close Formation Flight against Disturbances
Computer Vision and Image Processing
Remote Sensing Images Recognition by Deep Convolutional Neural Networks

Adaptive Binary Stripe Pattern for High Dynamic Range Three-Dimensional Shape Measurement)6
Multi-view Clustering: A Brief Review	11
Zhongyang Tang	
An Improved ORB Image Feature Matching Algorithm Based on SURF	18
Contour Extraction of Flagstones in Complex Working Conditions	23
An Improved Method of 3D Scene Reconstruction Based on SfM	28
Advanced Information Technology and Applications	
Menu Control and Functionalities of 3D Digital Oscilloscope	33
Research on the Location and Segmentation Method of Milk Production Data	38
Optimization of Sorting Activities in Automatic Storage and Retrieval Systems Based on Improved Artificial Fis Swarm Algorithm	
Xiaoyu Gao, Lei Yu, Shangyang He An Adjustable Window-Based FIR Filter and Its Application in Audio Signal De-Noising	18
Md Altab Hossin, Mitun Shil, Vu Thanh, Ngo Tung Son	
Low-Altitude UAV Imagery Based Cross-Section Geological Feature Recognition via Deep Transfer Learning 25 Yi Zhao, Jiandong Li, Xiaohui Li, Yingdi Hu	53