

2018 International Conference on Control and Robots (ICCR 2018)

**Hong Kong
15-17 September 2018**



**IEEE Catalog Number: CFP18R30-POD
ISBN: 978-1-5386-8244-9**

**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:	CFP18R30-POD
ISBN (Print-On-Demand):	978-1-5386-8244-9
ISBN (Online):	978-1-5386-8243-2

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

CURRAN ASSOCIATES INC.
proceedings
.com

2018 International Conference on Control and Robots (ICCR 2018)

Table of Contents

Robot Design and Control Technology

Solving Inverse Kinematics Model for 7-DoF Robot Arms Based on Space Vector	1
<i>Shangpei Li, Zhijie Wang, Qi Zhang, Fang Han</i>	
Design and Characterization of Soft Pneumatic Actuator for Universal Robot Gripper	6
<i>Mohamed E. M. Salem, Qiang Wang, Ruoshi Wen, Ma Xiang</i>	
Workspace Allocation for Team of Robots with Different Actuation Capabilities	11
<i>Mert Turanli, Hakan Temeltas</i>	
A Design and Evaluation of Hand-held Mechatronic Laparoscopic Surgical Robot	19
<i>Renfeng Xue, Zhijiang Du, Zhiyuan Yan, Bingyin Ren</i>	
RGB-D People Detection and Tracking from Small-Footprint Ground Robots	25
<i>Zehui Yuan, Ya Zhang, Rongjie Duan</i>	
A KE, DSM and ISM Based Approach for Patrol Robot Development	30
<i>Shih-Wen Hsiao, Chien-Nan Wu</i>	
Contemplating Urban Operations Involving a UGV Swarm	35
<i>Boon Hong Aaron Teow, Oleg Yakimenko</i>	

Control Theory and Control Engineering

Improved RBF Neural Network Control System Design for Helicopter of Large Envelope	46
<i>Liu Gaoyuan, Wu Mei, Adnan Ashraf</i>	
Implementation of PSO Based Gain-Scheduled PID and LQR for DC Motor Control Using PLC and SCADA	52
<i>Suppachai Howimanporn, Sasithorn Chookaew, Warin Sootkaneung</i>	
HeuRL: A Heuristically Initialized Reinforcement Learning Method for Autonomous Driving Control Task	57
<i>Jiaxuan Xu, Jian Yuan</i>	
Design of PLC for Water Level Control Employing Swarm Optimization-Based PID Gain Scheduling	63
<i>Suppachai Howimanporn, Sasithorn Chookaew, Warin Sootkaneung</i>	

System Design and Experiment of the Hybrid Underwater Vehicle.....	68
<i>Xiaojie Ai, Song Kang, Wusheng Chou</i>	

Motion Planning Problems with Boxes: An Introduction for Undergraduate Courses in Discrete Mathematics	73
<i>Godfried T. Toussaint</i>	

Image Processing

Classification Performance Analysis of Weight Update Method Applied to Various ConvNet Models.....	78
<i>Seunghyun Kim, Sungwook Park, Suchang Lim, Doyeon Kim</i>	

Chinese License Plate Detection Based on Deep Neural Network.....	84
<i>Zhi-Kai Huang, Ling-Ying Hou</i>	

Feasibility Assessment of sUAS-Based Automated FOD Detection System	89
<i>Wee Leong Lee, Oleg Yakimenko</i>	