3rd International Conference on Automation, Control and Robotics Engineering (CACRE 2018)

IOP Conference Series: Materials Science and Engineering
Volume 428

Chengdu, China
19 – 22 July 2018

ISBN: 978-1-5108-7337-7
ISSN: 1757-8981

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571

Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2018) by the Institute of Physics
All rights reserved. The material featured in this book is subject to
IOP copyright protection, unless otherwise indicated.

Printed by Curran Associates, Inc. (2018)

For permission requests, please contact the Institute of Physics
at the address below.

Institute of Physics
Dirac House, Temple Back
Bristol BS1 6BE UK

Phone: 44 1 17 929 7481
Fax: 44 1 17 920 0979

techtracking@iop.org

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
Email: curran@proceedings.com
Web: www.proceedings.com

Table of contents

Volume 428

3rd International Conference on Automation, Control and Robotics Engineering

(CACRE 2018) 19–22 July 2018, Chengdu, China

Accepted papers received: 6 September 2018
Published online: 1 October 2018

Preface

2018 3rd International Conference on Automation, Control and Robotics Engineering (CACRE 2018)

Committees

Peer review statement

Papers

Automation Technology and Sensing Methods

Interface Byte Stream Parsing Algorithm for Black Box Test Cases Automatic Generation

Cao Jianping, Sun Wenzhu, Zhou Xiuzhi, Zhu Guotao and Hu Wenting.....1

A Graphical Authentication System Controlled by Eye Movement

Zhanheng Li, Chenwei Xi, Qiang Zhang and Xiujuan Zheng.....7

Research of UHF External Sensor Performance Calibration Test

Yan Jiangbao, Tan Xiangyu, Zhang Changsheng, Zhou Lei and Zhang Shaoquan.....14

Bagging of Xgboost Classifiers with Random Under-sampling and Tomek Link for Noisy Label-imbalanced Data

Luo Ruisen, Dian Songyi, Wang Chen, Cheng Peng, Tang Zuodong, Yu YanMei and Wang Shixiong.....21

The Design of Intelligent Grasping Control System for a Special Operation Manipulator

Songbo Deng, He Cai, Ke Li, Tongtong Li, Tao Deng and Yanbo Wang.....31

A Design of Medical Information Sharing Model Based on Blockchain Technology

Hao Jiang, Hao Peng and Songyi Dian.....39

Overview of Maximum Power Point Tracking Control Method for Wind Power Generation System

Yu Li and Li Chengxin.....45

Effect of Quartz Crystal Form on the Measurement Performance of Multi-dimensional Force Sensor

Yingjun Li, Guicong Wang, Shu Huang, Xuan Sun and Zhiquan Feng.....52

Application of BeiDou Navigation Satellite System in Anti-Drowning System

Yong Lei, Minghao Chen, Tianran Sun, Wenrui Li, Wensha Gou and Yong Qin.....58

Test on Stress Distribution of Bionic C-leg Wheel-soil Interaction with Its Data Processing

Gang-dun Hu, Cai-ling He, Hui-Ying Li and Lei Sun.....66

An Investment Decision Model of Distribution Network Planning Based on Correlation Mining of Reconstruction Measures and Loss Load Index

Jun Xiong, Zhixuan Liu, Yue Xiang, Yanxin Chai, Junyong Liu and Youbo Liu.....73

Reduce Energy Consumption in SWIPT System by Discontinuous Service Base Stations

Wenjie Dong, He Zhang and Xiang Liao.....79

Optical Circumferential Scanning Azimuth Measurement Method

Lin Gan and He Zhang.....86

Demagnetization Process Analysis and Numerical Simulation of Magnet with Shock Wave from Compact Explosively Driven Ferromagnetic Generator

Jian Wei, Shaojie Ma, Peng Liu and Yunlei Shi.....91

Simulation and Experimental Research of Continuous High Impact Test Equipment

Feiyin Li and Shaojie Ma.....99

Finite Element Analysis of New Downhole Throttle Based on Orifice Valve

G Y Huo, S Y Dian and X Xu.....106

Sleep and Wake Classification Based on Heart Rate and Respiration Rate

W Li, X D Yang, A N Dai and K Chen.....112

Swing Process Model Design of a Cutter Suction Dredger Based on RBF-ARX Model

Shuang Jiang, Fusheng Ni and Lina Qian.....119

The Study of Ocean Ambient Noise Reconstruction in Low and Medium Frequency Bands

Zhang Liang, Wen Fengdan, Meng Chunxia and Han Jing.....125

Analysis on Mars Atmospheric Composition Probing Technology in the Future

Man Li, Yuming Liu and Dongbo Tian.....131

Harnessing Frequency and Language Features for Keyword Extraction on E-commerce Platforms

Chit Khine and K Nongpong.....137

Weighted Focal Loss: An Effective Loss Function to Overcome Unbalance Problem of Chest X-ray14

Ruoxi Qin, Kai Qiao, Linyuan Wang, Lei Zeng, Jian Chen and Bin Yan.....145

Deep Learning Based Semantic Labelling of 3D Point Cloud in Visual SLAM

Xuxiang Qi, Shaowu Yang and Yuejin Yan.....153

An Auxiliary Notification System for Amnesiac Patients Based on Face Recognition and Voice Synthesis Using Cloud Computing

Qiming Sun, Ping Guo and Changjiang Zhang.....162

A High-precision Pressure Controller Based on Zigbee Transmission

Wang Chao and Pu Han.....168

Design and Implementation of Inertial Measurement Information Acquisition System Based on XML

Pei Yu, Ting Wang, Jinyun Zhang and Jing Li.....173

The Research on the Ice Thickness Detection System Based On Capacitance Sensor

Du Xiaoting.....179

MCU System-based Intelligent High-speed Elevator Door Operator Fault Analysis and Research

Wang Qibing, Leng Yonggang, Li Dongliu, Zhang Xiaoqiang, Li Ren, Zhu Hongmei and Zhang Hao.....185

Research on Gear-Shift Strategy without Disengaging the Clutch for Automated Manual Transmission in Hybrid Electric Vehicle

Shaohua Sun, Baogui Wu, Yupeng Zou and Xinqing Wang.....193

RIHOG-BoVWs for Rotation-invariant Human Detection

Baozhen Liu, Hang Wu, Yu Zhang, Wenlong Xu, Kaiyu Mu and Yuhua Yao.....201

Advanced Control and Intelligent Algorithms

Target Tactical Clustering Algorithm Based on Grouping Field

Na Hao, Kaixuan Chu, Tianqing Chang, Bo Zhang and Lei Zhang.....211

Dynamic Differential Evolution Algorithm Applied in Point Cloud Registration

C L Li and S Y Dian.....218

The Application of PID-DMC Algorithm with Feedforward Compensation in the PTZ Platform

Y H Zhao, L Chai and L Z Jin.....223

Research on Intelligent Detection Technology for Bundle Branch Conduction Block

Hongwei Fang and Songyi Dian.....230

The State-of-the-art of Model Predictive Control in Recent Years

Jixia Han, Yi Hu and Songyi Dian.....236

Controller Design for Compound Pendulum with PID and MRAC Switch Control

Shuang Zhang and Songyi Dian.....242

Robust Predictive Control Based on LMI Optimization for Active Suspension System

Hao Peng, Hao Jiang and Songyi Dian.....247

Based On K-Means and Nearest Neighbor Algorithm for Fuzzy System Used for Data Fitting

Yi Hu, Jixia Han and Songyi Dian.....253

Comparative Study of PID, Type-1 and Type-2 Fuzzy Control for Nonlinear Systems

Yao Chen, Jiahao Liu and Tao Zhao.....258

Optimization of Interval Type-2 Fuzzy Logic Controller for Uncertain Inverted Pendulum System

Qing Wu, Jiahao Liu and Tao Zhao.....264

Research on Nonlinear Decoupling Method of Piezoelectric Six-Dimensional Force Sensor Based on BP Neural Network

Yingjun Li, Guicong Wang, Binbin Han, Xue Yang and Zhiquan Feng.....270

Research on An Adaptive Optimization Method of Anti-tank Missile in Plateau Environment

H L Liu, S Y Dian, L Wang and Y H Wu.....276

Age Classification Using Convolutional Neural Networks with the Multi-class Focal Loss

Wei Liu, Lin Chen and Yajun Chen.....282

Topology Design and Sliding Mode Controller Design for a Novel High Step-Up DC-DC Converter

Yicheng Liu, JiePing Wang, Hao Chen and Haiyan Tu.....289

Backstepping Controller Design for Pantograph-Catenary System

Zhi Liu, Yicheng Liu, Ning Zhou, Dong Zou and Haiyan Tu.....296

Ultrasound Environment Classification Based on Fuzzy Model

Zhili Long, Ronghua He, Xiaobing Zhang and Yuxiang He.....302

Multi-UUV Task Allocation with Limited Communication Range Based on Hoplites Framework

Ning Li, Minglong Li, Da Huang and Wei Yi.....308

A Method to Compensate Interaction between Actuator Dynamics and Control Allocator under Incremental Nonlinear Dynamic Inversion Controller

Xiang Li, Yi Jiang, Jiannan Zhang, Shaoyan Shi and Liangyu Zhao.....317

Improving Social Responsibility of Artificial Intelligence by Using ISO 26000

Wei-Wei Zhao.....325

Fuzzy Lookup Table Controller (FLTC) via Center Average De-fuzzifier (CAD) with a New Efficient Heaviside Search Algorithm (HSA) for Lookup Table Implementation

Chi-Hsu Wang, Kar-Chun Hor and Wei-Chuan Chen.....331

Motion Control of Manipulators Based on Model-free Adaptive Control

Ziqiao Zhang and Songyi Dian.....338

Jacquard Control System of Warp Knitting Machine Based on Embedded System

Li Ce, Meng Zhuo and Sun Yize.....345

Intelligent Robotics and Mechatronic Systems

A Novel 2R Parallel Mechanism for Alt-azimuth Pedestal

C C Xu, C Xue and X C Duan.....351

Neural Network Based Adaptive Chaotification of Uncertain Robot Manipulators Incorporating Motor Dynamics

Yang Li and Yuxiang Wu.....357

Improving the Parameters of the Model of the Wheeled Mobile Robot with Constraints by Adaptive Fuzzy Method

Shiqi Wang and Songyi Dian.....365

Optimized Landmark Distribution for Mobile Robot Visual Homing

Xun Ji and Qidan Zhu.....371

Motion Planning and Simulation of Combined Land-Air Amphibious Robot

Kailin Li, Baoling Han, Yuting Zhao and Chen Zhu.....378

A New Mitigation Method for Space Robot Charging Effect Based on CNTs

X N Yang, Y M Liu, M Li, J H Wang and Z H Yuan.....384

A Lateral Error S-Plane Control for Path Tracking on Autonomous Underwater Vehicle

Sui Haichen, Zhou Ziye, Jiang Yanqing, Cui Lintao and Li Ye.....390

Design and Implementation of Four-link Robot Crawler with Variable Structure

Zhao Yuting, Han Baoling, Luo Qingsheng and Li Kailing.....396

Multi-objective Identification of UAV Based on Deep Residual Network

Wang Jia Qi, Dai Ji Yang, Zhai Jin You and Ying Jin.....402

Research on The Control System of The Friendly Walking Assistant Robot for The Elderly

Xiaojuan Wei.....408

Model-Free Recurrent Reinforcement Learning for AUV Horizontal Control

Yujia Huo, Yiping Li and Xisheng Feng.....415

A Design of Magic Cube Robot Based on STM32

Guoyou Zhao, Haiyan Tu and Yicheng Liu.....423

On Locomotion Control Using Position Feedback Only in Traversing Rough Terrains with Hexapod Crawling Robot

Petr Čížek and Jan Faigl.....429

Kinematics Modelling and Co-simulation Research of a Novel Electrical Optical Cable Pruning Robot Using V-REP and MATLAB

Chao Li, Y F Yang and S Y Dian.....439

Trajectory Planning for Periodic Operation of Autonomous Excavating Robot Based on Time-Jerk Synthetic Optimum

Yaguang Zhu, Liang Zhang, Wanjin Guo and Zhengcang Chen.....447

Design of Automatic TV Inspection Equipment for CPR1000 Steam Generator 9th Tube Support Plate

Wei-Rang Wu, Yu-Chun Tao, Tong Yu, Qing-Sen Zhao and Xun-Zong Yang.....453

Virtual Experiments Design for Robotics Based on V-REP

Mingzuo Xie, Dongxu Zhou, Yong Shi and Ruiqing Jia.....459

AUV Tunnel Tracking Method Based on Adaptive Model Predictive Control

Chenkai Jia, Zhou Chen, Guocheng Zhang, Lei Shi, Yushan Sun and Shuo Pang.....469

Design and Implementation of a New Climbing Robot for High Voltage Transmission Tower

Wentao Jiang, Ronghai Liu, Yingchun Yang, Shuting Wan, Xinliang Guo, Zonghan Jiao and Hongjiang Yu.....475

Research on Kinematics Simulation of Continuum Robot Based on ADAMS

Yueling Zhang, Lin Chen and Songyi Dian.....484

Analysis on Attitude Fluctuation in Vertical Descent of Multi-rotor UAVs

Li Chenglong, Yang Zuqiang and Gou Jiangchuan.....490

Dynamic Analysis of a New Type of Asymmetrical Parallel Mechanism Based on Lagrange Method

Quan Li, Bin Li and Xinhua Zhao.....496