2018 IEEE 4th International Conference on Control Science and Systems Engineering (ICCSSE 2018)

Wuhan, China
21-23 August 2018

IEEE Catalog Number: CFP1883Y-POD
ISBN: 978-1-5386-7888-6

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: CFP1883Y-POD
ISBN (Print-On-Demand): 978-1-5386-7888-6
ISBN (Online): 978-1-5386-7887-9

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

2018 IEEE 4th International Conference on Control Science and Systems Engineering ICCSSE

Table of Contents

◆ Control Theory and Control Engineering

Design of Control System of Pneumatic Regulating Valves Based on STM32.....1

Luo Guoku, Dong Quanlin, Sun Meilin

A Second-Order Algorithm for the Distance Of A Point to An Epigraph 6

Wenhui Zhao, Ruan Li, Yan Gao

Command Governor Based Adaptive Control for Constrained Linear Systems.....10

Haoyu Du, Xiaochuan Ma, Yonghua Fan, Jie Yan

Study on Nonlinear Heat Exchanger Control System of Heat Conduction Oil of Vessel.....16

Zhexuan Ma, Xiaobing Mao, Le Cai, Xianzhen Liu

Decoupling Controller Design of Three-Axis Turntable Based on Auto Disturbance Rejection Technique.....21

Hui Zhao, Xuemei Wang, Zhe Xu, Zhu Yang, Tong Wu

Semi-Physical Model of Drill-String System and A Speed Compensation Feedback Controller for Stick-Slip Vibrations of Drill-String.....26

Meng Fu, JiangHong Li, YiYang Hu, YaFeng Wu

Adaptive Control for Spatial Turntable with Compensation of Cable-Harness Disturbance 31

Junming Tao, Jun Liu

The Optimization Method of Command and Control Process Based on Petri Nets .....

Yaohong Zhang, Weidong Bao

Hybrid Active-Passive $\alpha-$ stability Fault-Tolerant Control Research of Nonlinear NCS under DETCS 40
Wang Jun, Zhang Xiao-yan, Li Wei
The Control Strategies for High Frequency Algorithmic Trading 49
Xinying Jia, Raymond Yiu Keung Lau
Delay Estimation of Dynamic System Based on Correlation Coefficient 53
Zhen He, Song Ming Jiao

◆ Intelligent Robot Design and Control

Longitudinal Velocity Control of Robotic Vehicle with Articulated Suspension 58
Shafaq Gul, Fahad Mumtaz Malik, Raja Amir Azim
Design of Adaptive Fuzzy Backstepping Control System for Multi-Joint Series Manipulator .....
Yuhao Ma, Yanbing Liang
Research on Self-Organizing Target Hunting for Mobile Robot Group 67
Zeng Liang, Yang Wei
Path Planning Algorithm for Mobile Robot Based on Cellular Automaton 71
Jicuicui
Current Sampling Design of Six-Axis Robot Servo System Based on FPGA 76
Wenke Gong, Jiye Huang, Mingyu Gao, Zhiwei He

A Target Detection System for Mobile Robot Based On Single Shot Multibox Detector Neural Network 81
Yujie Du, Mingyu Gao, Yuxiang Yang, Jing Zhang, Zhongfei Yu

◆ Vehicle Engineering and System Control

Adaptive Car-Following Control of Intelligent Electric Vehicles 86
Wenchang Li, Tao Chen, Jinghua Guo, Jin Wang
Control , Modeling and Simulation on A Novel Regenerative Brake System of Electric Vehicle 90
Chao Li, Chengkun He, Ye Yuan, Junzhi Zhang
Real-Time Rollover Warning in Tripped and Un-tripped Rollovers with A Neural Network.....95
Kailerk Treetipsounthorn, Gridsada Phanomchoeng
Research on Rollover Prevention Stability of Heavy Truck Based on PID.....101
Guan Quguang, Hu Mingmao, Sun Yu, Zhang Hongyi, Tian Hua

Dual-Mode Motor Control Scheme for Electric Motorcycle 106
ZhengChi Zhou, MinYu Gao, ZhiWei He, Yu Zeng

◆ Mechanical Design and Manufacturing Engineering

Design of a Brain Controlled Wheelchair 112
Liqiang Xin, Shang Gao, Jingyue Tang, Xin Xu
Design of A Universal Missile Automatic Test System 117
Tong Wu, Xuemei Wang, Zhe xu, Hui Zhao
The Vibration Analysis of the Non-abrasive Cryogenic Polishing Experimental Devices 121
Shouping Qu, Zhihui Qi
Reliability Assessment Method Based on Performance Degradation and Improved Dempster-Shafer Evidence Theory 126
Xinchao Zhao, Weimin Lv, Wenlin Hu
Optimization of Machining Parameters Based on Principal Component Analysis and Artificial Neural Network 131
Lei Yuan, Shasha Zeng
Research on the Dual Prevention System of Hazardous Chemical Industry by Informationization 135
Yun Rong, Sanming Wang
The Research on the Complexity of the Equipment Support Network Based on Complex Networks .....
He Jia-wu, Dong Zhi-ming, Zhang Yong, Lei Zhen, Zhai Xiao-ning

◆ Electrical Engineering and Automation

State Feedback Control and Applied to PV Systems Under Improved MPPT Control 145
Guangyu Liu, Xiao Zhang
T-S Fuzzy Maximum Power Point Tracking Control of Z-source Photovoltaic Inverter .....
Xudong Liu, Honghua Wang, Chengliang Wang
Study on Current Decoupling Method of Three-Phase Grid-Connected Inverter .....
Lang Baohua, Zhang Hongpeng, Sun Luyan, Xu Xiaoxian
Study on Distribution Network Line Level Evaluation Model Based on Dynamic Classification Combination 159
Haiping Yu, Wei Xu, Anhong He, Xubing Xiao
Time Series Clustering and Evaluation of Unknown Working Conditions of Mismatched Photovoltaic Array Systems 164

Guangyu Liu, Xinpeng Wu

Servo Driver Inverter Circuit Based on Pure Resistance Current Sampling.....168

Huangpei Fu, Mingyu Gao, Jiahuan He

Adaptive Modeling of Brushless DC Motor Drive System.....173

Guangyu Liu, Chengcai Hu

◆ Sensor Technology and Application

Sensorless Vector Control of Three-Phase Permanent Magnet Synchronous Motor Based on Model Reference Adaptive System.....178

Shi Chenxing, Wang Chen

The Sensors' Spatial-Temporal Allocation by Linear Programming in Multi-Fighter Cooperative Detection 183

Wang Nan, Xu Yunshan

Design of Low Scale Pressure Sensor Intelligent System with Temperature Compensation Based on STM32.....188

Yanwen Li, Shaojie Ma

A Survey on Wireless Power Transfer based Charging Scheduling Schemes in Wireless Rechargeable Sensor Networks 194

Zhang Fan, Zhang Jie, Qian Yujie

Theoretical Study on the Influence of the Backing Material of A PVDF Pyroelectric Sensor 199

Q Chen, Y G Cao, W L Yu, L D Lu, Y B Wang

Research on Self-matching and Tuning Circuit of Transducer Based on PVDF Vibration Sensor 203

Wang Cong, Shaojie Ma

Research on Cueing Search Strategy of Active and Passive Sensors 207

Jie Wu, Tengfei Ding, Fang Chen, Jinchen Zou

◆ Modern Electronic Technology and Application

Active Battery Balancing Circuit Based on Optimized Flyback Convertor for Large Lithium-ion Battery Packs 212

Liyong Tian, Ming Hong, Zhiwei He, Mingyu Gao

Optimization Design of Serial-Parallel Coupled Micro-Perforated Panel Absorbers by Genetic Algorithm 217

Yujie Qian, Jie Zhang

Predictive Method of Capacitor Production Order Based on ARIMA Model 221
Hairong Qi, Zhiwei He, Yu Zeng
An Active Balance Circuit Applied to Lithium Ion Battery Packs 227
Zhao Wangbin, Huang Jun, Chen Haitao, Liu Huiying, Wu Chunyu, Liu Minghao
Lithium Battery SOC Estimation Based on Extended Kalman Filtering Algorithm 231
Li Haoran, Li Liangdong, Zheng Xiaoyin, Sun Mingxuan
Comparative Analysis of Contribution Degree of Environmental Parameters in Wave Induced Magnetic Field 236
Pei Cui, Junjun Lv, Jun Shao, Shaojie Pang
Experimental Research on the Brush-Target Method and Calorimetry Method for Measurement of High-Intensity Focused Ultrasound Power 242
Minda Dai, Yuebing Wang, Xing Guangzhen, Yang Ping
Research on Integrity Level of Safety Instrumented System Based on BN-LOPA 246
Long Zhou, Sanming Wang
Performance Assessment of Equipment Management Based on Cloud Model 252
Zhang Jun-biao, Shen Yan-an

◆ Aerospace Engineering and Control Technology

Adaptive Finite-Time Coordinated Attitude Tracking Control for Spacecraft Formation with Unknown Time-Varying Inertia 258
Zhihao Zhu, Yu Guo, Yifei Wu, Jian Guo
Adaptive Fast Sliding Model Attitude Tracking Control for Flexible Spacecraft 264
Zhi Gao, Zhihao Zhu
A Self-adaptive Cascade Fuzzy PID Method of Attitude Control for Quadrotor 269
Yanguo Fu, Qianqian Zhao, Zhigang Liu, Yan Xu, Xianyong Liu
Linear Feedback and LQR Controller Design for Aircraft Pitch Control.....
Adnan Ashraf, Wu Mei, Liu Gaoyuan, Mian Muhammad Kamal, Ali Mutahir
Fault-Tolerant Control Design of Quadrotor UAV Based on CPSO 279
Wang Jun, Yin Xiong-dong, Tian Yu-yang
Research on the Detection Method of Landing Sign for Unmanned Helicopter Based on Vision 284
Pengfei Wu, Zhangsong Shi, Zhonghong Wu, Penghao Yan
A Survey on Route Planning Methods of AUV Considering Influence of Ocean Current 288
Sheng Liang, Qiu Zhi-ming, Li Heng

In-flight Longitudinal Guidance for RLV in TAEM Phase 296
Fan Pengfei, Wang Fan, Fan Yonghua, Yan Jie
Research on Target Assignment of Multiple-UAVs Based on Improved Hybrid Genetic Algorithm 304
Jingfan Tian, Yankai Wang, Cong Fan

◆ Communication Engineering and Navigation System

Design of Routing Gateway for Smart Home Based on Wireless Network 308
Xiao Jianqi, Wang Taihong
Design and Analysis of ATP Compound Axis Control System for Intersatellite Optical Communication 312
Siwang Xu, Junfeng Han
Application of Hybrid Filtering Algorithm Based on Neural Network in INS/GPS Integrated Navigation System.....317
Huaizhong Hu, Jianbo Zhang
The Relationship between INS Aided GNSS Vector Tracking Performance and IMU Error.....322
Wu JiangXiong, Li ChuanJun, Zhang Qi
Rolling Angle Estimation Method for GNSS/SINS Integrated Navigation System Based on Least Square Method.....330
Liu Yukuan, Li Chuanjun, Chen Jingsheng
Relationship between System Physics Limits and System Bandwidth 334
Haikang Bai, Shengli Qu
Improved Access Control Based on Analytic Hierarchy Process 338
Chengfeng Zheng, Sijie Long, Jingyi Liu, Canliu Wu, Tianyi Qi, Yongsheng Zhu, Xiaojie Li, Zefeng Xie, Jia Shuai, Zhongyuan Chen, Wei Jiang
Design of the Family Intelligent Wheelchair Navigation System.....342
Kaisi Yang, Lianyu Zhao
Task Interleaving Scheduling for Phased Array Radar in Multi-Target Tracking 347
Haowei Zhang, Junwei Xie, Jiaang Ge, Zhaojian Zhang, Wenlong Lu

◆ Fault Diagnosis and Maintenance

Adaptive Compensation for MISO Nonlinear Systems Against Actuator Failures 351
Hao Ren, Yan Lin, Gang Zhu
Research on Particle Swarm Optimization for Determination of Optimal Time for Preventive Maintenance of Bridges 356

Wang Wei

Fault Detection for Stochastic Switched System Based on Fuzzy Adaptive Unscented Kalman Filter 360

Zhang Chenyang, Xie Linbo

Reinforcement Learning-Based Maintenance Scheduling for Resource Constrained Flow Line System 364

Zicheng Ling, Xiao Wang, Fang Qu

Diagnostic Strategy Optimization Method Based on Information Entropy Theory.....370

Jiahao Guo, Xianjun Shi, Kang Wang, Yufeng Qin

Research and Implementation of Fault Diagnosis of Seed Source Assembly Device Based on Expert System .....

WangWei, ZhangTao

Maintenance and Appraisal Expert System Design and Knowledge Library Construction for Electronic Recycled Equipment of Certain Missile 380

Xuedong Xue, Xude Cheng, Shuai Zhang, Wei Peng, Jian Qin

◆ System Modeling and Optimization

Modeling and Robust Optimization for System of Systems Problems under Uncertainty 385

Peng Liu, Boyuan Xia, Yuejin Tan, Danling Zhao

Parametric Modeling of Envelope Spiroid Based on Simulation Technology 391

Li Huang, Wei Hu, Du Jiang

Self-Excited Resonance Loading Tester Design and Simulation Study 395

Weikang Wang, Shaojie Ma, Feiyin Li

Study on the Characteristic of Natural Cavitation with Large Cavitation Number 400

Jiangfeng Tu, Shaojie Ma, He Zhang

◆ Intelligent Transportation and Transportation Safety

Analysis of Characteristics of Road Bus Service Based on Urban Rail Transit Network.....407

Li Jinjin

Multi-Objective Path Selection for Road Transportation of Dangerous Goods.....412

Jinpeng Li

A Evaluation Model of Speed Target Value Scheme for High-Speed Railway Based on Hybrid Decision-Making 417

Luo Yuan, Zhu Ying, Zhang Xiao-qiang, Yao Ling-kan

Research on the Operation Plan of Express Freight Train Based on Satisfaction of Shipper time .....

Gang Wang, Zhenhuan He

Stochastic Dynamic Model of City Bus Routes and Their Optimum Management 427

Shi' an Wang, N. U. Ahmed

The Release Characteristics and Selection Model for Vehicle Lane Changing of the Quadruple Left-Turn Traffic Flow at Signalized Intersection.....433

Yan Jiang

Research of Conflicts at Signalized Intersection and Safety Evaluation 438

Mengdi Yang

◆ Image Processing Technology and Application

Face Recognition Based on FP-Growth Improved LBP Operator 443

Sijie Long, Chengfeng Zheng, Canliu Wu, Tianyi Qi, Xiaojie Li, Yongsheng Zhu, Jingyi Liu, Jia Shuai, Zefeng Xie, Zhongyuan Chen, Jinwei Li, Hang Du

A Novel Method for Single Infrared Dim Small Target Detection Based on ROI extraction and Matrix Recovery.....447

Bin Xiong, Xinhan Huang, Min Wang

Feature Extraction of WDMS Spectra Based on Improved CNN 452

Jiang Bin, Mingze Li, Haiyang Hu, Jingfang Yin, Aobo Wang, Meixia Qu

An Automatic Analysis Method for Seabed Mineral Resources Based on Image Brightness Equalization 456

Xinliang Ma, Zhiwei He, Jiye Huang, Yanhui Dong, ChuFeng you

Dynamic Fuzzy Inference System for Edge Detection of Stone Inscriptions.....

Jie Song, Jie Wang, Shanshan Li

Compressor Blade Fault Diagnosis Based on Image Processing .....

Shuai Shao, Wei Lin

Study on Fatigue Driving Detection Model Based on Steering Operation Features and Eye Movement Features .....

Jun Ma, Jing Zhang, Zaiyan Gong, Yuchun Du

Gesture Recognition Based on Genetic Algorithm.....

Mingchao Yu, Gongfa Li, Ying Sun, Bo Tao, Shuang Xu, Fei Zeng

Research on Image Segmentation Technology Based on Genetic Algorithm.....

Chong Tan, Ying Sun, Gongfa Li, Bo Tao, Shuang Xu, Fei Zeng

◆ Data Calculation and Management

An Improved Distributed Data Fusion Method 484
Lai Tian, Xiang Pan, Zhaolin Wu, Jinfeng Liu
An Improved Naive Bayesian Classification Algorithm for Massive Data 489
Sun Tongjing, Li Ji, Ning Ke
An Approach to Non-normal Process Capability Analysis Using Johnson Transformation.....
Yanming Yang, Daxiao Li, Yinpeng Qi
Improved Interacting Multiple Model-New Nearest Neighbor Data Association Algorithm ...
Kaijie Zhang, Haoshen Lin, Gang Liu, Xiaolong Ma
Design of Ultra-High g Penetration Fuze Data Record Device 505
Jinming Zhang, He Zhang, Da Yu

◆ Computer Theory and Application

Dynamic Model of Bank Queuing System and Its Optimal Management 510
Shi' an Wang, N.U. Ahmed
Optimization of Path Blocking of Dangerous Counterexample Based on AHP 515
Yukun Zhao, Deming Zhong, Rui Sun, Yuxin Ding
Economy Optimization for Series-Parallel Multi-State Systems Considering Reliability Evaluation 519
Yishuang Hu, Yi Ding, Fan Wen
Floorplanning and Evaluation of A Hierarchical Cluster-Based NoC for Multicore System.....524
Xu Chen, Feng Shi, Fei Yin, Zenghui Wei, Xiaojun Wang
A Hierarchical Time Order Petri Nets Modeling Method.....528
Qi changing, Bi yiming, Li yong
Observer-Based Consensus Control of Multi-Agent Systems with Input Delay 533
Shibin Yang, Jun Chen, Fei Liu
Evacuation Entropy Particle Swarms Optimization (E-PSO) Evacuation Model Considering Panic Factors.....538
Tongtong Yu, Jian Wang, Zijun Zhao
Route Planning Algorithm of Region Important Target Search Based on PSO 545
Tang Shu-juan, Zhao Ke, Li De-fang, Wang Nan
Mixed Differential Evolution Algorithm for the Multi-Objective 0-1 Programming Problem 549
Ning Gui-ying, Zhou Yong-quan

A Review of Value-Focused Thinking (VFT) Application 555
Zhexuan Zhou, Yajie Dou, Yuejin Tan, Jiang Jiang
Ship Life-Saving Training System Based on Virtual Reality Technology 559
Qiu Shaoyang, Ren Hongxiang