2020 International Conference on Computer Engineering and Intelligent Control (ICCEIC 2020)

Chongqing, China
6 – 8 November 2020

IEEE Catalog Number: CFP20Z13-POD
ISBN: 978-1-7281-8574-3

Copyright © 2020 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: CFP20Z13-POD
ISBN (Print-On-Demand): 978-1-7281-8574-3
ISBN (Online): 978-1-7281-8573-6

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

2020 International Conference on Computer Engineering and Intelligent Control (ICCEIC)

ICCEIC 2020

Table of Contents

Preface xii
Committee Members xiv

Computer Network Technology and Communication Image Recognition

Discussion on the Research and Analysis of Computer Remote Network Communication Technology 1
Shaofu Luo (Chongqing Aerospace Polytechnic)

Improve the Mental Health of College Students by Means of Computer Network Technology 5
Yan Hu (Chongqing College of Architecture and Technology)

The Real-Time Recognition of Upper Limb Micro Motions Based on sEMG Signals 10
Changcheng Shi (Chinese Academy of Sciences), Sijia Ye (Chinese Academy of Sciences), Yehao Ma (Chinese Academy of Sciences), and Guokun Zuo (Chinese Academy of Sciences)

Distributed Flocking Protocol of Multi-Agent Systems with Transmission Delay 14
Ye Cheng (Naval Aviation University), Tianlong Shen (National Innovation Institute of Defense Technology), Bao Shi (Naval Aviation University), and Li Zhuang (Naval Aviation University)

Construction of Agricultural Knowledge Service Platform for Scientific and Technological Innovation 18
Xiaojing Qin (Beijing Academy of Agriculture and Forestry Sciences), Hui Zhang (Beijing Academy of Agriculture and Forestry Sciences), Huaiguo Zheng (Beijing Academy of Agriculture and Forestry Sciences), and Xiaojing Zhang (Beijing Academy of Agriculture and Forestry Sciences)

The Method of Recognizing Traffic Signs Based on the Improved Capsule Network 22
Zhang Hao (Huali College, Guangdong University of Technology)

Application Research on the Substitution Specification of MMS 27
Luo Hua-Feng (Zhejiang Electric Power Co., Ltd.), Ruan Li-Xiang (Zhejiang Electric Power Co., Ltd.), Lu Cheng-Yu (Zhejiang Electric Power Co., Ltd.), Wang Li-Hua (Beijing Sifang Engineering Technology Co., Ltd), Yang Bin (Beijing Sifang Engineering Technology Co., Ltd), and Bao Yun-Long (Beijing Sifang Engineering Technology Co., Ltd)

A Method of Equipment Disassembly Path Planning Based on Directed Constraint Graph Disassembly Sequence .32
Yang Cao (Army Armored Forces Academy), Hongtian Liu (Army Armored Forces Academy), Chao Song (Army Armored Forces Academy), Hongwei Wu (Army Armored Forces Academy), Dongjun Wang (Army Armored Forces Academy), and Hai Lin (Army Armored Forces Academy)

Robust Recognition of Truck License Plate in Mine Environment .36
Shi Siqi (Xi'an University of Technology), Li Nanting (Xi'an University of Technology), Ma Yanjun (Xi'an University of Technology), and Zheng Liping (Xi'an University of Technology)

Research on the Rendering Method of Metal Wire Based on Virtual Reality .43
Jintao Liu (Tsinghua Shenzhen International Graduate School)

White Blood Cell Segmentation Based on Visual Attention Mechanism and Model Fitting .47
Haonan Zheng (Fuzhou University), Xiaogen Zhou (Fuzhou University), Jing Li (Fuzhou University), Qinquan Gao (Fuzhou University), and Tong Tong (Fuzhou University)

Research on Simulation of Pedestrian Flow Unity 3D through Multiple Exit Architecture .51
Fei Lv (Chengdu Normal University) and Chang'an Hu (National Institute of Measurement and Testing Technology)

SAR Image Ship Detection Based on Deep Learning .55
Jiang Kun (Lanzhou Jiaotong University) and Cao Yan (Lanzhou Jiaotong University)

Recommendation of Cyber Attack Method Based on Knowledge Graph .60
Yunjia Ou (State Key Laboratory of Mathematical Engineering and Advanced Computing), Tianyang Zhou (State Key Laboratory of Mathematical Engineering and Advanced Computing), and Junhu Zhu (State Key Laboratory of Mathematical Engineering and Advanced Computing)

Research and Application of System Equipment Fault Diagnosis Based on Satellite Ground Station .66
Ke Tian (University of Electronic Science), Yuwen Wang (University of Electronic Science), Xiaotao He (University of Electronic Science), and Xuanrui Qu (University of Electronic Science)

Protocol Reverse Engineering by Analysis of the Probability Distribution of Messages .73
Wu Weisen (Information Engineering University) and Gu Chunxiang (Information Engineering University)

Emotion Recognition Using Generative Adversarial Networks .77
Zhaoqin Peng (Beihang University), Jia Li (Beihang University), and Zhengyi Sun (Beihang University)

External Reflection Recognition for Glass Walls Surface .81
Yongbin Wei (China Construction Industrial Engineering and Technology Research Institue Co., Ltd), Shaodan Zhi (China Construction Industrial Engineering and Technology Research Institue Co., Ltd), and Shi Liu (China Construction Industrial Engineering and Technology Research Institue Co., Ltd)

Big Data Design Prediction and Algorithm Optimization

A New Intelligent Retail Container System with a Dual Neural Network Model Design .85
Min Zeng (Shanghai Technical Institute of Electronics & Information), Shengjian Wu (FinVolution Group), Fang Li (Shanghai Technical Institute of Electronics & Information), and Guosheng Hu (Shanghai Technical Institute of Electronics & Information)

A Survey of FPGA Based on Graph Convolutional Neural Network Accelerator .92
Zi Ming Xiong (Electrical and Computer Engineering University of Toronto)

Design of State Grid Shopping Mall Heating Technology Application Assistant Decision System Based on Big Data Analysis .97
Po Hu (State Grid Electronic Commerce Co., Ltd.), Keliang Duan (State Grid Electronic Commerce Co., Ltd.), Weiqiang Huo (State Grid Hubei Electric Power Co. LTD.), Qiong Zhang (State Grid Electronic Commerce Co., Ltd.), Mengya Zhou (State Grid Hubei Electric Power Co. LTD.), and Yunlin Ba (State Grid Hubei Electric Power Co. LTD.)

Robot Path Planning Based on A*algorithm and Genetic Algorithm .101
Tang Xiang Rong (School of YanBian University) and Xu Hong Mei (School of YanBian University)

Object Tracking in Video Sequence Based on Kalman Filter .106
Li Hongmei (Information and Communication Company of State Grid Sichuan Electric Power Company), Huang Lin (Information and Communication Company of State Grid Sichuan Electric Power Company), Zhang Ruiqiang (Information and Communication Company of State Grid Sichuan Electric Power Company), Lv Lei (Information and Communication Company of State Grid Sichuan Electric Power Company), Wang Diangang (Information and Communication Company of State Grid Sichuan Electric Power Company), and Li Jiazhou (Information and Communication Company of State Grid Sichuan Electric Power Company)

Automatic Optimization of Super Parameters Based on Model Pruning and Knowledge Distillation .111
Min Wu (Beijing Aerospace Automatic Control Institute), Weihua Ma (Beijing Aerospace Automatic Control Institute), Yue Li (Beijing Aerospace Automatic Control Institute), and Xiongbo Zhao (Beijing Aerospace Automatic Control Institute)

A Framework Enhanced by Mutual Information Cross Entropy for Time Series Anomaly Detection under Noise .117
Sheng Mao (Air Force Engineering University), Jiansheng Guo (Air Force Engineering University), and Xiangyu Fan (Air Force Engineering University)

Stock Price Prediction Model Based on RBF-SVM Algorithm .124
Zixuan Liu (North China Electric Power University), Ziyuan Dang (North China Electric Power University), and Jie Yu (North China Electric Power University)

Influence and Enlightenment of the Sharing Economy on Chinese Entrepreneurs .128
Xiaohong Xiao (Guizhou University of Finance and Economics), Zheng Zhou (Guizhou University of Finance and Economics), and Qinghong Tian (Capital University of Economics and Business)

Urban Functional Area and Its Visualization in the Era of Big Data .133
Zehan Yang (Ulink College of Beijing)

A SDN Data Plane Abnormal State Detection Method Based on Flow Rules Analyzing .138
Wenbin Zhang (China National Digital Switching System Engineering and Technological Research Center), Qiang Wei (China National Digital Switching System Engineering and Technological Research Center), Zehui Wu (China National Digital Switching System Engineering and Technological Research Center), and Yunchao Wang (China National Digital Switching System Engineering and Technological Research Center)

An Asynchronous Game-Based Algorithm to the Weighted Vertex Cover of Networks .145
Kaiyi Luo (Zhejiang Normal University)

Construction of Carbon Trading Platform using Sovereignty Blockchain .149
Yu Bai (Guiyang University), Tao Song (Guiyang University), Yang Yang (Guiyang University), Ouyang Bocheng (Guiyang University), and Sheng Liang (Guiyang University)

Study on Classfication Based on Data of an Traditional Chinese Medcine by Similarity Network .153
Xingying Zhai (Jiangxi University of Traditional Chinese Medicine), Li Jiang (Jiangxi University of Traditional Chinese Medicine), Bingtao Li (Jiangxi University of Traditional Chinese Medicine), and Guoliang Xu (Jiangxi University of Traditional Chinese Medicine)

A New Hybrid Differential Particle Swarm Optimization Algorithm and Application .157
Pei Xiao-Gen (Shandong University)

A Comprehensive Evaluation System for Coaches' Evaluation Based on Hybrid Learning Algorithm .163
Pingzhi Lin (Hainan University), Jingwen Zhang (Hainan University), Haohua Wang (Hainan University), and Sijia Xiao (Hainan University)

Design and Implementation of Visual Detection System for Driving Environment .168
Xuhao Wang (Northwestern Polytechnical University)

Whale Optimization Algorithm Based on Nonlinear Weights and Single Point Crossove .179
Qiu Shao-ming (Dalian University), Liu Liang-cheng (Dalian University), Du Xiu-li (Dalian University), and Zhang Bin (Dalian University)

Review on Improved Algorithms Based on ICP Algorithm .185
Xueyao Jiang (Chengdu University of Technology), Mingzhe Liu (Chengdu University of Technology), Yao Huang (Chengdu University of Technology), and Rui Luo (Chengdu University of Technology)

Cross-Area Node Selection Algorithm for Data Replica Storing in Cloud Data Centers .190
Yang Lu (Northeast Forestry University), Changlin Xu (China XD), and Yan Zheng (Harbin Normal University)

Approximate Calculation of Crofton Formula .195
ShuYuan Cai (USTB), Ping Long (USTB), QiHan Wei (USTB), and LinTong Zhang (USTB)

Algorithm Realization and Application of Geodesic .199
ShuYuan Cai (USTB), Ping Long (USTB), QiHan Wei (USTB), and LinTong Zhang (USTB)

Violation Target Detection Based on Video Streaming .203
Weibin Shen (Zhejiang Gongshang University), Xi Zhang (Zhejiang Gongshang University), Xiaoling Wang (Zhejiang Gongshang University), and Jihong Feng (Zhejiang Gongshang University)

Research on Equipment Situation Display Based on Multi-Source Data Fusion .207
Cai-sen Chen (Army Academy of Armored Forces), Hai-rong Hu (Army Academy of Armored Forces), Lu-lu Fang (Army Academy of Armored Forces), and Yang-xia Xiang (Army Academy of Armored Forces)

Intelligent Control and System Structure Automation

An Offloading Architecture of Lossless Compression Based on Smart NIC .212
Can Zhang (Inspur Electronic Information Industry Co., Ltd.), Yaming Xu (Inspur (Beijing) Electronic Information Industry Co., Ltd.), Hongliang Wang (Inspur Electronic Information Industry Co., Ltd.), Wei Liu (Inspur Electronic Information Industry Co., Ltd.), Qi Mu (Inspur Electronic Information Industry Co., Ltd.), and Wei Guo (Inspur (Beijing) Electronic Information Industry Co., Ltd.)

Research on V2G Control of Smart Microgrid .216
Weijie Zhang (EVOC Intelligent Technology Co., Ltd.) and Jiansheng Wang (EVOC Intelligent Technology Co., Ltd.)

Research Direction of Smart Home Real-Time Monitoring .220
Yangyang Li (Brookline High School)

Research on CPU Instruction Security .233
Haolan Wu (China National Digital Switching System Engineering and Technological Research Center), Qiang Wei (China National Digital Switching System Engineering and Technological Research Center), and Zehui Wu (China National Digital Switching System Engineering and Technological Research Center)

A PET-Based on Vienna Rectifier Research on New Topological Structure and Control Strategy .240
Hongbo Lin (Changchun University of Technology), Wenchao Jia (Changchun University of Technology), and Zhuo Jia (Changchun University of Technology)

Life Cycle Management System of Infrastructure Based on State Awareness and Intelligent Warehousing .247
Liu Wei (Shenzhen Power Supply Bureau Co., Ltd)

Auxiliary Variable Based Adaptive Sliding-Mode Control for Systems with Mismatched Disturbances .253
Haihui Long (Shanghai Jiao Tong University), Qing Wang (Shanghai Aircraft Design and Research Institute), Jiankang Zhao (Shanghai Jiao Tong University), and Tianli Guo (Shanghai Jiao Tong University)

Multi-Person Collaborative Hoisting Training System Based on Mixed Reality .258
Taojin Li (Air Force Engineering University), Songgui Lei (Air Force Engineering University), Wei Wang (Air Force Engineering University), and Qingli Wang (Air Force Engineering University)

Fault Diagnosis Program of Ship Simulation Circuit Based on Labview 266
Sheng Pei (Naval Aviation University), Li Heng (Naval Aviation University), Chen Liming (Naval Aviation University), and Wang Qingjiang (Naval Aviation University)

Research on Space Transportation Intelligence Control 271
Wu Feng (Beijing Institute of Tracking and Telecommunications Technology), Liu Xiu - Luo (Beijing Institute of Tracking and Telecommunications Technology), Wang Jia (Beijing Institute of Tracking and Telecommunications Technology), Liu Yao (The Institute of Computing Technology of the Chinese Academy of Sciences), An Gang (The Institute of Computing Technology of the Chinese Academy of Sciences), and Chu Long - Fei (LINK SPACE)

A Novel Hybrid Model for Video Salient Object Detection 275
Jinping Cai (Tianjin University of Technology) and Sheng Lin (Tianjin University of Technology)

Design of Hover Flying Adaptive PD Controller for Four Rotor Unmanned Aerial Vehicle 280
Aitang Li (The Second Research Institute of CAAC), Dan Fan (The Second Research Institute of CAAC), Xiaowen Cao (The Second Research Institute of CAAC), Yan Nie (The Second Research Institute of CAAC), Yuhang Yang (The Second Research Institute of CAAC), and Ye Zhang (The Second Research Institute of CAAC)

Deep Reinforcement Learning of Cooperative Control with Four Robotic Agents by MADDPG 287
Zhaoyang Wang (Wuhan Textile University), Renzhuo Wan (Wuhan Textile University), Xi Gui (Wuhan Textile University), and Guopeng Zhou (Hubei University of Science and Technology)

Node Switching Method in Power Distribution Internet of Things Based on Blockchain 291
Guanlin Si (North China Electric Power Research Institute Co. Ltd.), Yue Sun (North China Electric Power Research Institute Co. Ltd.), Wei Chen (North China Electric Power Research Institute Co. Ltd.), and Leran Chen (North China Electric Power Research Institute Co. Ltd.)

Design and Realization of Intelligent Home System ON NB-IoT 296
Zifeng Yuan (Beijing University of Chemical Technology) and Bin He (Beijing University of Chemical Technology)

Cooperative Control and Autonomous Driving System for Multi-Robot in the No Man's Land 301
Junyi Ma (Beijing Institute of Technology), Jingyi Xu (Beijing Institute of Technology), Quanfu Yu (Beijing Institute of Technology), and Jiarui Song (Beijing Institute of Technology)

Charging Scheduling Design of Mobile Charging Vehicle 306
Ruru Duan (EVOC Intelligent Technology Co., Ltd.) and Chengze Xu (EVOC Intelligent Technology Co., Ltd.)

Billing System in Distributed Computing Environment 310
Jun Wen (University of Electronic Science and Technology of China) and Wang Zhang (University of Electronic Science and Technology of China)

Design of Portable Testing Equipment for Dynamic Parameters of a Guidance Instrument 314
Hongtian Liu (Army Academy of Armored Forces), Yizhuo Jia (Army Academy of Armored Forces), Chao Song (Army Academy of Armored Forces), Yang Cao (Army Academy of Armored Forces), Dongjun Wang (Army Academy of Armored Forces), Hongwei Wu (Army Academy of Armored Forces), and Wanjun Zhang (Army Academy of Armored Forces)

Apply Acceleration Sampling to Learn Kick Motion for NAO Humanoid Robot 318
Xinpeng Hu (Hefei University of Technology), Zhuolun Li (Hefei University of Technology), Guolong Sun (Hefei University of Technology), and Baofu Fang (Hefei University of Technology)

Author Index 325