

**2019 IEEE International Conferences  
on Ubiquitous Computing &  
Communications (IUCC 2019) and  
Data Science and Computational  
Intelligence (DSCI 2019) and Smart  
Computing, Networking and Services  
(SmartCNS 2019)**

**Shenyang, China  
21 – 23 October 2019**



**IEEE Catalog Number: CFP19IUC-POD  
ISBN: 978-1-7281-5210-3**

**Copyright © 2019 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:	CFP19IUC-POD
ISBN (Print-On-Demand):	978-1-7281-5210-3
ISBN (Online):	978-1-7281-5209-7

**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](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

CURRAN ASSOCIATES INC.  
**proceedings**  
.com

# **2019 IEEE International Conferences on Ubiquitous Computing & Communications (IUCC) and Data Science and Computational Intelligence (DSCI) and Smart Computing, Networking and Services (SmartCNS)** **IUCC-DSCI-SmartCNS 2019**

## Table of Contents

Message from the IUCC 2019 General Chairs .....	xxii
Message from the IUCC 2019 Program Chairs .....	xxiii
Message from the DSCI 2019 General Chairs .....	xxiv
Message from the DSCI 2019 Program Chairs .....	xxv
Message from the SmartCNS 2019 General Chairs .....	xxvi
Message from the SmartCNS 2019 Program Chairs .....	xxvii
Message from the IMHCS 2019 Workshop Chairs .....	xxviii
Message from the RTWC 2019 Workshop Chairs .....	xxix
Message from the BDRA 2019 Workshop Chairs .....	xxx
Message from the NGDN 2019 Workshop Chairs .....	xxxi
Message from the EMCA 2019 Workshop Chairs .....	xxxii
Message from the AINet 2019 Workshop Chairs .....	xxxiii
Message from the TCG 2019 Workshop Chairs .....	xxxiv
Message from the MECN 2019 Workshop Chairs .....	xxxv
Message from the MLSys 2019 Workshop Chairs .....	xxxvi
Message from the IVRIR 2019 Workshop Chairs .....	xxxvii
Message from the EEIoT 2019 Workshop Chair .....	xxxviii
Message from the QTPC 2019 Workshop Chairs .....	xxxix
IUCC 2019 Organizing Committee .....	xl
IUCC 2019 Program Committee .....	xli
DSCI 2019 Organizing Committee .....	xliii
DSCI 2019 Program Committee .....	xliv
SmartCNS 2019 Organizing Committee .....	xlvi
SmartCNS 2019 Program Committee .....	xlvi
Steering Committee .....	xlvi

## Session IUCC-1: Ubiquitous Computing I

Real-Time Traffic Congestion Analysis Based on Collected Tweets .....	1
<i>Mohammed A. A. Al-qaness (Wuhan University), Mohamed Abd Elaziz (Zagazig University), Ammar Hawbani (University of Science and Technology of China), Aaqif Afzaal Abbasi (Foundation University), Liang Zhao (Shenyang Aerospace University), and Sunghwan Kim (University of Ulsan)</i>	
Temporal Data Fusion at the Edge .....	9
<i>Linfu Yang (Nanjing University of Posts and Telecommunications) and Bin Liu (Nanjing University of Posts and Telecommunications)</i>	
A k-Nearest Neighbor Algorithm Based on Homomorphic Encryption .....	15
<i>Zhenzhou Guo (Shenyang Aerospace University), Shan Wang (Shenyang Aerospace University), Weifeng Jin (Shenyang Aerospace University), Changqing Gong (Shenyang Aerospace University), and Na Lin (Shenyang Aerospace University)</i>	
A Batch Acquisition of Model Data for Aircraft Heat and Surface Treatment .....	21
<i>Ye Hu (AVIC Shenyang Aircraft Company Limited), Liang Zhao (Shenyang Aerospace University), and Xin Zhou (AVIC Shenyang Aircraft Company Limited)</i>	

## Session IUCC-1: Ubiquitous Computing II

An Improved Sierpinski Fractal Based Network Architecture for Edge Computing Datacenters .....	27
<i>Han Qi (Shenyang Aerospace University), Zelin Li (Shenyang Aerospace University), Jian Qi (Qiqihar NO.1 Middle School), Xinyao Wang (Shenyang Aerospace University), Abdullah Gani (University of Malaya), and Md Whaiduzzaman (Jahangirnagar University)</i>	
UAV Task Assignment Algorithm Based on Splitting and Reorganization .....	35
<i>Jiehong Wu (Shenyang Aerospace University) and Xin Su (Shenyang Aerospace University)</i>	
Continuous Skyline Query Processing Algorithm Based on Sharding Technology Under Sliding Window Model .....	43
<i>Xiufeng Xia (Shenyang Aerospace University), Tiantian Yu (Shenyang Aerospace University), Rui Zhu (Shenyang Aerospace University), Jiajia Li (Shenyang Aerospace University), Xiangyu Liu (Shenyang Aerospace University), and Chuanyu Zong (Shenyang Aerospace University)</i>	
Multi-User Offloading and Resource Allocation for Vehicular Multi-Access Edge Computing .....	50
<i>Wenhan Zhan (University of Electronic Science and Technology of China), Hancong Duan (University of Electronic Science and Technology of China), and Qingxin Zhu (University of Electronic Science and Technology of China)</i>	

## Session IUCC-2: Ubiquitous Communications I

Delegation of Authentication to the Data Plane in Software-Defined Networks .....	58
<i>Amar Almaini (Edinburgh Napier University), Ahmed Al-Dubai (Edinburgh Napier University), Imed Romdhani (Edinburgh Napier University), and Martin Schramm (Deggendorf Institute of Technology)</i>	

Real-Time Measurement Method of Available Bandwidth Based on Kalman Filter .....	66
<i>Guangye Li (Northeastern University, State Grid Liaoning Electric Power Company Limited), Weimin Lei (Northeastern University), Wei Zhang (Northeastern University), and Yunchong Guan (Northeastern University)</i>	
LSTM Based Network Flow Forecasting in High-Speed Railway Data Network .....	71
<i>Yang Zhou (Beijing Jiaotong University), Qiang Sun (Beijing Jiaotong University), and Xiaodong Chen (Beijing Jiaotong University)</i>	
Connection Degree Cost and Reward Based Algorithm in Cognitive Radio Networks .....	76
<i>Yi Zhang (Institute of Army Artillery and Air Defense Forces), Yao Wang (Institute of Army Artillery and Air Defense Forces), Cen Wu (Institute of Army Artillery and Air Defense Forces), Bin Zhao (Institute of Army Artillery and Air Defense Forces), Jiamei Chen (Shenyang Aerospace University), and Jing Dong (Institute of Army Artillery and Air Defense Forces)</i>	
Telecom Big Data Assisted BS Resource Analysis for LTE/5G Systems .....	81
<i>Lexi Xu (China Unicom Network Technology Research Institute), Xuefeng Chen (China Railway Engineering Consulting Group Corporation), Liang Zhao (Shenyang Aerospace University), Xin Hu (Beijing University of Posts and Telecommunications), Nan Jiang (Queen Mary University of London), Yuting Luan (China Railway Engineering Consulting Group Corporation), Xinzhou Cheng (China Unicom Network Technology Research Institute), and Jie Gao (China Unicom Network Technology Research Institute)</i>	

## Session IUCC-2: Ubiquitous Communications II

A Percolation Based Approach for Critical Density in Non-Orientation Directional Sensor Network .....	89
<i>Lin Kang (Taiyuan University of Science and Technology), Yanjie Qi (Taiyuan University of Science and Technology), Wenhua Gao (Taiyuan University of Science and Technology), Anhong Wang (Taiyuan University of Science and Technology), and Zenshou Dong (Taiyuan University of Science and Technology)</i>	
Efficient CQI Estimation for Synchronized ABS Configuration in HetNet .....	95
<i>Yupeng Wang (Shenyang Aerospace University), Junyan Kang (Shenyang Aerospace University), and Lening Wang (Flight Inspection Center of CAAC)</i>	
Verification in Mobile Communication During The Change of IP Address .....	101
<i>Moamen Badawy (University of Science and Technology of China), Weiping Li (University of Science and Technology of China), and Ammar Hawbani (University of Science and Technology of China)</i>	
Semi-Static ON/OFF Switching Schemes for Energy Efficient Phantom Cellular Networks .....	106
<i>Natasha Niaz (National University of Sciences and Technology), Rizwan Ahmad (National University of Sciences and Technology), Waqas Ahmed (Pakistan Institute of Engineering and Applied Sciences), Shahryar Saleem (Air University), and Liang Zhao (Shenyang Aerospace University)</i>	
The Communication Availability of the Cooperative Combat of Manned / Unmanned Aerial Vehicles in Electromagnetic Cyber Confrontation Environment .....	112
<i>Lijun Gao (Shenyang Aerospace University), Jian Ding (Shenyang Aerospace University), and Ruina Lian (Henan University)</i>	

## Session IUCC-3: Ubiquitous System, Services and Applications I

Fruit Tree Disease Recognition Based on Convolutional Neural Networks .....	118
<i>Zechen Zheng (Xi'an Shiyong University), Shaowei Pan (Xi'an Shiyong University), and Yichi Zhang (Xi'an Shiyong University)</i>	
Spatio-Temporal Trajectory Features Based Sensitive Relationship Protection .....	123
<i>Xiangyu Liu (Shenyang Aerospace University), Yifan Shen (Shenyang Aerospace University), Xiufeng Xia (Shenyang Aerospace University), Jiajia Li (Shenyang Aerospace University), Chuanyu Zong (Shenyang Aerospace University), and Rui Zhu (Shenyang Aerospace University)</i>	
A K-Means Clustering Approach for PCA-Based Web Service QoS Prediction .....	129
<i>Huazhou Yang (Xi'an Shiyong University), Hongdan Yan (Xi'an Shiyong University), and Cuilian Dong (Xi'an Shiyong University)</i>	
Modeling the Formation of User Replying Network on Government Microblogs: An Exponential Random Graph Model .....	133
<i>Jie Xiong (University of Electronic Science and Technology of China), Xiaodong Feng (University of Electronic Science and Technology of China), and Zhiwei Tang (University of Electronic Science and Technology of China)</i>	
An Adaptive Clustering Algorithm of Gaussian Curve Fitting the Histogram Based on K-Means .....	141
<i>Guangkun Ma (Northeastern University, Shenyang University of Technology), Jinzhu Yang (Ministry of Education, Northeastern University), Xiaoxu Song (Northeastern University), and Hong Zhao (Northeastern University)</i>	

## Session IUCC-3: Ubiquitous System, Services and Applications II

Personalized Privacy Protection with Spatio-Temporal Features in Social Networks .....	146
<i>Xiufeng Xia (Shenyang Aerospace University), Boyang Yin (Shenyang Aerospace University), Xiangyu Liu (Shenyang Aerospace University), Jiajia Li (Shenyang Aerospace University), Rui Zhu (Shenyang Aerospace University), and Chuanyu Zong (Shenyang Aerospace University)</i>	
TMATCH: A New Framework for Supporting Car-Sharing Under Carpooling Model .....	153
<i>Xiufeng Xia (Shenyang Aerospace University), Zhenchang Hu (Shenyang Aerospace University), Rui Zhu (Shenyang Aerospace University), Jiajia Li (Shenyang Aerospace University), Chuanyu Zong (Shenyang Aerospace University), and Xiangyu Liu (Shenyang Aerospace University)</i>	
A Method on Fault Prediction of Large Aspect Ratio UAV Wing Based on Deep Belief Network .....	159
<i>Hang Yin (Shenyang Aerospace University) and Meng Yan (Shenyang Aerospace University)</i>	
Dynamic Beam Hopping for DVB-S2X Satellite: A Multi-Objective Deep Reinforcement Learning Approach .	164
<i>Yuchen Zhang (Beijing University of Posts and Telecommunications), Xin Hu (Beijing University of Posts and Telecommunications), Rong Chen (Beijing University of Posts and Telecommunications), Zhili Zhang (54th Research Institute China Electronics Technology Group Corporation), Liquan Wang (54th Research Institute China Electronics Technology Group Corporation), and Weidong Wang (Beijing University of Posts and Telecommunications)</i>	

## Session IUCC-4: Ubiquitous Media and Signal Processing I

Extending the Recognition Limit of Two-Dimensional Bar Code .....	170
<i>Jiaming Zhang (Shenyang Aerospace University), Zhihong Yin (Shenyang Aerospace University), and Liang Zhao (Shenyang Aerospace University)</i>	
Ideation Support System with Personalized Knowledge Level Prediction .....	177
<i>Yui Kita (The University of Tokyo) and Jun Rekimoto (The University of Tokyo)</i>	
Matching Cost Calculation Model Based on Multi-Scale Convolutional Neural Network .....	185
<i>Tengna Wang (Xian Branch of China Telecom co. LTD) and Lin Ye (Shaanxi Branch of China Telecom co. LTD)</i>	
An Improved Watershed Algorithm Based on k-Medoids in Cervical Cancer Images .....	190
<i>Bin Dong (The Affiliated Hospital of Hebei University), Linan Jia (Hebei University), Yuntao Wang (Hebei University), Jianqun Li (Hebei University), and Guojie Yang (The Affiliated Hospital of Hebei University)</i>	

## Session IUCC-4: Ubiquitous Media and Signal Processing II

Sequential Detection of Flying Small Target in Infrared Images Based on Generalized Low-Rank Background Estimation .....	196
<i>Chuanyun Wang (Shenyang Aerospace University), Keyi Si (Shenyang Aerospace University), Tian Wang (Beihang University), Zhaokui Li (Shenyang Aerospace University), Na Lin (Shenyang Aerospace University), and Ershen Wang (Shenyang Aerospace University)</i>	
An Evaluation Standard and Loss Function Applied to the Semantic Segmentation of Large Depth of Field Pictures .....	202
<i>Zhuojin Pan (Shenyang Aerospace University), Xinlei Wei (Shenyang Aerospace University), Xuwen Dai (Shenyang Aerospace University), and Zhen Luo (Shenyang Aerospace University)</i>	
An Improved Algorithm Based on Convolutional Neural Network for Smoke Detection .....	207
<i>Hang Yin (Shenyang Aerospace University) and Yurong Wei (Shenyang Aerospace University)</i>	
MSK Carrier Synchronization Scheme Based on Demodulation Soft Information Aided .....	212
<i>Yuan Qiu (Chinese Academy of Sciences) and Xiaoxin He (Chinese Academy of Sciences)</i>	

## Session DSCI-1: Data Science Theory, Algorithms and Architectures I

Research on the Influencing Factors of Film Box Office Based on Ordinary Least Square and Threshold Quantile Autoregressive Model .....	218
<i>Jingdong Liu (Zhongnan University of Economics and Law), Won-Ho Choi (Dongseo University), and Fei Hao (Shaanxi Normal University)</i>	
Multi-Label Learning Based on Clustering Optimization .....	224
<i>Xiaoying Wang (Army Engineering University of PLA), Jun Xie (Army Engineering University of PLA), Xingliu Tao (Army Engineering University of PLA), Xiaofeng Zhang (Army Engineering University of PLA), and Qi Lu (Army Engineering University of PLA)</i>	
Research on Government Domain Ontology Construction Method Based on Formal Concept Analysis .....	230
<i>Jian Nong (Wuzhou University), Chaoxiang Liang (Wuzhou University), and Pengyu Xie (Guangxi Power Grid Co., Ltd)</i>	



A Deep Learning Model Enhanced with Emojis for Sina-Microblog Sentiment Analysis .....	236
<i>Jiabo Zhang (Xihua University), Xianyong Li (Xihua University), Yajun Du (Xihua University), Xiaoliang Chen (Xihua University), Yuehui Li (Xihua University), Jianzhong Zheng (Xihua University), and Zhen Wang (Xihua University)</i>	
Finding Global Contrast Core Subgraphs in Large-Scale Genetic Association Study .....	243
<i>Lei Qiu (North China University of Technology), Yuan Li (North China University of Technology), Jing Sun (North China University of Technology), Jinsheng Liu (North China University of Technology), and Yuhai Zhao (Northeastern University)</i>	
An Improved Particle Swarm Optimization Algorithm Combined with Invasive Weed Optimization .....	251
<i>Huan Zhao (Shenyang Aerospace University, University of Newcastle), Xin Wang (Shenyang Aerospace University), Zhongze Jiao (Shenyang Aerospace University), Wen Zeng (Shenyang Aerospace University), Jinxiao Dou (University of Science and Technology, Liaoning), and Jianglong Yu (University of Newcastle, University of Science and Technology, Liaoning)</i>	

## Session DSCI-1: Data Science Theory, Algorithms and Architectures II

Research on the Extraction of Entity Relationships From Fusion Syntactic Information .....	258
<i>Baosheng Yin (Shenyang Aerospace University), Yingxuan Wang (Shenyang Aerospace University), Daming Pei (China Institute of Marine Technology and Economy), and Yusheng Yan (China Institute of Marine Technology and Economy)</i>	
Research on Sentence Similarity Calculation Based on Attention Mechanism and Sememe Information ....	266
<i>Huang Jian (Shenyang Aerospace University), Yu Bai (Shenyang Aerospace University), Guiping Zhang (Shenyang Aerospace University), and Wanwan Miu (Shenyang Aerospace University)</i>	
Image Matching Algorithm Based on GMS .....	274
<i>Hua Li (Changchun University of Science and Technology), Wen Liu (Changchun University of Science and Technology), Cheng Han (Changchun University of Science and Technology), and Xiangxu Kong (Changchun University of Science and Technology)</i>	
Graph Convolutional Networks with Objects for Skeleton-Based Action Recognition .....	280
<i>Xiangbin Shi (Shenyang Aerospace University), Haowen Li (Shenyang Aerospace University), Fang Liu (Shenyang Aerospace University), Deyuan Zhang (Shenyang Aerospace University), Jing Bi (Shenyang Aerospace University), and Zhaokui Li (Shenyang Aerospace University)</i>	
DnM3Net: Multi-Scale & Multi-Level Shuffle-CNN Via Multi-Level Attention for Image Denoising .....	286
<i>Yue Cao (Shaanxi Normal University), Jinhe He (Shaanxi Normal University), Yu Zhang (Shaanxi Normal University), Gang Lu (Shaanxi Normal University), Shigang Liu (Shaanxi Normal University), and Xiaojun Wu (Shaanxi Normal University)</i>	

## Session DSCI-2: Data Science Applications I

A Spectral Radius Based Evaluation Function for Automatic Focusing .....	293
<i>Guojin Peng (Wuzhou University), Meini Lv (Wuzhou University), and Kuikui Wang (Wuzhou University)</i>	



A New Feature Selection Method for Intrusion Detection .....	298
<i>Zhen Wang (Xihua University), Mingwei Tang (Xihua University), Jiayu Deng (Xihua University), Yanting Wang (Xihua University), Jiang Qian (Xihua University), and Xiaoliang Chen (Xihua University)</i>	
Symmetry Structure Research of Complex Community from Disconnection Vertexes Perspective .....	305
<i>Duo Zhai (Shenyang Jianzhu University), Jing Shan (Shenyang Jianzhu University), Jiaying Wang (Shenyang Jianzhu University), Mingyang Shao (Shenyang Jianzhu University), and Jianzhao Cao (Shenyang Jianzhu University)</i>	
Loop Closure Detection Based on Improved Hybrid Deep Learning Architecture .....	312
<i>Yuan Liu (Guilin University of Electronic Technology), Rong Xiang (Guilin University of Electronic Technology), Qieshi Zhang (Chinese Academy of Sciences), Ziliang Ren (Chinese Academy of Sciences), and Jun Cheng (Chinese Academy of Sciences)</i>	
Lightweight Virtual Machine Mapping for Data Centers .....	318
<i>Aaqif Afzaal Abbasi (Foundation University), Sidra Sultana (National University of Science and Technology), Mohammed A. A. Al-Qaness (Wuhan University), Ammar Hawbani (University of Science and Technology of China), Sameen Javed (Keptuckin Inc.), and Sunghwan Kim (University of Ulsan)</i>	
A Real-Time Feedback Approach Based on Semantic Clustering for Poverty Alleviation Problem .....	323
<i>Zizhen Peng (WuZhou Vocational College), Guobei Peng (Guangxi University), Zhiyi Mo (Wuzhou University), Guangyao Pang (Wuzhou University), Zongyuan Zheng (Wuzhou University), and Xiang Wei (Wuzhou University)</i>	

## Session DSCI-2: Data Science Applications II

A Website Source Evaluation Algorithm Based on Comprehensive Feature Analysis .....	329
<i>Baosheng Yin (Shenyang Aerospace University), Longlong Zhang (Shenyang Aerospace University), Daming Pei (China Institute of Marine Technology and Economy), and Yusheng Yan (China Institute of Marine Technology and Economy)</i>	
Aggregate Nearest Neighbors Queries with Service Time Constraints in Time-Dependent Road Networks .	336
<i>Jiajia Li (Shenyang Aerospace University), Jixu Wang (Shenyang Aerospace University), Xiufeng Xia (Shenyang Aerospace University), Xiangyu Liu (Shenyang Aerospace University), Rui Zhu (Shenyang Aerospace University), and Chuanyu Zong (Shenyang Aerospace University)</i>	
Design of Optimal Clinic Route System Based on WeChat Platform .....	344
<i>Wenhao Chen (Changchun University of Science and Technology), Shi Pan (Changchun University of Science and Technology), Yang Li (Changchun University of Science and Technology), Jiayang Wang (Changchun University of Science and Technology), Jiaqi Wang (Changchun University of Science and Technology), Yuting Zhang (Changchun University of Science and Technology), and Wendi Zhu (Changchun University of Science and Technology)</i>	
Research on 3D CAD Model Retrieval Algorithm Based on Global and Local Similarity .....	349
<i>Weifang Ma (Shenyang Aerospace University), Peiyan Wang (Shenyang Aerospace University), Dongfeng Cai (Shenyang Aerospace University), and Dahan Wang (Shenyang Aerospace University)</i>	

Optimal Guidance Method for UCAV in Close Free Air Combat .....	356
<i>Yaofei Chen (Shenyang Aerospace University), Xiaoping Sun (Shenyang Aerospace University), Dejian Liu (Shenyang Aerospace University), and Shufa Li (Shenyang Aerospace University)</i>	

## Session DSCI-3: Computational Intelligence for Big Data Processing I

Pose-Based Multi-Target Tracking .....	361
<i>Xiangbin Shi (Shenyang Aerospace University), Xiaoyu Yang (Shenyang Aerospace University), Deyuan Zhang (Shenyang Aerospace University), Jing Bi (Shenyang Aerospace University), Zhaokui Li (Shenyang Aerospace University), and Fang Liu (Shenyang Aerospace University)</i>	
An Efficient Personalized Video Recommendation Algorithm Based on Mixed Mode .....	367
<i>Wei Zhang (Central China Normal University), Yi Wang (Central China Normal University), Hao Chen (Central China Normal University), and Xia Wei (Hubei University)</i>	
P-Spiking Deep Neural Network Based on Adaptive SPCNN Temporal Coding .....	374
<i>Yuli Chen (Shaanxi Normal University), Huiting Yao (Shaanxi Normal University), Miao Ma (Shaanxi Normal University), Zhao Pei (Shaanxi Normal University), Xingwei Li (Shaanxi Normal University), and Zengguo Sun (Shaanxi Normal University)</i>	
Semi-Supervised Generative Adversarial Model for 3D Recognition .....	381
<i>Haoqian Wang (Shenzhen Institute of Future Technology), Shuhao Zhang (Shenzhen Institute of Future Technology), Yongbing Zhang (Shenzhen Institute of Future Technology), and Zhihong Liu (Shenzhen Institute of Future Technology)</i>	
Trusted Autonomous Vehicles: an Interactive Exhibit .....	386
<i>Hugo L. S. Araujo (University of Leicester), Carlos Diego N. Damasceno (University of Leicester), Rayna Dimitrova (University of Leicester), Genovefa Kefalidou (University of Leicester), Mehdi Mehtarizadeh (University of Leicester), Mohammad Reza Mousavi (University of Leicester), Jemima Onime (University of Leicester), Jan Oliver Ringert (University of Leicester), Jose Miguel Rojas (University of Leicester), Nervo Xavier Verdezoto (University of Leicester), and Syed Wali (University of Leicester)</i>	

## Session DSCI-3: Computational Intelligence for Big Data Processing II

"Research" on Feature Representation Method of Deep Learning for 3D CAD Model Clustering .....	394
<i>Dahan Wang (Shenyang Aerospace University), Peiyan Wang (Shenyang Aerospace University), Weifang Ma (Shenyang Aerospace University), and Guiping Zhang (Shenyang Aerospace University)</i>	
Text Classification Using Scope Based Convolutional Neural Network .....	402
<i>Jiaying Wang (Shenyang Jianzhu University), Jing Shan (Shenyang Jianzhu University), Yaxin Li (Shenyang Jianzhu University), Yi Ren (Shenyang Jianzhu University), Duo Zhai (Shenyang Jianzhu University), and Jinling Bao (Baicheng Normal University)</i>	
Improving Accuracy of Key Information Acquisition for Social Media Text Summarization .....	408
<i>Wanwan Miao (Shenyang Aerospace University), Guiping Zhang (Shenyang Aerospace University), Yu Bai (Shenyang Aerospace University), and Dongfeng Cai (Shenyang Aerospace University)</i>	

EIP-VIO: Edge-Induced Points Based Monocular Visual-Inertial Odometry .....	416
<i>Luoying Hao (Chinese Academy of Sciences), Hongjian Li (Chinese Academy of Sciences), Jun Cheng (Chinese Academy of Sciences), and Qieshi Zhang (Chinese Academy of Sciences)</i>	
A Lifted Semi-Direct Monocular Visual Odometry .....	422
<i>Hongjian Li (Chinese Academy of Sciences), Luoying Hao (Chinese Academy of Sciences), Qieshi Zhang (Chinese Academy of Sciences), Xiping Hu (Chinese Academy of Sciences), and Jun Cheng (Chinese Academy of Sciences)</i>	
DP-Pose: Multi-Person Pose Estimation in Video Sequence through Dynamic Programming .....	427
<i>Deyuan Zhang (Shenyang Aerospace University), Junyuan Wang (Shenyang Aerospace University), Xiangbin Shi (Shenyang Aerospace University), Zhaokui Li (Shenyang Aerospace University), Fang Liu (Shenyang Aerospace University), and Cuiwei Liu (Shenyang Aerospace University)</i>	

## Session DSCI-4: Data Mining and Applications I

Dynamic Clustering Recommendation Algorithm For Two-Layer Graph Attention Network .....	433
<i>Zhihui Wang (Shaanxi Normal University), Jianrui Chen (Shaanxi Normal University), and Bo Wang (Inner Mongolia University of Technology)</i>	
Collaborative Filtering Recommendation Algorithm Based on Multifactorial Clustering .....	439
<i>Chunxia Zhao (Inner Mongolia University of Technology) and Jianrui Chen (Shaanxi Normal University)</i>	
Predicting the Legal Risk of "Section 337 Investigations" by Elastic Time Predictor .....	444
<i>Xing Gao (Dalian University), Chao Che (Dalian University), Lasheng Zhao (Dalian University), and Jianxin Zhang (Dalian University)</i>	
Building user Profiles Based on user Interests and Preferences for Recommender Systems .....	450
<i>Pavel Stakhiyevich (Shaanxi Normal University) and Zhao Huang (Shaanxi Normal University)</i>	
Multiple License Plate Location Algorithm in Complex Scene .....	456
<i>YuMei Zhou (TianHe College of GuangDong Polytechnic Normal University), MeiNi Lv (WuZhou University), ZiQing Ling (WuZhou University), and DongLing Li (WuZhou University)</i>	
A Rumor Blocking Method Based on Tolerance of Users .....	462
<i>Min Zhang (Shaanxi Normal University), Xiaoming Wang (Shaanxi Normal University), and Xueyang Qin (Shaanxi Normal University)</i>	

## Session DSCI-4: Data Mining and Applications II

Literature Recommendation Technology Based on User Characteristics and Semantic Computing .....	469
<i>Baosheng Yin (Shenyang Aerospace University), Hang Qin (Shenyang Aerospace University), Daming Pei (China Institute of Marine Technology and Economy), and Yusheng Yan (China Institute of Marine Technology and Economy)</i>	
RFID Data Warehousing and OLAP with Hive .....	476
<i>Yeisol Yoo (Purdue University Fort Wayne) and Jin Soung Yoo (Purdue University Fort Wayne)</i>	

Detection of Social Groups in Class by Affinity Propagation .....	484
<i>Yajie Wang (Shaanxi Xueqian Normal University), Qiyang Peng (Shaanxi Normal University), Zhao Pei (Ministry of Education, Shaanxi Normal University), Miao Ma (Shaanxi Normal University), Yuli Chen (Shaanxi Normal University), Chengcai Leng (Northwest University), and Honghong Yang (Ministry of Education)</i>	
Threat Assessment for Rotte Based on Cooperative Tactical Recognition .....	490
<i>Guanglei Meng (Shenyang Aerospace University), Mingzhe Zhou (Shenyang Aerospace University), Huimin Zhang (Shenyang Aerospace University), and Donglai Sun (Shenyang Aerospace University)</i>	
UAV Attack and Defense Optimization Guidance Method Based on Target Trajectory Prediction .....	495
<i>Guanglei Meng (Shenyang Aerospace University), Cheng Zhang (Shenyang Aerospace University), Shouye Liu (Shenyang Aerospace University), and Runnan Zhao (Shenyang Aerospace University)</i>	

## Session SmartCNS: Smart Computing, Networking and Services I

An Improved DV-Hop Localization Algorithm Based on Error Vector Modification for Wireless Sensor Network .....	500
<i>Haixiao Li (University of Chinese Academy of Sciences) and Dong Yu (Chinese Academy of Sciences)</i>	
An Object Detection Network for Embedded System .....	506
<i>Yanpeng Sun (Shenyang Aerospace University), Chenlu Wang (Shenyang Aerospace University), and Lele Qu (Shenyang Aerospace University)</i>	
Carpooling Algorithm with the Common Departure .....	513
<i>Xiufeng Xia (Shenyang Aerospace University), Hao Liu (Shenyang Aerospace University), Jiajia Li (Shenyang Aerospace University), Xiangyu Liu (Shenyang Aerospace University), Rui Zhu (Shenyang Aerospace University), and Chuanyu Zong (Shenyang Aerospace University)</i>	
A Data Clustering Strategy for Enhancing Mutual Privacy in Healthcare System of IoT .....	521
<i>Xuancheng Guo (Fujian Normal University, Minjiang University), Hui Lin (Fujian Normal University, Minjiang University), Chuanfeng Xu (Fujian Normal University), and Wenzhong Lin (Minjiang University)</i>	
IoT-Based Environmental Data News Generation System for Healthcare .....	527
<i>Yunqing Guan (Communication University of Zhejiang), Qingsheng Li (Communication University of Zhejiang), and Ying Tian (Communication University of Zhejiang)</i>	

## Session SmartCNS: Smart Computing, Networking and Services II

A Chinese Character Generation Model for Cloud Information Security .....	534
<i>Zhang Li (Hubei University of Economics), Qingsheng Li (Communication University of Zhejiang), and Yunqing Guan (Communication University of Zhejiang)</i>	
Indoor Wheeled Robot Positioning Algorithm Based on Extended Kalman Filter .....	541
<i>Xiangbin Shi (Shenyang Aerospace University), Jingyuan Tan (Shenyang Aerospace University), and Deyuan Zhang (Shenyang Aerospace University)</i>	

M <sup>2</sup> S <sup>2</sup> F <sup>2</sup> : Multiscale Multistage Spectral-Spatial Features Fusion Framework for Hyperspectral Image Classification .....	547
<i>Xiangbin Shi (Shenyang Aerospace University), Kuo Song (Shenyang Aerospace University), Zhaokui Li (Shenyang Aerospace University), Jing Bi (Shenyang Aerospace University), and Deyuan Zhang (Shenyang Aerospace University)</i>	
Mobile Robot Path Planning Algorithm Based on Rapidly-Exploring Random Tree .....	555
<i>Yajie Wang (Shenyang Aerospace University) and Yuan Huang (Shenyang Aerospace University)</i>	

## Session IMHCS: Information Management in Human-Centric Systems

Ontological Approach to Personalized Situational Planning: Concept and Scenarios .....	561
<i>Ziqiang Tang (University of Aizu) and Evgeny Pyshkin (University of Aizu)</i>	
CAPT Tool Audio-Visual Feedback Assessment Across a Variety of Learning Styles .....	565
<i>John Blake (University of Aizu), Natalia Bogach (Peter the Great Polytechnic University), Artem Zhuikov (Peter the Great Polytechnic University), Iurii Lezhenin (Peter the Great Polytechnic University), Mikhail Maltsev (Peter the Great Polytechnic University), and Evgeny Pyshkin (University of Aizu)</i>	
Towards Case-Based Reasoning with k-d Trees for a Computer Game of Soccer .....	570
<i>Georgii Mola Bogdan (University of Aizu) and Maxim Mozgovoy (University of Aizu)</i>	

## Session RTWC: Real-Time Wireless Communications in Industrial Applications

A Heuristic Approach for Low Delay Distributed MAC using Successive Interference Cancellation in Priority-Based Industrial Wireless Network .....	573
<i>Yida Xu (Chinese Academy of Sciences, University of Chinese Academy of Sciences), Qi Wang (Chinese Academy of Sciences), Jianmin Liu (Chinese Academy of Sciences, University of Chinese Academy of Sciences), Chentao He (Chinese Academy of Sciences, University of Chinese Academy of Sciences), Boyu Diao (Chinese Academy of Sciences), and YongJun Xu (Chinese Academy of Sciences)</i>	
A Q-Learning Based Cross-Layer Transmission Protocol for MANETs .....	580
<i>ChenTao He (University of Chinese Academy of Sciences), Qi Wang (University of Chinese Academy of Sciences), Yongjun Xu (University of Chinese Academy of Sciences), Jianmin Liu (University of Chinese Academy of Sciences), and Yida Xu (University of Chinese Academy of Sciences)</i>	
A Scalable Testbed for Task Offloading and Deployment of Heterogeneous Edge Computing .....	586
<i>Boyu Diao (Chinese Academy of Sciences), Kang Yang (Sichuan Normal University), Yuzhu Mei (NanKai University), Qi Wang (Chinese Academy of Sciences), Chao Li (Chinese Academy of Sciences), Zhulin An (Chinese Academy of Sciences), and Yongjun Xu (Chinese Academy of Sciences)</i>	

Manufacturing Industry Supply Chain Management Based on the Ethereum Blockchain .....	592
<i>Zhijun Xu (Beijing University of Posts and Telecommunications), Yichen Liu (Inner Mongolia University), Jun Zhang (Inner Mongolia University), Zhaoxiong Song (Chinese Academy of Sciences), Jun Li (Bubi Technologies), and Jihua Zhou (Chongqing Jinmei Communication)</i>	

## Session BDRA: Big Data Research and Application

A Low Cost and Easy Implement Highway Accident Detection Model Based on Big Data .....	597
<i>Chuntao Song (China Unicom Network Technology Research Institute), Yong Wang (China United Network Communications Group Corporation), Shiyan Zhang (China Continent Property &amp; Casualty Insurance Corporation), and Lexi Xu (China Unicom Network Technology Research Institute)</i>	
Comprehensive IoT SIM Card Anomaly Detection Algorithm Based on Big Data .....	602
<i>Tao Zhang (China Unicom Network Technology Research Institute), Haibin Li (China United Network Communications Group Corporation), Lexi Xu (China Unicom Network Technology Research Institute), Jie Gao (China Unicom Network Technology Research Institute), Jian Guan (China Unicom Network Technology Research Institute), and Xinzhou Cheng (China Unicom Network Technology Research Institute)</i>	
Research on Evaluation Method of Wireless Network Cross-Boundary Coverage Based on Smart Terminals Location Data .....	607
<i>Jian Guan (China Unicom Network Technology Research Institute), Lexi Xu (China Unicom Network Technology Research Institute), Tao Zhang (China Unicom Network Technology Research Institute), Jie Gao (China Unicom Network Technology Research Institute), and Xinzhou Cheng (China Unicom Network Technology Research Institute)</i>	
A Novel Big Data Assisted Analysis Architecture for Telecom Operator .....	611
<i>Yong Zhang (China Unicom Network Technology Research Institute), Xinzhou Cheng (China Unicom Network Technology Research Institute), Lexi Xu (China Unicom Network Technology Research Institute), Xin He (China Unicom Network Technology Research Institute), Jian Guan (China Unicom Network Technology Research Institute), Kun Chao (China Unicom Network Technology Research Institute), and Chuntao Song (China Unicom Network Technology Research Institute)</i>	
Post-Evaluation Model of Telecommunication Network Construction Based on AHP .....	616
<i>Xinzhou Cheng (China Unicom Network Technology Research Institute), Xingtong Liu (The High School attached to Beijing Jiaotong University), Qingqing Zhang (China Unicom Network Technology Research Institute), Lexi Xu (China Unicom Network Technology Research Institute), Xiaodong Cao (China Unicom Network Technology Research Institute), Yu Qin (China Mobile Pingdingshan Branch), Heng Zhang (China Unicom Network Technology Research Institute), Fan Zhang (China Unicom Network Technology Research Institute), and Jie Gao (China Unicom Network Technology Research Institute)</i>	
Sorting and Utilizing of Telecom Operators Data Assets Based on Big Data .....	621
<i>Yongsheng Chi (China Unicom Network Technology Research Institute), Xinzhou Cheng (China Unicom Network Technology Research Institute), Chuntao Song (China Unicom Network Technology Research Institute), Rui Xia (China Unicom Network Technology Research Institute), Lexi Xu (China Unicom Network Technology Research Institute), and Zhi Li (China Unicom Smart Network Center)</i>	



An Insight Scheme for Large-Scale Events Based on Telecom Operators Data .....	626
<i>Jianjian Yang (China Unicom Network Technology Research Institute), Xinzhou Cheng (China Unicom Network Technology Research Institute), Kun Chao (China Unicom Network Technology Research Institute), Yunyun Wang (China Unicom Network Technology Research Institute), Lexi Xu (China Unicom Network Technology Research Institute), and Jie Gao (China Unicom Network Technology Research Institute)</i>	

## Session NGDN: Next Generation Data-Driven Networks

DCNN-BiGRU Text Classification Model Based on BERT Embedding .....	632
<i>He Huang (Guangdong University of Petrochemical Technology, Nanjing University of Posts and Telecommunications), Xiao-Yuan Jing (Guangdong University of Petrochemical Technology), Fei Wu (Nanjing University of Posts and Telecommunications), Yong-Fang Yao (Guangdong University of Petrochemical Technology), Xin-Yu Zhang (Wuhan University), and Xi-Wei Dong (Jiujiang University)</i>	
Resource Scheduling in Cloud Computing Based on Firefly Algorithm .....	638
<i>Chang-an Ren (Hunan Institute of Technology), Yinzen Huang (Hunan Institute of Technology), Qingyun Luo (Hunan Institute of Technology), and Xiaocui Li (Huazhong University of Science and Technology)</i>	

## Session EMCA: Embedded Multi-Core Computing and Applications

Meta-Learning Techniques to Analyze the Raman Data for Optical Diagnosis of Oral Cancer Detection ....	644
<i>Mukta Sharma (Chang Gung University), Lokesh Sharma (AI Innovation Research Center), Ming-Jer Jeng (Chang Gung University), Liann-Be Chang (Chang Gung University), Shiang-Fu Huang (Chang Gung Memorial Hospital), and Shih-Lin Wu (AI Innovation Research Center)</i>	
An Implementation of IoT-Based Weather Monitoring System .....	648
<i>Yung-Chung Tsao (National Chi Nan University), Yin Te Tsai (Providence University), Yaw-Wen Kuo (National Chi Nan University), and Chaokung Hwang (Wu Tso Elementary School)</i>	
Classification of Autoclave Temperature via Deep Learning .....	653
<i>Wan Ju Lin (National Taiwan University), Jian-Wen Chen (Chang Gung University), Che-Lun Hung (Chang Gung University), and Ching-Hsien Hsu (Asia University)</i>	

## Session AINet: AI-Driven Network

Rush Hour Capacity Enhancement in 5G Network Based on Hot Spot Floating Prediction .....	657
<i>Shoufeng Wang (Samsung Research China-Beijing), Fan Li (China Unicom Beijing Branch), Hao Ni (Samsung Research China-Beijing), Lexi Xu (China United Network Communications Corporation), Meifang Jing (Samsung Research China-Beijing), Junyi Yu (Samsung Research China-Beijing), and Xidong Wang (China Mobile Research Institute)</i>	
Data Representation Models of Concept Systems .....	663
<i>Hong Zhu (China National Institute of Standardization), Yue Cheng (China National Institute of Standardization), and Ang Gao (China National Institute of Standardization)</i>	



Blind Video Quality Assessment Based on Human Visual Characteristic .....	669
<i>Shiyu Zhou (China Unicom Network Technology Research Institute),</i>	
<i>Xiqing Liu (China Unicom Network Technology Research Institute),</i>	
<i>Yuanbing Tian (China Unicom Network Technology Research Institute),</i>	
<i>Bin Fu (Zhiyou Open Source Communication Research Institute Co., Ltd),</i>	
<i>Xiuyan Xia (Beijing University of Posts and Telecommunications), and</i>	
<i>Jin Ge (China Unicom Network Technology Research Institute)</i>	
Discussion on Communication Control Method of Cluster UAV .....	675
<i>Jinge Guo (Beijing Institute of Technology), Yang Zhang (China Mobile</i>	
<i>Group Co., Ltd.), and Bao Guo (ZONG, CMPak Ltd.)</i>	
Big Data and Standardization Application in Targeted Poverty Alleviation .....	680
<i>Zhaoyang Sun (China National Institute of Standardization), Yue Cheng</i>	
<i>(China National Institute of Standardization), Xu Mao (China National</i>	
<i>Institute of Standardization), Kuitong Xian (China National Institute</i>	
<i>of Standardization), He Liu (China National Institute of</i>	
<i>Standardization), and Xin An (Chinese Academy of Forestry)</i>	
Research and Application of Decision Tree Algorithm in QoS-Aware Service for Fault Diagnosis .....	684
<i>Jin Ge (China United Network Communications Corporation), Lexi Xu</i>	
<i>(China United Network Communications Corporation), Lei Tong (China</i>	
<i>United Network Communications Group Corporation), Yuanbing Tian (China</i>	
<i>United Network Communications Corporation), Xuan Chen (China United</i>	
<i>Network Communications Corporation), Xiqing Liu (China United Network</i>	
<i>Communications Corporation), Shiyu Zhou (China United Network</i>	
<i>Communications Corporation), and Shiyu Hu (Beijing University of Posts</i>	
<i>and Telecommunications)</i>	
Parameter Estimation for Maneuvering Target in OTHR Relying on Improved Maximum-Likelihood	
Algorithm.....	689
<i>Chengye Lu (Iallchain Co., Ltd), Jinzhou Li (Beijing Institute of</i>	
<i>Remote Sensing Information), Miao Wang (DFH Satellite Co., Ltd.), and</i>	
<i>Jinfeng Hu (University of Electronic Science and Technology of China)</i>	

## Session TCG: Technology of Computer Games

Design and Implementation of a General Chess Game System Client Based on Electron Framework .....	696
<i>Luying Shi (Beijing Information Science &amp; Technology University),</i>	
<i>Shuqin Li (Beijing Information Science &amp; Technology University),</i>	
<i>Daiying Lei (Beijing Information Science &amp; Technology University), and</i>	
<i>Jianbo Bo (Beijing Information Science &amp; Technology University)</i>	
Study on the Play Strategy of Dou Dizhu Poker Based on Convolution Neural Network .....	702
<i>Shuqin Li (Beijing Information Science &amp; Technology University),</i>	
<i>Renzhi Wu (Beijing Information Science &amp; Technology University), and</i>	
<i>Jianbo Bo (Beijing Information Science &amp; Technology University)</i>	
Design and Implementation of Hex Computer Game Platform .....	708
<i>Yongjie Gui (Shenyang Aerospace University), Hedan Liu (Shenyang</i>	
<i>Aerospace University), Hang Yin (Shenyang Aerospace University),</i>	
<i>Zhongzhi Li (Shenyang Aerospace University), and Na Guo (Shenyang</i>	
<i>Aerospace University)</i>	
Design of No-Go Game Algorithm Based on Reinforcement Learning .....	712
<i>Jianbo Bo (Beijing Information Science and Technology University),</i>	
<i>Shuqin Li (Beijing Information Science and Technology University), Rui</i>	
<i>Geng (Beijing Information Science and Technology University), and</i>	
<i>Jiaming Tong (Beijing Information Science and Technology University)</i>	

## Session MECN: Multi-Access Edge Computing and Networking

VANET Channel Allocation Scheme Based on Hungarian Algorithm .....	717
<i>Tengyuan Liu (Wuhan University of Technology) and Ruifang Li (Wuhan University of Technology)</i>	
Improving Web Browsing Experience with Personalized Edge Computing .....	723
<i>Zhaoxin Wu (University of Tsukuba) and Yasushi Shinjo (University of Tsukuba)</i>	

## Session MLSys: Machine Learning Assisted Smart System

Generalized Association and Deep Understanding Method for Big Video Data Processing .....	731
<i>Lin Xu (Nanjing Research institute of Electronic Engineering), Wei Wu (Nanjing Research institute of Electronic Engineering), Wanghan Lv (Nanjing Research institute of Electronic Engineering), and Dong Wang (University of Jinan)</i>	
Survey of Time Series Data Processing in Industrial Internet .....	736
<i>Miao-qiong Wang (China Academy of Information and Communication Technology), Kai Wei (China Academy of Information and Communication Technology), and Chun-yu Jiang (China Academy of Information and Communication Technology)</i>	
An Apriori-Based Energy-Efficient Algorithm for SDN Data Center .....	742
<i>Peng HongYu (TangShan University) and Hao TianLu (TangShan University)</i>	
Comprehensive Analysis System and Scenarios of Electric IoT Big Data .....	747
<i>Rui Yang (Beijing Smartchip Microelectronics Technology Company Limited), Na Liu (Beijing Smartchip Microelectronics Technology Company Limited), Junzhu Li (Bright Oceans Inter-Telecom Corporation), Lexi Xu (China Unicom Network Technology Research Institute), Xinzhou Cheng (China Unicom Network Technology Research Institute), Zhenjiang Pang (Beijing Smartchip Microelectronics Technology Company Limited), and Zhicheng Zang (Beijing Smartchip Microelectronics Technology Company Limited)</i>	
Research on New Energy Grid Connection and Electric Vehicle Charging Fault Resolution Method .....	752
<i>Menglong Xu (PONOVO Power Co., Ltd), Xiaohua Long (Changjun Meixihu Middle School), and Wenwen Zhou (PONOVO Power Co., Ltd)</i>	
Research on Telecom Big Data Platform of LTE/5G Mobile Networks .....	756
<i>Lexi Xu (China Unicom Network Technology Research Institute), Guanglu Shao (China United Network Communications Group Corporation), Yue Cao (Beihang University), Haochen Yang (Beijing NO. 35 High School), Chen Sun (Nanchang Hangkong University), Tao Zhang (China Unicom Network Technology Research Institute), Binyuan Wen (China Unicom Network Technology Research Institute), Xinzhou Cheng (China Unicom Network Technology Research Institute), Chuntao Song (China Unicom Network Technology Research Institute), and Xin He (China Unicom Network Technology Research Institute)</i>	
Sharing and Compatibility Studies of Eess(Passive) and IMT System in 24.25-27.5 GHz .....	762
<i>Yao Zhou (China Unicom Network Technology Institute), Yiyang Niu (Beijing University of Posts and Telecommunications), and Yi Feng (China Unicom Network Technology Institute)</i>	

## Session IVRIR: Interactive Virtual Reality and Intelligent Recognition

Improved Fast Stereo Matching Algorithm Based on Convolutional Neural Networks .....	768
<i>Chunfeng Xu (Changchun University of Science and Technology), Shiyu Lu (Changchun University of Science and Technology), Wen Liu (Changchun University of Science and Technology), Ye Bai (Changchun University of Science and Technology), and Cheng Han (Changchun University of Science and Technology)</i>	
Siamese Network for Visual Tracking via Focal Loss .....	774
<i>Shan Jiang (Changchun University of Science and Technology), Cheng Han (Changchun University of Science and Technology), Xiaoqiang Di (Changchun University of Science and Technology), and Hua Li (Changchun University of Science and Technology)</i>	
Single-Pixel Estimation for Enhanced Object Detection and Recognition with Kinect for Windows V2 .....	780
<i>Cosmas Obiora Ndubuisi (Changchun University of Science and Technology) and Hua Li (Changchun University of Science and Technology)</i>	
Dynamic Caustic Generation for Transparent Geometry in Virtualized GPU Environment .....	786
<i>Hua Li (Changchun University of Science and Technology), Xiangxu Kong (Changchun University of Science and Technology), and Wen Liu (Changchun University of Science and Technology)</i>	

## Session EEIoT: Energy-Efficient Internet of Things

A Hybrid Localization Algorithm Based on Error Correction .....	792
<i>Jing Zhang (Changchun University of Science and Technology), Xin Feng (Changchun University of Science and Technology), and Jing Guo (Changchun University of Science and Technology)</i>	

## Session QTPC: Quantum Technology and Parallel Computing

Fast Laplacian of Gaussian Edge Detection Algorithm for Quantum Images .....	798
<i>Suzhen Yuan (Chongqing University of Posts and Communications), Salvador E. Venegas-Andraca (Tecnologico de Monterrey), Chaoping Zhu (Chongqing Technology and Business University), Yan Wang (Chongqing University of Posts and Communications), Xuefeng Mao (Chongqing University of Posts and Communications), and Yuan Luo (Chongqing University of Posts and Communications)</i>	
Multi-Step Traffic Flow Prediction Using Recurrent Neural Network .....	803
<i>Di Yang (Changchun University of Science and Technology), Huamin Yang (Changchun University of Science and Technology), Peng Wang (Changchun University of Science and Technology), and Songjiang Li (Changchun University of Science and Technology)</i>	
Constructing a Large-Scale Data Center Network Structure Using Regular Graphs .....	809
<i>Guannan Qu (Jilin University) and Wentao Chen (Chang Guang Satellite Technology Co. Ltd.)</i>	
Thai Language Sentence Segmentation Based on N-Gram Context Model .....	813
<i>Hongbin Wang (Kunming University of Science and Technology), Zhiju Zhang (Kunming University of Science and Technology), Qiang Shen (Kunming University of Science and Technology), Yantuan Xian (Kunming University of Science and Technology), Yafei Zhang (Kunming University of Science and Technology), and Cunli Mao (Kunming University of Science and Technology)</i>	

An Identity Privacy Protection Strategy in Vehicle Named Data Network .....	818
<i>Xuejie Liu (Jilin University), Qi Bing (Jilin University), Xinhua Lu (Jilin University), Lihong Zhong (Jilin University), Da Wei (Jilin University), and Guannan Qu (Jilin University)</i>	

<b>Author Index .....</b>	<b>823</b>
---------------------------	------------