

# **2019 IEEE Fourth International Conference on Data Science in Cyberspace (DSC 2019)**

**Hangzhou, China  
23 – 25 June 2019**



**IEEE Catalog Number: CFP19E91-POD  
ISBN: 978-1-7281-4529-7**

**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:	CFP19E91-POD
ISBN (Print-On-Demand):	978-1-7281-4529-7
ISBN (Online):	978-1-7281-4528-0

**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 Fourth International Conference on Data Science in Cyberspace (DSC) **DSC 2019**

## Table of Contents

Organization	xviii
Program Committee	xix
Keynotes	xxi
Invited Talk	xxv
Tutorials	xxvi

## 2019 IEEE Fourth International Conference on Data Science in Cyberspace (DSC)

### Session 1: Deep Learning Algorithm and Applications 1

Design of High Performance Convolutional Neural Network for Lightweight Platform	1
<i>Daihui Li (Guangxi Normal University), Zeng Shangyou (Guangxi Normal University), Zhou Yue (Guangxi Normal University), Pan Bing (Guangxi Normal University), and Yang Lei (Guangxi Normal University)</i>	
Research on Data Caching Method of Gradient Consistent Hash	9
<i>Xujian Li (Shandong University of Science and Technology) and Kai Xu (Shandong University of Science and Technology)</i>	
RnnTd: An Approach Based on LSTM and Tensor Decomposition for Classification of Crimes in Legal Cases	16
<i>Xiaoding Guo (Harbin Institute of Technology), Hongli Zhang (Harbin Institute of Technology), Lin Ye (Harbin Institute of Technology), and Shang Li (Harbin Institute of Technology)</i>	

### Session 2: Cyberspace Security 1

The Improved Model for Anomaly Detection Based on Clustering and Dividing of Flow	23
<i>Ao Liu (Tianjin University of Tecnolgy) and Bin Sun (Tianjin University of Tecnolgy)</i>	

Research of Trojan Attack Effect Evaluation Based on FAHP .31.....	31
<i>Haocheng Zhong (National University of Defense Technology), Chenxi Zeng (National University of Defense Technology), Aiping Li (National University of Defense Technology), Yan Jia (National University of Defense Technology), Rong Jiang (National University of Defense Technology), Yulu Qi (National University of Defense Technology), and Weihong Han (Guangzhou University)</i>	
Cryptanalysis and Improvement of a Remote Anonymous Authentication Protocol for Mobile Multi-server Environments .38.....	38
<i>Hailong Yao (Lanzhou City University), Xingbing Fu (Hangzhou Dianzi University), Caifen Wang (Shenzhen Technology University), Congcong Meng (Lanzhou City University), Bo Hai (Lanzhou City University), and Shiqiang Zhu (Lanzhou City University)</i>	
AutoDE: Automated Vulnerability Discovery and Exploitation .46.....	46
<i>Yuntao Zhang (Beijing University of Posts and Telecommunications), Tong Liu (Beijing University of Posts and Telecommunications), Zhongru Wang (Zhejiang Lab, Hangzhou, China; Beijing University of Posts and Telecommunications), Qiang Ruan (Beijing DigApis Technology Co., Ltd, Beijing, China), and Binxing Fang (Beijing University of Posts and Telecommunications)</i>	

## Session 3: Deep Learning Algorithm and Applications 2

Attentive Context-Aware Music Recommendation .54.....	54
<i>Yu Tao (Peking University), Yuanxing Zhang (Peking University), and Kaigui Bian (Peking University)</i>	
Rebalancing the Car-Sharing System: A Reinforcement Learning Method .62.....	62
<i>Lixingjian An (Zhejiang University), Changwei Ren (Zhejiang University), Zhaoquan Gu (Guangzhou University), Yuexuan Wang (Zhejiang University, The University of Hong Kong), and Yunjun Gao (Zhejiang University)</i>	
FS-Net: Medical Image Denoising via Local Receptive Field Smoothing Network .70.....	70
<i>Wang Xiaowei (PLA Army Engineering University Nanjing), Jiabin Xiong (Beijing Institute of Technology), Rui Wang (Harbin Institute of Technology), Worku J. Sori (Harbin Institute of Technology), Jingtian Wang (Mary Star of the Sea High School CA , USA), Liu Shaohui (Harbin Institute of Technology), and Feng Jiang (School of Computer Science and Jinling Hospital, Nanjing, China, China)</i>	
Multi-node Mode Decomposition Based Deep Learning Model for Road Section Traffic Prediction .77.....	77
<i>Khouanetheva Pholsena (Shanghai Jiaotong University), Li Pan (Shanghai Jiaotong University), and Zhenpeng Zheng (Shanghai Jiaotong University)</i>	

## Session 4: Cyberspace Security 2

- Privacy-Preserving Location-Based Query Over Encrypted Data in Outsourced Environment .84.....  
*Huijuan Lian (Shanghai Jiao Tong University), Weidong Qiu (Shanghai Jiao Tong University), Di Yan (Shanghai Jiao Tong University), Zheng Huang (Shanghai Jiao Tong University), and Peng Tang (Shanghai Jiao Tong University)*
- A Multi-objective Examples Generation Approach to Fool the Deep Neural Networks in the Black-Box Scenario .92.....  
*Yepeng Deng (Harbin Institute of Technology), Chunkai Zhang (Harbin Institute of Technology), and Xuan Wang (Harbin Institute of Technology)*
- Construction of Situation Assessment Indicator System Based on Latitude and Longitude Lines of Information Security .100.....  
*Yanwei Sun (China Information Technology Security Evaluation Center), Li Chen (Computer Network Information Center, Chinese Academy of Sciences), Lihua Yin (Cyberspace Institute of Advanced Technology (CIAT), Guangzhou University), Yunchuan Guo (Institute of Information Engineering Chinese Academy of Sciences), Xiangjie Meng (China Information Technology Security Evaluation Center), and Peng Zhang (China Information Technology Security Evaluation Center)*

## Session 5: Knowledge Graph and Knowledge Processing

- Joint Extraction of Entities and Relations Based on Multi-label Classification .106.....  
*Yunxuan Liu (National University of Defense Technology), Aiping Li (National University of Defense Technology), Jiuming Huang (Hunan Singhand Intelligent Data Technology), Xiping Zheng (National University of Defense Technology), Hao Wang (National University of Defense Technology), Weihong Han (Cyberspace Institute of Advanced Technology, Guangzhou University Institute of Electronic and Information Engineering of UESTC in Guangdong), and Zhichao Wang (Hunan Singhand Intelligent Data Technology)*
- Knowledge Fusion: Introduction of Concepts and Techniques .112.....  
*Yichen Song (National University of Defence Technology), Aiping Li (National University of Defence Technology), Yan Jia (National University of Defence Technology), Jiuming Huang (Hunan Singhand Intelligent Data Technology), and Xiaojuan Zhao (National University of Defence Technology)*
- Multi-source Knowledge Fusion: A Survey .119.....  
*Xiaojuan Zhao (National University of Defense Technology), Yan Jia (National University of Defense Technology), Aiping Li (National University of Defense Technology), Rong Jiang (National University of Defense Technology), Haocheng Xie (National University of Defense Technology), Yichen Song (National University of Defense Technology), and Weihong Han (Guangzhou University Institute of Electronic and Information Engineering of UESTC)*

## Session 6: Machine Learning 1

- Learning Non-Stationary Dynamic Bayesian Network Structure from Data Stream .128.....  
*Qing Meng (Hainan College of Vocation and Technique), Yongheng Wang (Bigsearch in Cyberspace Research Center, Zhejiang Lab), Jingbin An (Bigsearch in Cyberspace Research Center, Zhejiang Lab), Zhongru Wang (Bigsearch in Cyberspace Research Center, Zhejiang Lab), Baoxing Zhang (PLA 305 Hospital), and Lijie Liu (Xinjiang Military General Hospital)*
- HDGS: A Hybrid Dialogue Generation System using Adversarial Learning .135.....  
*Han Yu (National University of Defense Technology), Aiping Li (National University of Defense Technology Changsha, China), Rong Jiang (National University of Defense Technology Changsha, China), Yan Jia (National University of Defense Technology Changsha, China), Xiaojuan Zhao (National University of Defense Technology Changsha, China), and Weihong Han (Guangzhou University Institute of Electronic and Information Engineering of UESTC in Guangdong)*
- A Fast Network Embedding Approach with Preserving Hierarchical Proximities .142.....  
*Jie Zhang (Tsinghua University), Yan Wang (Tsinghua University), and Jie Tang (Tsinghua University)*
- Logic-Based Online Complex Event Rule Learning with Weight Optimization .150.....  
*Yongheng Wang (Research Center of Cyberspace Bigsearch, Zhejiang Lab), Rong Zhu (Hunan University), Zengwang Wang (Hunan University), Xiaozan Zhang (Hunan University), and Baoxing Zhang (PLA 305 Hospital Beijing)*

## Session 7: Social Networks 1

- Text Sentiment Analysis Based on Parallel Recursive Constituency Tree-LSTM .156.....  
*Yongheng Wang (Research Center of Cyberspace Bigsearch, Zhejiang Lab), Xiaozan Zhang (Hunan University), Xiangge Wang (Hunan University), Rong Zhu (Hunan University), Zengwang Wang (Hunan University), and Lijie Liu (Xinjiang Military General Hospital)*
- Negotiation Game Model for Big Data Transactions .162.....  
*Jiajia Zhang (Peng Cheng Laboratory), Shuqiang Yang (Peng Cheng Laboratory), Weizhe Zhang (Peng Cheng Laboratory), Bin Zhang (Peng Cheng Laboratory), Zhenhuan Luo (Harbin Institute of Technology, Shenzhen), Ying Zhou (Peng Cheng Laboratory), and Jia Xie (Oracle Research & Development Center Co., Ltd, Shenzhen)*
- Joint Embedding of Emoticons and Labels Based on CNN for Microblog Sentiment Analysis .168.....  
*Yongcai Tao (Zhengzhou University), Xinqian Zhang (Zhengzhou University), Lei Shi (Zhengzhou University), Lin Wei (Zhengzhou University), Zhaoyang Hai (Zhengzhou University), and Junaid Abdul Wahid (Zhengzhou University)*

Influence Maximization on Large-Scale Networks with a Group-Based Method via Network Embedding .176...  
*Yaoxuan Ji (Shanghai Jiao Tong University; Shanghai Key Laboratory of Integrated Administration Technologies for Information Security), Li Pan (Shanghai Jiao Tong University; Shanghai Key Laboratory of Integrated Administration Technologies for Information Security; National Engineering Laboratory for Information Content Analysis Technology), and Peng Wu (Shanghai Jiao Tong University; Shanghai Key Laboratory of Integrated Administration Technologies for Information Security; National Engineering Laboratory for Information Content Analysis Technology)*

## Session 8: Intelligent System

An Improved Feature Fusion for Speaker Recognition .183.....  
*Meixiang Dai (Hangzhou Dianzi University), Guojun Dai (Hangzhou Dianzi University), Yifan Wu (Hangzhou Dianzi University), Yixing Xia (Hangzhou Dianzi University), Fangyao Shen (Hangzhou Dianzi University), and Hua Zhang (Hangzhou Dianzi University)*

Visualization of the Non-Dominated Solutions in Many-Objective Optimization .188.....  
*Minghui Xiong (Science and Technology on Complex Electronic System Simulation Laboratory, Space Engineering University), Wei Xiong (Science and Technology on Complex Electronic System Simulation Laboratory, Space Engineering University), and Ping Jian (Science and Technology on Complex Electronic System Simulation Laboratory, Space Engineering University)*

Toward Dynamic Computation Offloading for Data Processing in Vehicular Fog Based F-RAN .196.....  
*Tianpeng Ye (Shanghai Jiao Tong University), Xiang Lin (Shanghai Jiao Tong University), Jun Wu (Shanghai Jiao Tong University), Gaolei Li (Shanghai Jiao Tong University), and Jianhua Li (Shanghai Jiao Tong University)*

Yun: A High-Performance Container Management Service Based on OpenStack .202.....  
*Sijie Yang (Jiangnan University, Wuxi), Xiaofeng Wang (Jiangnan University, Wuxi; The Cyberspace Security Research Center), Lun An (Beijing University of Posts and Telecommunications), and Guizhu Zhang (Jiangnan University)*

Tracing Android Kernel Codes at Early Stage without Extra Hardware Components .210.....  
*Boyu Zhang (Beijing Institute of Technology), Kai Yang (Beijing Institute of Technology), Lianfang Wang (Beijing Institute of Technology), Yu-an Tan (Beijing Institute of Technology), and Sikang Hu (Beijing Institute of Technology)*

## Session 9: Machine Learning 2

Cross-Domain User Profile Construction by Log Analysis .217.....  
*Ye Tao (Qingdao University of Science and Technology), Yanzhe Wang (Qingdao University of Science and Technology), Cao Shi (Qingdao University of Science and Technology), Xiaodong Wang (Ocean University of China), Canhui Xu (Qingdao University of Science and Technology), and Zhifang Xu (Haier Technology Co., Ltd., Qingdao, China)*

The Nearest Neighbor Classifiers for Time Series with Complex Shape Features .222.....  
*Qianhong Lin (Beijing Jiaotong University), Huarui Wu (Beijing Research Center for Information Technology in Agriculture), Jidong Yuan (Beijing Jiaotong University), and Jingqiu Gu (Beijing Research Center for Information Technology in Agriculture)*

Semi-Random Forest Based on Representative Patterns for Noisy and Non-Stationary Data Stream .228.....  
*Bencai Zhang (Beijing Jiaotong University), Huarui Wu (Beijing Research Center for Information Technology in Agriculture), Yange Sun (Beijing Jiaotong University), and Ronghua Gao (Beijing Research Center for Information Technology in Agriculture)*

A Standardized Aerosol Repository System for Knowledge Services and Crowdsourcing .235.....  
*Xiaoyi Huang (State Key Laboratory of CAD&CG, Zhejiang University), Jun Zheng (State Key Laboratory of CAD&CG, Zhejiang University), Kejun Zhang (State Key Laboratory of CAD&CG, Zhejiang University), Dong Liu (State Key Laboratory of Modern Optical Instrumentation, Zhejiang University), Jie Chen (State Key Laboratory of Modern Optical Instrumentation, Zhejiang University), and Lei Bi (Department of Atmospheric Sciences, Zhejiang University)*

## Session 10: Social Networks 2

SMAM: Detecting Rumors from Microblogs with Stance Mining Assisting Task .242.....  
*Zeng Lingyu (Beijing University of Posts and Telecommunications), Song Chenguang (Beijing University of Posts and Telecommunications), Wu Bin (Beijing University of Posts and Telecommunications), and Wang Bai (Beijing University of Posts and Telecommunications)*

Topic Model-Based Recommender System for Longtailed Products Against Popularity Bias .250.....  
*Chunhua Sun (Hefei University of Technology) and Yinjie Xu (Hefei University of Technology)*

An Unsupervised Approach of Truth Discovery from Multi-sourced Text Data .257.....  
*Chen Chang (Army Engineer University), Jianjun Cao (The Sixty-third Research Institute, National University of Defense Technology), Guojun Lv (Army Engineer University), and Nianfeng Weng (The Sixty-third Research Institute, National University of Defense Technology)*

Identifying Influential Nodes with a Community Structure Measure .264.....  
*Liangliang Zhang (Beijing Institute of System Engineering), Xiao Sun (Beijing Institute of System Engineering), Peng Wang (Beijing Institute of System Engineering), Jinxin Hou (Beijing Institute of System Engineering), and Guidong Sun (Beijing Institute of System Engineering)*



# Workshops

## Big Data and Business Analytics (BDBA 2019)

Research on the Relationship between APP Size and Installation Time in Intelligent Mobile Devices .270.....	
<i>Chan Jiang Jiang (Central South University (CSU)), Shaoyong Li (Central South University (CSU)), Guangcheng Huo (The People's Liberation Army 75731 troops), and Lei Luo (National University of Defense Technology)</i>	
Attention-Based Text Recognition in Image .278.....	
<i>Yiwei Zhu (Shanghai Jiaotong University), Shilin Wang (Shanghai Jiaotong University), Zheng Huang (Shanghai Jiaotong University), Kai Chen (Shanghai Jiaotong University), Xiang Lin (Shanghai Jiaotong University), and Quanhai Zhang (Shanghai Jiaotong University)</i>	
Chinese Text Classification Based on Neural Networks and Word2vec .284.....	
<i>Weixiong Hu (Guangzhou University), Zhaoquan Gu (Guangzhou University), Yushun Xie (Guangzhou University), Le Wang (Guangzhou University), and Keke Tang (Guangzhou University)</i>	
Weighted-Ring Similarity Measurement for Community Detection in Social Network .292.....	
<i>Zheng Shen (Zhejiang University Hangzhou), Zhaoquan Gu (Guangzhou University), Yuexuan Wang (Zhejiang University &amp; The University of Hong Kong), Xiaoling Zheng (Zhejiang University), and Mingli Song (Zhejiang University)</i>	
Association Analysis of Abnormal Behavior of Electronic Invoice Based on K-Means and Skip-Gram .300.....	
<i>Peng Tang (Shanghai Jiao Tong University), Weidong Qiu (Shanghai Jiao Tong University), Min Yan (Shanghai Jiao Tong University), Zheng Huang (Shanghai Jiao Tong University), Shuang Chen (Shanghai Jiao Tong University), and Huijuan Lian (Shanghai Jiao Tong University)</i>	
Research on Abnormal Behavior of Electronic Invoice Based on Artificial Neural Network .306.....	
<i>Shuang Chen (Shanghai Jiao Tong University), Weidong Qiu (Shanghai Jiao Tong University), Peng Tang (Shanghai Jiao Tong University), Guorui Duan (Shanghai Jiao Tong University), Min Yan (Shanghai Jiao Tong University), and Zheng Huang (Shanghai Jiao Tong University)</i>	
A Spatio-Temporal Flow Model of Dockless Shared Bikes .312.....	
<i>Jian Dong (National University of Defense Technology), Bin Chen (National University of Defense Technology), Chuan Ai (National University of Defense Technology), and Fang Zhang (National University of Defense Technology)</i>	
Sentiment Analysis of Home Appliance Comment Based on Generative Probabilistic Model .318.....	
<i>Cao Shi (Qingdao University of Science and Technology), Ye Tao (Qingdao University of Science and Technology), Canhui Xu (Qingdao University of Science and Technology), Xiaodong Wang (Ocean University of China), Yanzhe Wang (Qingdao University of Science and Technology), and Zihao Wang (Qingdao University of Science and Technology)</i>	
Competency Analysis in Human Resources Using Text Classification Based on Deep Neural Network .322.....	
<i>Qiao Guohao (Beijing University of Posts and Telecommunications), Wu Bin (Beijing University of Posts and Telecommunications), Wang Bai (Beijing University of Posts and Telecommunications), and Zhang Baoli (Beijing University of Posts and Telecommunications)</i>	

Finding Water Quality Trend Patterns Using Time Series Clustering: A Case Study .330.....	<i>Leijun Huang (Zhejiang A &amp; F University), Hailin Feng (Zhejiang A &amp; F University), and Ying Le (Zhejiang A &amp; F University)</i>
Overview of IoT Security Architecture .338.....	<i>Jian Zhang (Tianjin University of Technology), Huanran Jin (Tianjin University of Technology), Liangyi Gong (Tsinghua University), Jing Cao (Tianjin Information System Security and Confidentiality Evaluation Center), and Zhaojun Gu (Civil Aviation University of China)</i>
The Current Research of IoT Security .346.....	<i>Jian Zhang (Tianjin University of Technology), Huaijian Chen (Tianjin University of Technology), Liangyi Gong (Tsinghua University), Jing Cao (Tianjin Information System Security and Confidentiality Evaluation Center), and Zhaojun Gu (Civil Aviation University of China)</i>

## **Big Data Mining for Cyberspace (BDMC 2019)**

Conflicts Resolving for Fusion of Multi-source Data .354.....	<i>Yuanqi Yang (Beijing University of Posts and Telecommunications), Lize Gu (Beijing University of Posts and Telecommunications), and Xiaoning Zhu (Beijing University of Posts and Telecommunications)</i>
Adathm: Adaptive Gradient Method Based on Estimates of Third-Order Moments .361.....	<i>Huikang Sun (Institute of Cyberspace Security, Beijing University of Posts and Telecommunications), Lize Gu (Institute of Cyberspace Security, Beijing University of Posts and Telecommunications), and Bin Sun (Institute of Cyberspace Security, Beijing University of Posts and Telecommunications)</i>
Efficient Parallel Algorithm for Mining High Utility Patterns Based on Spark .367.....	<i>Junqiang Liu (Zhejiang Gongshang University), Rong Zhao (Zhejiang Gongshang University), Xiangcai Yang (Zhejiang Gongshang University), Yong Zhang (Zhejiang Gongshang University), and Xiaoning Jiang (Zhejiang Gongshang University)</i>
Knowledge Graph-Based Clinical Decision Support System Reasoning: A Survey .373.....	<i>Xiayu Xiang (Beijing University of Posts and Telecommunications), Zhongru Wang (Cyberspace Big Search Center, Zhejiang Lab), Yan Jia (National University of Defense Technology), and Binxing Fang (Chinese Academy of Sciences)</i>
KSC: A Fast and Simple Spectral Clustering Algorithm .381.....	<i>Longcheng Zhai (Beijing University of Posts and Telecommunications), Bin Wu (Beijing University of Posts and Telecommunications), and Qiuyue Li (Beijing University of Posts and Telecommunications)</i>
STNS-CSG: Syntax Tree Networks with Self-Attention for Complex SQL Generation .388.....	<i>Miaomiao Hong (Beijing University of Posts and Telecommunications), Bin Wu (Beijing University of Posts and Telecommunications), Bai Wang (Beijing University of Posts and Telecommunications), and Pengpeng Zhou (Beijing University of Posts and Telecommunications)</i>

Multiscale Emulation Technology Based on the Integration of Virtualization, Physical and Simulation Networks .396.....	
	<i>Yang Chen (Jiangnan University), Guangjie Zhang (Jiangnan University), Dongliang Hu (Jiangnan University), and Qingguang Tao (Jiangnan University)</i>
Short-Term Traffic Flow Prediction using Attention-Based Long Short-Term Memory Network .403.....	
	<i>Peng Peng (Zhejiang University of Technology), Dongwei Xu (Zhejiang University of Technology; Research Institute, Enjoyor Co.LTD, Hangzhou, China), He Gao (Zhejiang University of Technology), Qi Xuan (Zhejiang University of Technology), Yi Liu (Zhejiang University of Technology), Haifeng Guo (Zhejiang University of Technology; Research Institute, Enjoyor Co.LTD, Hangzhou, China), and Defeng He (Zhejiang University of Technology)</i>
Hot Event Detection for Social Media Based on Keyword Semantic Information .410.....	
	<i>Zexuan Yu (Beijing University of Posts and Telecommunications), Xu Wu (Beijing University of Posts and Telecommunications), Xiaqing Xie (Beijing University of Posts and Telecommunications), and Jin Xu (Beijing University of Posts and Telecommunications)</i>
A Simple but Effective Way to Improve the Performance of RNN-Based Encoder in Neural Machine Translation Task .416.....	
	<i>Yan Liu (Hebei University of Science and Technology), Dongwen Zhang (Hebei University of Science and Technology), Lei Du (Hebei University of Science and Technology), Zhaoquan Gu (Guangzhou University), Jing Qiu (Guangzhou University), and Qingji Tan (Heilongjiang State Farm Science Technology Vocational College)</i>
A Weakness Relevance Evaluation Method Based on PageRank .422.....	
	<i>Yanan Du (Beijing University of Posts and Telecommunications) and Yueming Lu (Beijing University of Posts and Telecommunications)</i>

## **Multi-source Network Fusion and Analysis (MSNFA 2019)**

Analysis of the Influence of Individual Web Behavior Pattern on Group Behavior Simulation .428.....	
	<i>Jingjing Li (Harbin Institute of Technology), Yang Liu (Harbin Institute of Technology), Hongri Liu (Harbin Institute of Technology), Bailing Wang (Harbin Institute of Technology), Wei Wang (Harbin Institute of Technology), and Lianhai Wang (Qilu University of Technology (Shandong Academy of Science)Park Co., Ltd)</i>
BICON:Connecting the Same Users of Different Social Networks using BiLSTM .432.....	
	<i>Hao Wang (National University of Defense Technology), Bin Zhou (National University of Defense Technology), Jiuming Huang (Hunan Singhand Intelligent Data Technology), Yunxuan Liu (National University of Defense Technology), Xinping Zheng (National University of Defense Technology), and Weihong Han (Guangzhou University, Institute of Electronic and Information Engineering of UESTC in Guangdong)</i>

A Topic Mining Method for Multi-source Network Public Opinion Based on Improved Hierarchical Clustering .439.....	439
<i>Yue Cai (Beijing University of Posts and Telecommunications), Xu Wu (Beijing University of Posts and Telecommunications), Xiaqing Xie (Beijing University of Posts and Telecommunications), and Jin Xu (Beijing University of Posts and Telecommunications)</i>	
Hybrid Text Topic Discovery Method for Multi-source Information .445.....	445
<i>Xinzhe Wang (Beijing University of Posts and Telecommunications), Xu Wu (Beijing University of Posts and Telecommunications), Xiaqing Xie (Beijing University of Posts and Telecommunications), and Jin Xu (Beijing University of Posts and Telecommunications)</i>	
Machine Learning Assisted Content Delivery at Edge of Mobile Social Networks .453.....	453
<i>Yu Tao (Peking University), Kaigui Bian (Peking University), Chengliang Gao (Peking University), Yuanxing Zhang (Peking University), Lingyang Song (Peking University), and Shaolin Dong (Fibonacci Data Consulting Services Inc)</i>	
Community Preserving Node Embedding Based on Seed-Expansion Sampling .459.....	459
<i>Yilin Yang (Beijing University of Posts and Telecommunications), Nianwen Ning (Beijing University of Posts and Telecommunications), Yunlei Zhang (Beijing University of Posts and Telecommunications), and Bin Wu (Beijing University of Posts and Telecommunications)</i>	
A Method of Conflict Detection for Security Policy Based on B+ Tree .466.....	466
<i>Xueting Luo (Beijing University of Posts and Telecommunications) and Yueming Lu (Beijing University of Posts and Telecommunications)</i>	

## **Vulnerability Analysis and Adversarial Learning (VAAL 2019)**

A Black-Box Approach to Generate Adversarial Examples Against Deep Neural Networks for High Dimensional Input .473.....	473
<i>Chengru Song (Beijing University of Posts and Telecommunications), Changqiao Xu (Beijing University of Posts and Telecommunications), Shujie Yang (Beijing University of Posts and Telecommunications), Zan Zhou (Beijing University of Posts and Telecommunications), and Changhui Gong (Beijing University of Posts and Telecommunications)</i>	
A Structure-Based De-Anonymization Attack on Graph Data Using Weighted Neighbor Match .480.....	480
<i>Junbin Fang (National University of Defense Technology), Aiping Li (National University of Defense Technology), Qianyu Jiang (National University of Defense Technology), Shudong Li (Guangzhou University), and Weihong Han (Guangzhou University)</i>	
Botnet Detection Method Based on Artificial Intelligence .487.....	487
<i>Zihui Guo (China Mobile Research Institute), Jin Peng (China Mobile Research Institute), Jun Fu (China Mobile Research Institute), Yexia Cheng (University of Chinese Academy of Sciences), and Cancan Chen (China Mobile Research Institute)</i>	
Construction of Cyber Range Network Security Indication System Based on Deep Learning .495.....	495
<i>Haitian Liu (National University of Defense Technology), Weihong Han (Cyberspace Institute of Advanced Technology, Guangzhou University, Institute of Electronic and Information Engineering of UESTC in Guangdong), and Yan jia (National University of Defense Technology)</i>	

Formal Verification of 5G-EAP-TLS Authentication Protocol .503.....	
	<i>Jingjing Zhang (Army Engineering University of PLA), Qiang Wang (National Key Laboratory of Science and Technology on Information System Security), Lin Yang (National Key Laboratory of Science and Technology on Information System Security), and Tao Feng (National Key Laboratory of Science and Technology on Information System Security)</i>
FSM-Based Cyber Security Status Analysis Method .510.....	
	<i>Yulu Qi (National University of Defense Technology), Jincheng Zhong (National University of Defense Technology), Rong Jiang (National University of Defense Technology), Yan Jia (National University of Defense Technology), Aiping Li (National University of Defense Technology), Li Huang (Hunan Institute of Traffic Engineering), and Weihong Han (Guangzhou University)</i>
Intrusion Detection Results Analysis Based on Variational Auto-Encoder .516.....	
	<i>Haocheng Xie (National University of Defense Technology), Aiping Li (National University of Defense Technology), Rong Jiang (National University of Defense Technology), Yan Jia (National University of Defense Technology), Li Huang (Department of High-Tech Research Hunan Institute of Traffic Engineering), and Weihong Han (Guangzhou University Institute of Electronic and Information Engineering of UESTC in Guangdong)</i>
Research on Evaluation Index System for Software Vulnerability Analysis Methods .522.....	
	<i>Jin Li (National Key Laboratory of Science and Technology on Information System Security, Beijing, China), Min-Huan Huang (National Key Laboratory of Science and Technology on Information System Security, Beijing, China), Shuai-Bing Lu (National Key Laboratory of Science and Technology on Information System Security, Beijing, China), Hu Li (National Key Laboratory of Science and Technology on Information System Security, Beijing, China), and Jin-Fu Chen (National Key Laboratory of Science and Technology on Information System Security, Beijing, China)</i>
VMRe: A Reverse Framework of Virtual Machine Protection Packed Binaries .528.....	
	<i>Jie Lin (Harbin Institute of Technology, Shenzhen), Chuanyi Liu (Harbin Institute of Technology, Shenzhen), Xinyi Zhang (The Chinese University of Hong Kong, Shenzhen), Rongfei Zhuang (Harbin Institute of Technology, Shenzhen), and Binxing Fang (Chinese Academy of Engineering)</i>
A Novel Text Classification Approach Based on Word2vec and TextRank Keyword Extraction .536.....	
	<i>Shouyou Song (Zhejiang Lab), Zhongru Wang (Zhejiang Lab), Shuai Xu (Institute of Systems Engineering Academy of Military Sciences), Shice Ni (Investigation Technology Center, PLCCMC), and Jia Xiao (Beijing University of Posts and Telecommunications)</i>
A Detection Method Based on K-Cores Algorithm for Abnormal Processes in the Server .544.....	
	<i>Jing Du (Luoyang Electronic Equipment Test Center of China), Fujiang Ao (Academy of Military Sciences), Yaxin Zhao (Luoyang Electronic Equipment Test Center of China), and Yinglong Liu (Luoyang Electronic Equipment Test Center of China)</i>

Kernel Vulnerability Analysis: A Survey .549.....  
*Shuaibing Lu (National Key Laboratory of Science and Technology on Information System Security), Zhechao Lin (National Key Laboratory of Science and Technology on Information System Security), and Ming Zhang (National Key Laboratory of Science and Technology on Information System Security)*

## **Virtual Narration and User Experience Design Analysis (VNUEDA 2019)**

An Empirical Study on Expectation of Relationship Between Human and Smart Devices—With Smart Speaker as an Example .555.....  
*Shilong Wu (Baidu AI Interaction Design Lab), Sinan He (Baidu AI Interaction Design Lab), Yu Peng (Baidu AI Interaction Design Lab), Weiying Li (Baidu AI Interaction Design Lab), Moli Zhou (Baidu AI Interaction Design Lab), and Daisong Guan (Baidu AI Interaction Design Lab)*

Facial Movements Recognition Using Multichannel EMG Signals .561.....  
*Lin Shao (Shan Dong University of Arts, Jinan, China)*

Narratology-Based Interaction Design of 3D Reconstructed Cultural Relics .567.....  
*Xiaomei Nie (Tsinghua University), Shunru Li (Tsinghua University), Chun Yuan (Tsinghua University), Qifang Cao (Tsinghua University), Mingchun Wang (Tsinghua University), Wenlong Liu (Tsinghua University), and Maomao Li (Tsinghua University)*

Research on the Application of Chinese Traditional Patterns Innovation and Development Based on Interactive Media .575.....  
*Jianzhi Xie (Beijing Film Academy), Xumeng Liu (Beijing Film Academy), Jing Li (Beijing Film Academy), and Ling Zou (Beijing Film Academy)*

Study on Digital Chromatography of Fahai Temple Frescoes in Ming Dynasty Based on Visualization .581.....  
*Yali Zhang (Capital Normal University, Beijing, China), Yingqing Xu (Tsinghua University), Shufan Li (Capital Normal University, Beijing, China), and Fangya Deng (Capital Normal University, Beijing, China)*

A Hybrid Packet Classification Algorithm Based on Hash Table and Geometric Space Partition .587.....  
*Jiamin Huang (Beijing University of Posts and Telecommunications), Yueming Lu (Beijing University of Posts and Telecommunications), and Kun Guo (Beijing University of Posts and Telecommunications)*

Efficient Randomized Hierarchy Construction for Interactive Visualization of Large Scale Point Clouds .593.....  
*Lai Kang (National University of Defense Technology), Jie Jiang (National University of Defense Technology), Yingmei Wei (National University of Defense Technology), and Yuxiang Xie (National University of Defense Technology)*

## Data Analysis for Bridging Cyber-Real Spaces (DA4BS2 2019)

Blockchain Based Fine-Grained and Scalable Access Control for IoT Security and Privacy .598.....	
<i>Shuang Sun (Institute of Microelectronics of Chinese Academy of Sciences), Shudong Chen (Institute of Microelectronics of Chinese Academy of Sciences), Rong Du (Institute of Microelectronics of Chinese Academy of Sciences), Weiwei Li (Institute of Microelectronics of Chinese Academy of Sciences), and Donglin Qi (Institute of Microelectronics of Chinese Academy of Sciences)</i>	
UAV-Based Motion Target Detection and Tracking Method in Dynamic Scenes .604.....	
<i>Guodong Yang (Hangzhou Dianzi University), Jianhai Zhang (Hangzhou Dianzi University), Li Zhu (Xiamen University), Weitao Huan (Hangzhou Dianzi University), Guang Lin (Hangzhou Dianzi University), and Zheng Ma (Hangzhou Chuangjiang Information Technology Co. Ltd.)</i>	
Accurate Object Recognition for Unmanned Aerial Vehicle Electric Power Inspection using an Improved YOLOv2 Algorithm .610.....	
<i>Qiang Chen (Hangzhou Dianzi University), Yunyuan Gao (Hangzhou Dianzi University), Yun Peng (University of Houston), Jianhai Zhang (Hangzhou Dianzi University), and Ke Sun (Information Technology Co. Ltd.)</i>	
A Survey: Cloud Data Security Based on Blockchain Technology .618.....	
<i>Hang Xu (Tianjin University of Technology), Jing Cao (Tianjin Information System Security and Confidentiality Evaluation Center), Jian Zhang (Tianjin University of Technology), Liangyi Gong (Tsinghua University), and Zhaojun Gu (Civil Aviation University of China)</i>	
Uncertain Complex Event Processing Based on Markov Logical Networks .625.....	
<i>Yongheng Wang (Research Center of Cyberspace Big Search Zhejiang Lab), Zengwang Wang (Hunan University), Lijie Liu (Xinjiang Military General Hospital), and Xiaozan Zhang (Hunan University)</i>	
Analyzing the Cross-Sector Sharing of Government Data Based on the Niche Theory .630.....	
<i>Min Sun (Peking University), Yu Zhang (No. 51 Beiwa Xili, Haidian District), and Xiao Sun (School of Systems Engineering Academy of Military Science, China)</i>	
<b>Author Index 635</b> .....	