

**2023 IEEE Intl Conf on Parallel & Distributed  
Processing with Applications, Big Data &  
Cloud Computing, Sustainable Computing &  
Communications, Social  
Computing & Networking  
(ISPA/BDCLOUD/SocialCom/SustainCom 2023)**

**Wuhan, China  
21 – 24 December 2023**

**Pages 1-586**



IEEE Catalog Number: CFP2352Z-POD  
ISBN: 979-8-3503-2923-0

**Copyright © 2023 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:	CFP2352Z-POD
ISBN (Print-On-Demand):	979-8-3503-2923-0
ISBN (Online):	979-8-3503-2922-3

**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

**2023 IEEE Intl Conf on Parallel  
& Distributed Processing with  
Applications, Big Data &  
Cloud Computing,  
Sustainable Computing &  
Communications, Social  
Computing & Networking  
(ISPA/BDCloud/SocialCom/Su  
stainCom)**

**ISPA-BDCloud-SocialCom-  
SustainCom-SpaCCS 2023**

**Table of Contents**

Message from the ISPA 2023 General Chairs .....	xxix
Message from the ISPA 2023 Program Chairs .....	xxx
ISPA 2023 Organizing Committee .....	xxxi
ISPA 2023 Steering Committee .....	xxxiii
ISPA 2023 Program Committee .....	xxxiv
ISPA 2023 Reviewers .....	xxxvi
Message from the BDCloud 2023 General Chairs .....	xliii
Message from the BDCloud 2023 Program Chairs .....	xliv
BDCloud 2023 Organizing Committee .....	xlv
BDCloud 2023 Steering Committee .....	xlvii
BDCloud 2023 Reviewers .....	xlviii
Message from the SocialCom 2023 General Chair .....	li
Message from the SocialCom 2023 Program Chairs .....	lii
SocialCom 2023 Organizing Committee .....	liii
SocialCom 2023 Steering Committee .....	lv
SocialCom 2023 Program Committee .....	lvi
SocialCom 2023 Reviewers .....	lvii
Message from the SustainCom 2023 General Chairs .....	lx
Message from the SustainCom 2023 Program Chairs .....	lxi
SustainCom 2023 Organizing Committee .....	lxii
SustainCom 2023 Steering Committee .....	lxiii
SustainCom 2023 Reviewers .....	lxiv
Message from the SpaCCS 2023 General Chairs .....	lxvii

Message from the SpaCCS 2023 Program Chairs .....	lxviii
SpaCCS 2023 Organizing Committee .....	lxix
SpaCCS 2023 Steering Committee .....	lxxi
SpaCCS 2023 Reviewers .....	lxxii
Sponsors .....	lxxv

## ISPA 2023

### Systems and Architectures Track

FC+: Near-Optimal Deadlock-Free Expander Data Center Networks .....	1
<i>Xiao Zhang (Shanghai Jiao Tong University), Peirui Cao (Shanghai Jiao Tong University), Yongxi Lyu (Shanghai Jiao Tong University), Qizhou Zhang (Shanghai Jiao Tong University), Shizhen Zhao (Shanghai Jiao Tong University), Xinbing Wang (Shanghai Jiao Tong University), and Chenghu Zhou (Chinese Academy of Sciences; Shanghai Jiao Tong University)</i>	
Time Fairness-Based Application Offloading in Mobile Edge Computing with Individual QoS Guarantee .....	10
<i>Mengwei Xie (Shandong University, China), Lizhen Cui (Shandong University, China), Jianxiong Liu (Aerospace Science &amp; Industry Network Information Development Co. LTD, China), Wei Guo (Shandong University, China), and Feng Li (Shandong University, China)</i>	
DySched: Relieving Large-Scale Incast for Cloud-Native RDMA Applications .....	18
<i>Jiejian Wu (Shanghai Jiao Tong University, China), Zhe Wang (Shanghai Jiao Tong University, China), Teng Ma (Alibaba Group, China), Linghe Kong (Shanghai Jiao Tong University, China), Yutong Liu (Shanghai Jiao Tong University, China), Zhuo Song (Alibaba Group &amp; Shanghai Jiao Tong University, China), Jiadi Yu (Shanghai Jiao Tong University, China), Yong Yang (Alibaba Group, China), Tao Ma (Alibaba Group, China), and Guihai Chen (Shanghai Jiao Tong University, China)</i>	
Hierarchical Sketch: An Efficient Solution for Threshold-t Flows Measurement in High-Speed Networks .....	26
<i>Yifan Han (Soochow University, China), He Huang (Soochow University, China), Yang Du (Soochow University, China), Yu-E Sun (Soochow University, China), Jia Liu (State Key Laboratory for Novel Software Technology, Nanjing University, China), and Hongli Xu (University of Science and Technology of China, China)</i>	
ADSwitch: Adaptive CPU Scheduling for Distributed Systems .....	34
<i>Yidong Zhong (South China Normal University, China), Yang Ao (South China Normal University, China), Dingding Li (South China Normal University, China), Jianguo Li (South China Normal University, China), and Deze Zeng (China University of Geosciences, China)</i>	

A Decentralized Vehicle-to-Vehicle Energy Trading System Based on Efficient Sharding Services .....	42
<i>Kun Meng (Qingdao University of Science and Technology, China), Lijun Sun (Qingdao University of Science and Technology, China), Xiao Chen (University of Leicester, UK), Haiqin Wu (East China Normal University, China), and Shuaiyong Li (Key Laboratory of Industrial Internet of Things and Networked Control, Ministry of Education, China)</i>	
K-Means++ and Reinforcement Learning-Based Clustering Method to Achieve Energy Efficiency in Underwater Acoustic Sensor Networks .....	50
<i>Tao Xiong (South-Central Minzu University, China), Rui Hou (South-Central Minzu University, China), Lingyun Zhou (South-Central Minzu University, China), Guanglin Xing (South-Central Minzu University, China), and Deze Zeng (China University of Geosciences, China)</i>	
FedEntropy: Efficient Federated Learning for Non-IID Scenarios Using Maximum Entropy Judgment-Based Client Selection .....	56
<i>Zhiwei Ling (East China Normal University, China), Zhihao Yue (East China Normal University, China), Jun Xia (East China Normal University, China), Ting Wang (East China Normal University, China), Mingsong Chen (East China Normal University, China), and Xiang Lian (Kent State University, USA)</i>	
Secure, Efficient, and Privacy-Protecting One-to-Many Cross-Chain Shared Data Consistency Audit .....	64
<i>Dan Li (Nanjing University of Aeronautics and Astronautics, China), Panpan Ding (Nanjing University of Aeronautics and Astronautics, China), Yuqian Zhou (Nanjing University of Aeronautics and Astronautics, China), Yuguang Yang (Beijing University of Technology, China), and Chenting Li (Nanjing University of Aeronautics and Astronautics, China)</i>	
Traceable Ring Signature Scheme in Internet of Vehicles Based on Lattice Cryptography .....	72
<i>Wei Liao (Huazhong University of Science and Technology, China), Lansheng Han (Huazhong University of Science and Technology, China), and Peng Chen (Huazhong University of Science and Technology, China)</i>	
DRAS: A Scheduling Algorithm for Cloud-Based DAG with Deadline Constraints .....	80
<i>Wei Zheng (University of Xiamen, China), Jinglong Deng (University of Xiamen, China), Zihan Nan (University of Beijing Jiaotong, China), Peixuan Lin (University of Xiamen, China), and Yue Hong (University of Xiamen, China)</i>	
Economical Electricity Supplement for Mobile Collectors in Large-Scale Multitask WSNs .....	88
<i>Xin Zhai (Nanjing University of Posts and Telecommunications, China), Lijie Xu (Nanjing University of Posts and Telecommunications, China), Jialei Zhang (Nanjing University of Posts and Telecommunications, China), Kun Wang (Nanjing University of Posts and Telecommunications, China), Jia Xu (Nanjing University of Posts and Telecommunications, China), and Bei Xu (Nanjing University of Posts and Telecommunications, China)</i>	

Predictive Queue-Based Low Latency Congestion Detection in Data Center Networks .....	96
<i>Pingping Dong (Hunan Normal University, China), Xiaojuan Lu (Hunan Normal University, China), Tairan Huang (Hunan Normal University, China), Liying Chen (Hunan Normal University, China), Yang Yang (Hunan Normal University, China), and Lianming Zhang (Hunan Normal University, China)</i>	
VSNT: Adaptive Network Traffic Forecasting via VMD and Deep Learning with SCI-Block and Attention Mechanism .....	104
<i>Pingping Dong (Hunan Normal University, China), Yuning Zuo (Hunan Normal University, China), Liying Chen (Hunan Normal University, China), Shangyu Li (Hunan Normal University, China), and Lianming Zhang (Hunan Normal University, China)</i>	
Constructing Future Vehicle Digital Twins with Insights from Cloud-Edge Collaboration .....	110
<i>Xin Shi (Shenyang Aerospace University, China), Liang Zhao (Shenyang Aerospace University, China), Na Lin (Shenyang Aerospace University, China), Lexi Xu (China Unicom, China), Ammar Hawbani (Shenyang Aerospace University, China), and Yuanguo Bi (Northeastern University, China)</i>	
Data Quality Assessment in Mobile Crowdsensing by Utilizing Psychology Effect .....	118
<i>Zhehao Cheng (Wuhan University of Science and Technology, China), Jiaoyan Chen (Wuhan University of Science and Technology, China), Jin Liu (Wuhan University of Science and Technology, China), and Mengyang Li (Wuhan University of Science and Technology, China)</i>	
Ensuring Minority Group Rights in Social IoT with Fairness-Aware Federated Graph Node Classification .....	125
<i>Qinghua Mao (Shanghai Jiao Tong University, China), Xi Lin (Shanghai Jiao Tong University; Shanghai Key Laboratory of Integrated Administration Technologies for Information Security, China), Gaolei Li (Shanghai Jiao Tong University; Shanghai Key Laboratory of Integrated Administration Technologies for Information Security, China), Lixing Chen (Shanghai Jiao Tong University; Shanghai Key Laboratory of Integrated Administration Technologies for Information Security, China), Yuchen Liu (North Carolina State University, USA), Yuxin Qi (Shanghai Jiao Tong University; Shanghai Key Laboratory of Integrated Administration Technologies for Information Security, China), and Jianhua Li (Shanghai Jiao Tong University; Shanghai Key Laboratory of Integrated Administration Technologies for Information Security, China)</i>	
All-Pairs SimRank Updates on Dynamic Graphs .....	131
<i>Liangfu Zhang (Renmin University of China, Engineering Research Center of Database and Business Intelligence, China), Cuiping Li (Renmin University of China, Key Laboratory of Data Engineering and Knowledge Engineering, China), Chuanwen Luo (Beijing Forestry University, China), and Hong Chen (Key Laboratory of Data Engineering, Renmin University of China, China)</i>	
Localization and Tracking Using ODE-LSTM Algorithm with Non-Line-of-Sight Channels .....	139
<i>Xiao Zhao (Nanjing University of Posts and Telecommunications, China), Feng Tian (Nanjing University of Posts and Telecommunications, China), and Ziling Shao (Nanjing University of Posts and Telecommunications, China)</i>	

Fine-Grained IoT Device Identification Method Based on Self-Supervised ViT .....	145
<i>Kai Peng (Huazhong University of Science and Technology, China), Tong Lu (Huazhong University of Science and Technology, China), Song Mei (Huazhong University of Science and Technology, China), Nannan Xue (Huazhong University of Science and Technology, China), Yongchao Shen (Huazhong University of Science and Technology, China), and Menglan Hu (Huazhong University of Science and Technology, China)</i>	
Deep Reinforcement Learning Based Dynamic Channel Bonding for Wi-Fi Networks .....	153
<i>Hao Chen (Xiamen University, China), Peng Liu (Wireless Technology Lab, 2012 Laboratories, Huawei Technologies Co., Ltd, China), Lizhao You (Xiamen University, China; Shenzhen Research Institute of Xiamen University, China), Ziyang Guo (Wireless Technology Lab, 2012 Laboratories, Huawei Technologies Co., Ltd, China), Jiajun Luo (Wireless Technology Lab, 2012 Laboratories, Huawei Technologies Co., Ltd, China), Xinghua Sun (Sun Yat-sen University, China), Taotao Wang (Shenzhen University, China), and Liqun Fu (Xiamen University, China)</i>	
A Genetic Algorithm Based Adaptive Offloading Scheme for Domain Generalization in VEC .....	161
<i>Tianyu Li (Shenyang Aerospace University, China), Liang Zhao (Shenyang Aerospace University, China), Chaojin Mao (Shenyang Aerospace University, China), Na Lin (Shenyang Aerospace University, China), Qiang He (Northeastern University, China), and Xingwei Wang (Northeastern University, China)</i>	
Lightweight Security Authentication Scheme for Vehicle-Road Collaboration Using Physical Unclonable Function .....	169
<i>Zhuoqun Xia (Changsha University of Science and Technology, China), Chao Su (Changsha University of Science and Technology, China), Zisang Xu (Changsha University of Science and Technology, China), and Kejun Long (Hunan Key Laboratory of Smart Roadway and Cooperative Vehicle-Infrastructure Systems, China)</i>	
An Edge-Oriented Deep Learning Model Security Assessment Framework .....	175
<i>Pengbo Wang (Central South University, China), Boyin Zhang (Central South University, China), Shigeng Zhang (Central South University, China), and Xuan Liu (Hunan University, China)</i>	
Partitioning-Based Active Trust Mechanism in Cloud-Edge-Device Collaborative Data Collection .....	183
<i>Zhuoqun Xia (Changsha University of Science and Technology, China), Ziyu Wang (Changsha University of Science and Technology, China), and Xiao Liu (Guangxi University, Nanning, China)</i>	
Preserving Privacy of Input Features Across All Stages of Collaborative Learning .....	191
<i>Jianrong Lu (Huazhong University of Science and Technology, China), Lulu Xue (Huazhong University of Science and Technology, China), Wei Wan (Huazhong University of Science and Technology, China), Minghui Li (Huazhong University of Science and Technology, China), Leo Yu Zhang (Griffith University, Australia), and Shengqing Hu (Huazhong University of Science and Technology, China)</i>	
Adaptive Splitting Algorithm for Neural Network Modelling in AMP .....	199
<i>Kaifei Zhang (Henan University, China), Yuxiang Ma (Henan University, China), Yulei Wu (University of Bristol, UK), Tao Chen (Henan University, China), and Huijie Ma (Henan University, China)</i>	

Adaboost-Based Graph Convolutional Networks with Channel Attention for Intrusion Detection in Internet-of-Things .....	207
<i>Jing Long (Hunan Normal University, China), Cuiting Luo (Hunan Normal University, China), Ruxin Chen (Hunan Normal University, China), Wei Liang (Hunan University of Science and Technology, China), and Zheng Qin (Hunan University, China)</i>	
Joint Request Offloading and Resource Allocation for Energy Efficient D2D Enabled Multi-Type Inference Services .....	213
<i>Ziyu Zeng (Guangdong University of Technology, China), Jiale Huang (Guangdong University of Technology, China), Jiixin Wu (Guangdong University of Technology, China), and Jigang Wu (Guangdong University of Technology, China)</i>	
Libra: A Space-Efficient, High-Performance Inline Deduplication for Emerging Hybrid Storage System .....	221
<i>Tianmeng Zhang (Xiamen University, China), Renhui Chen (Xiamen University, China), Congming Gao (Xiamen University, China), Youtao Zhang (University of Pittsburgh, USA), Jun Yang (University of Pittsburgh, USA), and Jiwu Shu (Xiamen University, China)</i>	
VLEO Satellite Radio Access Network Slicing: A Hierarchical Deep Reinforcement Learning Approach .....	229
<i>Juan Luo (Hunan University, China), Ruoyu Xiao (Hunan University, China), Peng Sun (Hunan University, China), and Ying Qiao (Hunan University, China)</i>	
Exploring Imbalances Among Microservice Containers in Large Cloud Platforms .....	237
<i>Chenyu Lin (University of Macau, Macau SAR), Shutian Luo (Yale University, United States), and Huanle Xu (University of Macau, Macau SAR)</i>	
Efficient Node Selection for Coding-Based Timely Computation over Heterogeneous Systems .....	246
<i>Yuxuan Lin (Hohai University, China), Bin Tang (Hohai University, China), Siyuan Zhou (Hohai University, China), Zaipeng Xie (Hohai University, China), and Baoliu Ye (Hohai University, China)</i>	
Parallel and Batch Multiple Replica Auditing Protocol for Edge Computing .....	254
<i>Yi Li (Nanjing University of Information Science and Technology, China), Wenyong Zheng (Zhejiang Sci-Tech University), Vijayakumar Pandi (University College of Engineering Tindivanam, Anna University Chennai, India), Md Zakirul Alam Bhuiyan (Fordham University, USA), and C. Thamilarasu (P.S.V College of Engineering and Technology Krishnagiri, India)</i>	



Discrete Geometric Coded Data Layout for Large-Scale Object Storage Systems .....	262
<i>Yi Tian (Tianjin University of Technology; Tianjin Key Laboratory of Intelligence Computing and Novel Software Technology; Key Laboratory of Computer Vision and System, Ministry of Education, China), Guangping Xu (Tianjin University of Technology; Tianjin Key Laboratory of Intelligence Computing and Novel Software Technology; Key Laboratory of Computer Vision and System, Ministry of Education, China), Hongzhang Yang (Tianjin University of Technology; Tianjin Key Laboratory of Intelligence Computing and Novel Software Technology; Key Laboratory of Computer Vision and System, Ministry of Education, China), Yue Ni (Tianjin University of Technology; Tianjin Key Laboratory of Intelligence Computing and Novel Software Technology; Key Laboratory of Computer Vision and System, Ministry of Education, China), Jiaxin Cao (Tianjin University of Technology; Tianjin Key Laboratory of Intelligence Computing and Novel Software Technology; Key Laboratory of Computer Vision and System, Ministry of Education, China), and Lei Yang (Roycom (Tianjin) Information Technology Co., Ltd.)</i>	

## Technologies and Tools Track

FinD: Fine-Grained Dynamic Task Scheduling with Lightweight Threads on Many-Core Processors .....	270
<i>Nan Hu (Sun Yat-sen University, China), Chenglu Yan (Sun Yat-sen University, China), Zhiguang Chen (Sun Yat-sen University, China), and Yutong Lu (Sun Yat-sen University, China)</i>	
Software and Hardware Processing Method for Blockchain Light Node SPV Verification .....	279
<i>Zhan'gang Ma (Peking University, China), Jiandong Yan (Ruiyuan Venture Capital Co., Ltd, Changzhou Zhonglou Jinlong Holding Group, China), Feng Zou (Peking University, China), and Xixin Cao (Peking University, China)</i>	
The Instruction Separation Framework Against Man-At-The-End Attacks: Protect What is Mattered On-the-Fly .....	286
<i>Jiaxuan Wu (Technical University of Denmark, Denmark), Wei-Yang Chiu (Technical University of Denmark, Denmark), Peichen Liu (Technical University of Denmark, Denmark), Weizhi Meng (Technical University of Denmark, Denmark), and Wenjuan Li (Guangzhou University; The Education University of Hong Kong, China)</i>	
Reducing Latency of DAG-Based Consensus in the Asynchronous Setting via the UTXO Model ....	294
<i>Keyang Liu (The University of Tokyo), Maxim Jourenko (Tokyo Institute of Technology), and Mario Larangeira (Tokyo Institute of Technology/IOG)</i>	

GANDPS: Ensuring Both Detection Precision and Stability in GAN-Based Anomaly Detection for Network Traffic .....	305
<i>Liuhuan Li (South-Central Minzu University; Key Laboratory of Cyber-Physical Fusion Intelligent Computing, State Ethnic Affairs Commission, China), Ximin Yang (South-Central Minzu University; Key Laboratory of Cyber-Physical Fusion Intelligent Computing, State Ethnic Affairs Commission, China), Xiao Zhang (South-Central Minzu University; Key Laboratory of Cyber-Physical Fusion Intelligent Computing, State Ethnic Affairs Commission, China), Yumeng Yang (South-Central Minzu University; Key Laboratory of Cyber-Physical Fusion Intelligent Computing, State Ethnic Affairs Commission, China), Xuefeng Chen (China Telecom Group, GuiZhou Co., Ltd., China), and Wan Tang (South-Central Minzu University; Key Laboratory of Cyber-Physical Fusion Intelligent Computing, State Ethnic Affairs Commission, China)</i>	
Defending T-BFA in DNNs Efficiently via Random Security-Sensitive Weights Switching .....	311
<i>Xiaohui Wei (Jilin University, China), Yumin Yan (Jilin University, China), Xiaonan Wang (Jilin University, China), Yi Hu (Jilin University, China), and Hengshan Yue (Jilin University, China)</i>	
Parallel Integrity Authentication Data Structure Construction for Encrypted Range Queries .....	319
<i>Zhaokang Wang (Nanjing University of Aeronautics and Astronautics, China), Jiahui Pan (Nanjing University of Aeronautics and Astronautics, China), Lu Zhou (Nanjing University of Aeronautics and Astronautics, China), Zhonghui Zhang (Nanjing University of Aeronautics and Astronautics, China), and Caocong Ji (Nanjing University of Aeronautics and Astronautics, China)</i>	
Evaluating Performance Portability of SYCL and Kokkos: A Case Study on LBM Simulations .....	328
<i>Yue Ding (Institute for Quantum Information &amp; State Key Laboratory of High Performance Computing, National University of Defense Technology, China), Chuanfu Xu (Institute for Quantum Information &amp; State Key Laboratory of High Performance Computing, National University of Defense Technology, China), Haozhong Qiu (Institute for Quantum Information &amp; State Key Laboratory of High Performance Computing, National University of Defense Technology, China), Qingsong Wang (Institute for Quantum Information &amp; State Key Laboratory of High Performance Computing, National University of Defense Technology, China), Weixi Dai (Institute for Quantum Information &amp; State Key Laboratory of High Performance Computing, National University of Defense Technology, China), Yongzhen Lin (Institute for Quantum Information &amp; State Key Laboratory of High Performance Computing, National University of Defense Technology, China), and Yonggang Che (Institute for Quantum Information &amp; State Key Laboratory of High Performance Computing, National University of Defense Technology, China)</i>	

A Moving Target Defense Approach for the Distributed Dynamic Network .....	336
<i>Lin Zhang (Institute of Information Engineering, Chinese Academy of Sciences; University of Chinese Academy of Sciences, China), Yunchuan Guo (Institute of Information Engineering, Chinese Academy of Sciences; University of Chinese Academy of Sciences, China), Siyuan Leng (Institute of Information Engineering, Chinese Academy of Sciences, China), Zifu Li (Institute of Information Engineering, Chinese Academy of Sciences; University of Chinese Academy of Sciences, China), Fenghua Li (Institute of Information Engineering, Chinese Academy of Sciences; University of Chinese Academy of Sciences, China), and Liang Fang (Institute of Information Engineering, Chinese Academy of Sciences; University of Chinese Academy of Sciences, China)</i>	
Low-Overhead Privacy-Preserving Location-Based Skyline Query .....	344
<i>Yubo Peng (University of Electronic Science and Technology of China, China), Xiong Li (University of Electronic Science and Technology of China, China), Shuai Shang (University of Electronic Science and Technology of China, China), Xiaofen Wang (University of Electronic Science and Technology of China, China), and Xiaosong Zhang (University of Electronic Science and Technology of China, China)</i>	
A BPF-Based Task Scheduling Scheme for Heterogeneous Multiprocessor Systems .....	352
<i>Jing Li (Shanghai Jiao Tong University, China), Peihao Yang (Yunnan Dali Research Institute of Shanghai Jiao Tong University, China), Linghe Kong (Shanghai Jiao Tong University, China), and Guihai Chen (Shanghai Jiao Tong University, China)</i>	
Joint Resource Placement and Service Replica Placement Scheme in Mobile Edge Computing .....	360
<i>Surafel Kifetew Woldeyes (Central South University, China), Yongmin Zhang (Central South University, China), Wei Wang (Central South University, China), and Zhaohui Li (Central South University, China)</i>	
Cryptanalysis of Space-Hard Ciphers Under Strong White-Box Security .....	368
<i>Bin Li (South China Normal University, China), Yufeng Tang (South China Normal University, China), Yupeng Zhang (South China Normal University, China), Hengxing Liu (South China Normal University, China), Di Li (South China Normal University, China), and Zheng Gong (South China Normal University, China)</i>	
Efficient Differentially Private Tensor Factorization in the Parallel and Distributed Computing Paradigm .....	375
<i>Feng Zhang (China University of Geosciences, China), Hao Wang (China University of Geosciences, China), Ruixin Guo (China University of Geosciences, China), Erkang Xue (China University of Geosciences, China), and Guangzhi Qu (Oakland University, USA)</i>	
Disentangling Client Contributions: Improving Federated Learning Accuracy in the Presence of Heterogeneous Data .....	381
<i>Chunming Liu (Hubei University, China), Daniyal M Alghazzawi (King Abdulaziz University, Saudi Arabia), Li Cheng (Hubei University, China), Gaoyang Liu (Huazhong University of Science and Technology, China), Chen Wang (Huazhong University of Science and Technology, China), Cheng Zeng (Hubei University, China), and Yang Yang (Hubei University, China)</i>	

FedCSA: Boosting the Convergence Speed of Federated Unlearning Under Data Heterogeneity .....	388
<i>Zhen Wang (Hubei University, China), Daniyal M Alghazzawi (King Abdulaziz University, Saudi Arabia), Li Cheng (Hubei University, China), Gaoyang Liu (Huazhong University of Science and Technology, China), Chen Wang (Huazhong University of Science and Technology, China), Cheng Zeng (Hubei University, China), and Yang Yang (Hubei University, China)</i>	
ERODRL: Efficient ISP Routing Optimization via Deep Reinforcement Learning .....	394
<i>Changrui Chen (Kunming University of Science &amp; Technology, China), Xiaolin Chen (Qiongtai Normal University, China), and Deze Zeng (China University of Geosciences, China)</i>	
ProMD: A Proactive Intrusion Response System for Enterprise Network with Multi-Domain .....	402
<i>Siyuan Leng (Institute of Information Engineering, Chinese Academy of Sciences, China; University of Chinese Academy of Sciences, China), Fenghua Li (Institute of Information Engineering, Chinese Academy of Sciences, China; University of Chinese Academy of Sciences, China), Lin Zhang (Institute of Information Engineering, Chinese Academy of Sciences, China; University of Chinese Academy of Sciences, China), Yitong Wen (Institute of Information Engineering, Chinese Academy of Sciences, China; University of Chinese Academy of Sciences, China), Yunchuan Guo (Institute of Information Engineering, Chinese Academy of Sciences, China; University of Chinese Academy of Sciences, China), and Liang Fang (Institute of Information Engineering, Chinese Academy of Sciences, China)</i>	
An Active Security Defense Strategy for Microservices Based on Deep Reinforcement Learning.....	410
<i>Yuanbo Li (PLA Strategic Support Force Information Engineering University; Luoyang Institute of Science and Technology, China), Hongchao Hu (PLA Strategic Support Force Information Engineering University, China), Shuai Zhang (PLA Strategic Support Force Information Engineering University; Purple Mountain Laboratories, China), Guozhen Cheng (PLA Strategic Support Force Information Engineering University, China), and Wenyan Liu (PLA Strategic Support Force Information Engineering University; Purple Mountain Laboratories, China)</i>	
Parallel Implementation of SHA256 on Multizone Heterogeneous Systems .....	416
<i>Yongtao Luo (National University of Defense Technology, China), Jie Liu (National University of Defense Technology, China), Tiaojie Xiao (National University of Defense Technology, China), and Chunye Gong (National University of Defense Technology, China)</i>	
The Adaptive Fault-Tolerant Routing Based on an Improved Local Security Information Model of the Exchanged Hypercube .....	423
<i>Yazhi Zhang (Qilu University of Technology, China), Chuanwen Luo (Beijing Forestry University, China), Guijuan Wang (Qilu University of Technology (Shandong Academy of Sciences); Shandong Fundamental Research Center for Computer Science, China), Li Zhang (Qilu University of Technology (Shandong Academy of Sciences); Shandong Fundamental Research Center for Computer Science, China), Mengjie Lv (Nanjing University of Posts and Telecommunications, China), and Jiguo Yu (Qilu University of Technology (Shandong Academy of Sciences), China)</i>	

DPFCFI: A Hardware-Based Forward Control-Flow Integrity for Architecture and Microarchitecture .....	431
<i>Cairui She (Institute of Information Engineering, Chinese Academy of Sciences; University of Chinese Academy of Sciences, China), Liwei Chen (Institute of Information Engineering, Chinese Academy of Sciences; University of Chinese Academy of Sciences, China), and Gang Shi (Institute of Information Engineering, Chinese Academy of Sciences; University of Chinese Academy of Sciences, China)</i>	
EBFT: Efficient BFT Consensus Through Shortcut Replies .....	439
<i>Qingsheng Lei (State Grid Hubei Electric Power Company Limited), Yongjun Xia (Hubei Central China Technology Development of Electric Power Company Limited), Qitao Guo (State Grid Hubei Electric Power Company Limited), Rui Hao (Nanjing University), Xiaohai Dai (Huazhong University of Science and Technology), and Weiqi Dai (Huazhong University of Science and Technology)</i>	
Trusted Auditing of Data Operation Behaviors in Cloud Based on Blockchain and TEE .....	447
<i>Shujiang Xu (Qilu University of Technology (Shandong Academy of Sciences), China), Fansheng Wang (Qilu University of Technology (Shandong Academy of Sciences), China), Lianhai Wang (Qilu University of Technology (Shandong Academy of Sciences), China), Miodrag J. Mihaljević (the Serbian Academy of Sciences and Arts, Serbia), Shuhui Zhang (Qilu University of Technology (Shandong Academy of Sciences), China), Wei Shao (Qilu University of Technology (Shandong Academy of Sciences), China), and Qihao Huang (Qilu University of Technology (Shandong Academy of Sciences), China)</i>	
Fast 2-out-of-n ECDSA Threshold Signature .....	456
<i>Lin Zhong (New Huo Digital Limited, China), Yujue Wang (Hangzhou Innovation Institute of Beihang University, China), Jun Du (New Huo Digital Limited, China), Daji Liang (New Huo Digital Limited, China), Ziyuan Zhong (New Huo Digital Limited, China), Kevin He (New Huo Digital Limited, China), and Andrew Zhang (New Huo Digital Limited, China)</i>	
Cascade Meta-RCNN for Few-Shot Object Detection .....	466
<i>Shuting Li (Yunnan University, China), Qian Jiang (Yunnan University, China), Xin Jin (Yunnan University, China), Nanqing Liu (Southwest Jiaotong University, China), Shiyu Chen (Yunnan University, China), and Shin-Jye Lee (National Yang Ming Chiao Tung University, China)</i>	
PE-FedAvg: A Privacy-Enhanced Federated Learning for Distributed Android Malware Detection. ....	474
<i>Junwei Tang (Wuhan Textile University, China), Zilong Xu (Wuhan Textile University, China), Luyao Ye (Wuhan Textile University, China), Tao Peng (Wuhan Textile University, China), Ruhan He (Wuhan Textile University, China), Xinrong Hu (Wuhan Textile University, China), and Wenlong Tian (University of South China, China; Nanyang Technological University, Singapore)</i>	

Evaluating Indicator Weights for Satellite Internet Security Assessment: an Approach to Combining Rough Set with Fuzzy Hierarchical Analysis .....	482
<i>Yuming Lu (University of Chinese Academy of Sciences, China), Fenghua Li (University of Chinese Academy of Sciences, China), Yitong Wen (University of Chinese Academy of Sciences, China), Liang Fang (Institute of Information Engineering Chinese Academy of Sciences, China), Shoukun Guo (Institute of Information Engineering Chinese Academy of Sciences, China), and Zifu Li (Institute of Information Engineering Chinese Academy of Sciences, China)</i>	
Deep Reinforcement Learning-Based Network Moving Target Defense in DPDK .....	491
<i>Ke Shang (Institute of Information Technology, Information Engineering University, China), Weizhen He (Institute of Information Technology, Information Engineering University, China), Shuai Zhang (Institute of Information Technology, Information Engineering University, China), Zhen Zhang (Institute of Information Technology, Information Engineering University, China), Jichao Xie (Institute of Information Technology, Information Engineering University, China), and Xin Shi (Institute of Information Technology, Information Engineering University, China)</i>	
SCRA: Systolic-Friendly DNN Compression and Reconfigurable Accelerator Co-Design .....	500
<i>Xun Zhang (Chongqing University, China), ChengLiang Wang (Chongqing University, China), Xingquan Piao (Chongqing University, China), Ao Ren (Chongqing University, China), and ZheTong Huang (Chongqing University, China)</i>	
Efficient Hybrid Fuzzing with Syntax-Aware Input Trim Based on Lightweight Taint Analysis .....	508
<i>Long Gao (Wuhan University; Key Laboratory of Aerospace Information Security and Trusted Computing, Ministry of Education, China), Yiru Zhao (Wuhan University; Key Laboratory of Aerospace Information Security and Trusted Computing, Ministry of Education, China), Qihan Wan (Wuhan University; Key Laboratory of Aerospace Information Security and Trusted Computing, Ministry of Education, China), and Lei Zhao (Wuhan University; Key Laboratory of Aerospace Information Security and Trusted Computing, Ministry of Education, China)</i>	
Enhancing Resource Allocation Efficiency for Collaborative End-Edge Tasks in the Metaverse's Virtual Reality .....	516
<i>Wangsheng Yan (Fujian Normal University, China), Li Lin (Fujian Normal University, China), Ruihong Huang (Fujian Normal University, China), Jinbo Xiong (Fujian Normal University, China), Tianqiang Huang (Fujian Normal University, China), and Mingwei Lin (Fujian Normal University, China)</i>	
Semi-Asynchronous Federated Learning Optimized for NON-IID Data Communication Based on Tensor Decomposition .....	524
<i>Qidong Wu (Hainan University, China), Xuemei Fu (Hainan University, China), Xiangli Yang (Hainan University, China), Ruonan Zhao (Hainan University, China), Chengqian Wu (Hainan University, China), and Tinghua Zhang (Hainan University, China)</i>	

Privacy-Preserving Federated Learning Through Clustered Sampling on Fine-Tuning Distributed non-iid Large Language Models .....	531
<i>Sheng Yun (Fordham University, USA), Zakirul Alam Bhuiyan (Fordham University, USA), Md. Taufiq Al Hasib Sadi (North South University, Bangladesh), and Shen Su (Guangzhou University, China)</i>	

## Applications Track

GPU-Accelerated Maximal Bicliques Mining Framework for Large E-Commerce Networks .....	539
<i>Jingdong Li (East China Normal University; Zhejiang Lab, China), Zhao Li (Zhejiang Lab, China), Xiaoling Wang (East China Normal University, China), Xingjian Lu (East China Normal University, China), Ji Zhang (University of Southern Queensland, Australia), and Hongyang Chen (Zhejiang Lab, China)</i>	
Application Research of Vertical Federated Learning Technology in Banking Risk Control Model Strategy .....	545
<i>Yong Luo (Huazhong University of Science and Technology; China Minsheng Banking Corp., Ltd., China), Zhi Lu (Huazhong University of Science and Technology, China), Xiaofei Yin (China Minsheng Banking Corp., Ltd., China), Songfeng Lu (Huazhong University of Science and Technology; Shenzhen Huazhong University of Science and Technology Research Institute, China), and Yiting Weng (Shu Lun Pan, China)</i>	
A Novel Multi-Scale Spatial Tiling Based Adaptive Streaming Method for 360° Video .....	553
<i>Haipeng Du (Xi'an Jiaotong University, China), Huichuan Liu (Xi'an Jiaotong University, China), Geli Lv (Xi'an Jiaotong University, China), Xin Lv (Xi'an Jiaotong University, China), Zhiwen Wang (Xi'an Jiaotong University, China), and Weizhan Zhang (Xi'an Jiaotong University, China)</i>	
DepotDB: Mitigate Write Amplification with Region Compaction on KV Stores for Periodic Write-Intensive Workloads .....	561
<i>Zhixin Fan (University of Chinese Academy of Sciences; Institute of Information Engineering, Chinese Academy of Sciences, China), Yaohui Zhang (University of Chinese Academy of Sciences, China), Jiang Zhou (Institute of Information Engineering, Chinese Academy of Sciences; University of Chinese Academy of Sciences, China), Bo Li (Institute of Information Engineering, Chinese Academy of Sciences, China), Yong Chen (Texas Tech University, USA), and Weiping Wang (Institute of Information Engineering, Chinese Academy of Sciences, China)</i>	
Graph-Based Multi-View Clustering for Web Services .....	567
<i>Yang Wang (Hunan University of Science and Technology, China), Zhenzhen Yuan (Hunan University of Science and Technology, China), Guosheng Kang (Hunan University of Science and Technology, China), Buqing Cao (Hunan University of Science and Technology, China), JianXun Liu (Hunan University of Science and Technology, China), and Yong Xiao (Hunan University of Science and Technology, China)</i>	
A NUMA-Aware Graph Database for Hybrid Memory System .....	573
<i>Shaoheng Tan (South China Normal University, China), Chang Liu (South China Normal University, China), Dingding Li (South China Normal University, China), Yong Tang (South China Normal University, China), and Deze Zeng (China University of Geosciences, China)</i>	

Deep Reinforcement Learning to Enhance the Energy-Efficient Performance of Unmanned Aerial Vehicles-Enabled Fog Radio Access Networks .....	581
<i>Chuanjie Liu (Sichuan University, China), Siyu Ren (UESTC, China), Shuang Du (UESTC, China), Cheng Dai (Sichuan University, China), Bing Guo (Sichuan University, China), and Runzhi Fan (UESTC, China)</i>	
Anomaly Detection in Battery Charging Systems: A Deep Sequence Model Approach .....	587
<i>Li Zheng (Ministry of Education; Peking University, China), Donghui Ding (Hangzhou Yugu Technology; East China Normal University, China), Zhao Li (Hangzhou Yugu Technology; Zhejiang Lab), Jun Gao (Ministry of Education; Peking University, China), Jie Xiao (Hangzhou Yugu Technology, China), Hongyang Chen (Zhejiang Lab, China), Schahram Dustdar (Technical University of Vienna, Austria), and Ji Zhang (University of Southern Queensland, Australia)</i>	
A Federated Learning Aggregation that Integrates Clustering and Momentum Correction Based on Historical High-Quality Gradients .....	595
<i>Jian Xu (Sichuan University, China), Bing Guo (Sichuan University, China), Fei Chen (Sichuan University, China), Yan Shen (Chengdu University of Information, China), Shengxin Dai (Sichuan University, China), and Cheng Dai (Sichuan University, China)</i>	
EIF: A Mediated Pass-Through Framework for Inference as a Service .....	603
<i>Yiming Gao (University of Florida, USA), Zhen Wang (The University of Texas at Dallas, USA), Weili Wu (The University of Texas at Dallas, USA), and Herman Lam (University of Florida, USA)</i>	
Cost-Effective Dynamic Alliance Pricing Mechanism Based on Distributed Edge-Intelligence .....	612
<i>Zhihan Cao (Beijing Normal University, China; Fudan University, China), Xi Zheng (Macquarie University, Australia), Jianxiong Guo (Beijing Normal University, China), Weijia Jia (BNU-UIC &amp; Beijing Normal University, China), Yang Xu (Hunan University, China), and Tian Wang (BNU-UIC &amp; Beijing Normal University, China)</i>	
Efficient Large Scale Reverse-Time Migration Imaging Computation Based on Distributed Spark Cluster with GPUs .....	620
<i>Suhui Wangzhang (Nanjing University, China), Ruizhang Yang (Nanjing University, China), Rong Gu (Nanjing University, China), Bo Li (Sinopec Geophysical Research Institute, China), Dingjin Liu (Sinopec Geophysical Research Institute, China), and Zhaokang Wang (Nanjing University of Aeronautics and Astronautics, China)</i>	
Continuous Complex Relational Community Detection on Multi-Layer Networks .....	628
<i>Chuanyu Zong (Shenyang Aerospace University, China), Ziyi Cai (Shenyang Aerospace University, China), Wenju Li (Shenyang Aircraft Corporation, China), Tao Qiu (Shenyang Aerospace University, China), Jiajia Li (Shenyang Aerospace University, China), and Xiufeng Xia (Shenyang Aerospace University, China)</i>	
Transaction Data Management Optimization Based on Multi-Partitioning in Blockchain Systems...	634
<i>Jingyu Zhang (Changsha University of Science and Technology; National University of Defense Technology, China), Xingxing Hou (Changsha University of Science and Technology, China), Yilong Teng (Changsha University of Science and Technology, China), and Lailong Luo (National University of Defense Technology, China)</i>	



Content Style-Triggered Backdoor Attack in Non-IID Federated Learning via Generative AI .....	640
<i>Jinke Cheng (Shanghai Jiao Tong University, China), Gaolei Li (Shanghai Jiao Tong University, China), Xi Lin (Shanghai Jiao Tong University, China), Hao Peng (Zhejiang Normal University, China), and Jianhua Li (Shanghai Jiao Tong University, China)</i>	
Partial Deep Domain Adaptation for Non-Intrusive Load Monitoring .....	648
<i>Yuying Li (Hubei University, China), Yang Yang (Hubei University, China), Chen Wang (Huazhong University of Science and Technology, China), Runqin Liu (China Unicom Central South Research Institute, China), Hongbo Jiang (Hunan University, China), and Wenping Liu (Hubei University of Economics, China)</i>	
A High-Performance Data Verification Mechanism in Blockchain-Based IoT Systems .....	656
<i>Jingyu Zhang (Changsha University of Science and Technology, China; National University of Defense Technology, China), Pian Zhou (Changsha University of Science and Technology, China), Yongtao Sun (Changsha University of Science and Technology, China), and Lailong Luo (National University of Defense Technology, China)</i>	
A Space-Efficient Digital Wallet Service in Blockchain Systems .....	662
<i>Jingyu Zhang (Changsha University of Science and Technology; National University of Defense Technology, China), Jin Yang (Changsha University of Science and Technology, China), Chenghao Wu (Changsha University of Science and Technology, China), and Lailong Luo (National University of Defense Technology, China)</i>	
HBC: Combining Lossy and Lossless Hybrid Bilayer Compression Framework on Time-Series Data.....	670
<i>Wanying Lu (Nanjing University of Aeronautics and Astronautics, China), Liang Liu (Nanjing University of Aeronautics and Astronautics, China), Wenbin Zhai (Nanjing University of Aeronautics and Astronautics, China), Haoyuan Chen (Nanjing University of Aeronautics and Astronautics, China), and Yulei Liu (Nanjing University of Aeronautics and Astronautics, China)</i>	
High-Order Faithful Interpretation Methods for Tensor-Based CNNs .....	680
<i>Pengxu Chen (Hainan University, China), Huazhong Liu (Hainan University, China), Hanning Zhang (China Unicom (Hainan), China), Jihong Ding (Hainan University, China), Yunfan Zhang (Hainan University, China), and Dehua Chen (Donghua University, China)</i>	
Adaptive Fusion of Single-Stream and Dual-Stream Models Based on Cross-Modal Association Strength for Harmful Meme Detection .....	688
<i>Meng Lin (Institute of Information Engineering, Chinese Academy of Sciences, China; School of Cyber Security, University of Chinese Academy of Sciences, China), Qinghao Huang (Institute of Information Engineering, Chinese Academy of Sciences, China), Xingyi Yu (Academy of Cyber, China), Xianjing Guo (Institute of Information Engineering, Chinese Academy of Sciences, China; School of Cyber Security, University of Chinese Academy of Sciences, China), and Tao Guo (Institute of Information Engineering, Chinese Academy of Sciences, China; School of Cyber Security, University of Chinese Academy of Sciences, China)</i>	

An Efficient Decentralized Mutual Authentication Scheme Between Avatars for Metaverse .....	694
<i>Peng Huang (Changsha University of Science and Technology, China), Zisang Xu (Changsha University of Science and Technology, China), Wei Liang (Hunan University of Science and Technology, China), Jianbo Xu (Hunan University of Science and Technology, China), and Bin Zheng (Changsha University of Science and Technology, China)</i>	
A Semantic-Driven Generative Information Extraction Framework Oriented to Patent Text .....	701
<i>Yushan Zhao (Anhui University of Science and Technology, China), Tengke Wang (Anhui University of Science and Technology, China), and Shunxiang Zhang (Anhui University of Science and Technology, China)</i>	
Cross-Subject Drowsiness Recognition Model Based on the Multi-Scale Parallel Convolution of EEG Channels .....	709
<i>Songquan Li (Huazhong Agricultural University; Agricultural Genomics Institute at Shenzhen, Chinese Academy of Agricultural Sciences, China), Rongbo Zhu (Huazhong Agricultural University; Agricultural Genomics Institute at Shenzhen, Chinese Academy of Agricultural Sciences, China), Jun Yuan (Huazhong Agricultural University, China), and Shaohua Wan (University of Electronic Science and Technology of China, China)</i>	
Power Grid Encrypted Data Range Filtering Scheme Based on Order-Revealing Encryption .....	715
<i>Hongyi Qiao (Wuhan University, China), Cong Peng (Wuhan University, China), Min Luo (Wuhan University, China), Po Wu (State Grid Henan Electric Power Company, China), and Debiao He (Wuhan University, China)</i>	
A Distributed Storage System for System Logs Based on Hybrid Compression Scheme .....	724
<i>Baoming Chang (Institute of Information Engineering, Chinese Academy of Sciences; University of Chinese Academy of Sciences, China), Fengxi Zhou (Institute of Information Engineering, Chinese Academy of Sciences; University of Chinese Academy of Sciences, China), Zhaoyang Wang (Institute of Information Engineering, Chinese Academy of Sciences; University of Chinese Academy of Sciences, China), Yu Wen (Institute of Information Engineering, Chinese Academy of Sciences, China), and Boyang Zhang (Institute of Information Engineering, Chinese Academy of Sciences, China)</i>	
Twin Branch Transformers-Based Re-Ranking for Image Retrieval .....	736
<i>Ziqi Wang (Chinese Academy of Sciences, China) and Wei Wang (Shenzhen Campus of Sun Yat-sen University, China)</i>	
TGT: Churn Prediction in O2O Logistics with Two-Tower Gated Transformer .....	744
<i>Baoshen Guo (Southeast University), Hai Wang (Southeast University), Hao Liu (Southeast University), Wei Gong (University of Science and Technology of China), Wei Xi (Xi'an Jiaotong University), Xiaolei Zhou (National University of Defense Technology), and Shuai Wang (Southeast University)</i>	

CP-EB: Talking Face Generation with Controllable Pose and Eye Blinking Embedding .....	752
<i>Jianzong Wang (Ping An Technology (Shenzhen) Co., Ltd.), Yimin Deng (Ping An Technology (Shenzhen) Co., Ltd.; University of Science and Technology of China), Ziqi Liang (Ping An Technology (Shenzhen) Co., Ltd.; University of Science and Technology of China), Xulong Zhang (Ping An Technology (Shenzhen) Co., Ltd.), Ning Cheng (Ping An Technology (Shenzhen) Co., Ltd.), and Jing Xiao (Ping An Technology (Shenzhen) Co., Ltd.)</i>	
An SGX and Blockchain-Based System for Federated Learning in Classifying COVID-19 Images ....	758
<i>Sihang Qin (Huazhong University of Science and Technology; State Grid Wuhan Power Supply Company, China), Xianjun Gu (State Grid Wuhan Power Supply Company, China), Xing Jun (State Grid Wuhan Power Supply Company, China), Haitao Li (State Grid Wuhan Power Supply Company, China), Mengqi Huang (State Grid Wuhan Power Supply Company, China), and Weiqi Dai (Huazhong University of Science and Technology, China)</i>	
Ant: An Efficient Lossless Compression Algorithm for IoT Time Series Data .....	766
<i>Junhui Li (Tianjin University of Technology; Tianjin Key Laboratory of Intelligence Computing and Novel Software Technology; Key Laboratory of Computer Vision and System, Ministry of Education, China), Guangping Xu (Tianjin University of Technology; Tianjin Key Laboratory of Intelligence Computing and Novel Software Technology; Key Laboratory of Computer Vision and System, Ministry of Education, China), Hongzhang Yang (Tianjin University of Technology; Tianjin Key Laboratory of Intelligence Computing and Novel Software Technology; Key Laboratory of Computer Vision and System, Ministry of Education, China), and Yulei Wu (University of Bristol, Bristol, U.K.)</i>	
HKTGNN: Hierarchical Knowledge Transferable Graph Neural Network-Based Supply Chain Risk Assessment .....	772
<i>Zhanting Zhou (University of Electronic Science and Technology of China, China), Kejun Bi (Sichuan University, China), Yuyanzhen Zhong (Chongqing CEPREI Industrial Technology Research Institute Co., Ltd, China), Chao Tang (Sichuan Changhong Electronic Holding Group Co., Ltd, China), Dongfen Li (Chengdu University of Technology, china), Shi Ying (Wuhan University, China), and Ruijin Wang (University of Electronic Science and Technology of China, China)</i>	
Hybrid Distribution Separation for Prediction of Heterogeneous Zero-Inflated Time Series .....	783
<i>Zhixin Huang (Fujian Agriculture and Forestry University, China), Jiaxiang Lin (Fujian Agriculture and Forestry University, China), Qianqian Chen (Fujian Agriculture and Forestry University, China), and Zhenchang Zhang (Fujian Agriculture and Forestry University, China)</i>	
A Write-Optimized PM-Oriented B+-Tree with Aligned Flush and Selective Migration .....	789
<i>Xianyu He (Guizhou University, China), Runyu Zhang (Guizhou University, China), Pengpeng Tian (Guizhou University, China), Lening Zhou (Guizhou University, China), Min Lian (Guizhou University, China), and Chaoshu Yang (Guizhou University, China)</i>	
FSKY-Miner: Fast Mining of Skyline Patterns .....	795
<i>Chengdong Chen (Guangdong University of Technology, China), Wensheng Gan (Jinan University, China), Jiahui Chen (Guangdong University of Technology, China), and Shicheng Wan (South China University of Technology, China)</i>	

## Workshop

A Few-Shot Learning Approach for Anomaly Detection in Cooperative Tracking Control System ..	803
<i>Jieqi Rong (Central South University, China), Weirong Liu (Central South University, China), Xiaoquan Yu (Central South University, China), Wanwan Ren (Central South University, China), Boyu Shu (Central South University, China), and Jun Peng (Central South University, China)</i>	
A Multi-Attention Based CNN-BiLSTM Intrusion Detection Model for In-Vehicle Networks .....	809
<i>Kai Gao (Changsha University of Science &amp; Technology, China), Hao Huang (Changsha University of Science &amp; Technology, China), Linhong Liu (Changsha University of Science &amp; Technology, China), Ronghua Du (Changsha University of Science &amp; Technology, China), and Jinlai Zhang (Changsha University of Science &amp; Technology, China)</i>	
Multi-Head Self-Attention Enhanced Convolutional Neural Network for Driver Fatigue Detection Using EEG Signals .....	817
<i>Kai Gao (Changsha University of Science &amp; Technology, China), Wenhao Jia (Changsha University of Science &amp; Technology, China), Yuxiang Zhou (Changsha University of Science &amp; Technology, China), and Ronghua Du (Changsha University of Science &amp; Technology, China)</i>	
Prediction of Hydraulic Pumps Remaining Useful Life Based on LSTM and Transform with Dual Self-Attention .....	824
<i>Peng Liu (Changsha University of Technology, China), Shanghong He (Changsha University of Technology, China), Kai Gao (Changsha University of Technology, China), Geng Yang (Hunan Xingbang Intelligent Equipment Co., Ltd, China), Junhui Zou (Hunan Xingbang Intelligent Equipment Co., Ltd, China), and Longsheng Ye (Changsha University of Technology, China)</i>	
Energy Efficient Speed Planning of Electric Vehicles for Vehicle-Following Scenarios using Data-Driven Koopman Model .....	832
<i>Bin Chen (Changsha University of Science and Technology, China), Miaoben Wang (Changsha University of Science and Technology, China), Feng Zhou (Changsha University of Science and Technology, China), Haoyang Yan (Changsha University of Science and Technology, China), and Ronghua Du (Changsha University of Science and Technology, China)</i>	
Autonomous Cruise Control of Intelligent High-Speed Train with Online Energy-Saving Optimization .....	840
<i>Feng Zhou (Changsha University of Science and Technology, China), Hongkun Liang (Changsha University of Science and Technology, China), Kewu Tao (Changsha University of Science and Technology, China), and Shuo Li (Changsha University of Science and Technology, China)</i>	
Hierarchical Data-Driven Predictive Control Strategy for Energy Management of Electric Vehicles .....	846
<i>Bin Chen (Changsha University of Science and Technology, China), Guo He (Changsha University of Science and Technology, China), Feng Zhou (Changsha University of Science and Technology, China), Hao Huang (Changsha University of Science and Technology, China), Wei Liu (Changsha University of Science and Technology, China), and Ronghua Du (Changsha University of Science and Technology, China)</i>	

Research on Multi-Vehicle Formation Control with the Assistance of the Characteristic Model in the Networked Environment .....	854
<i>Jin Guo (Changsha University of Science and Technology, China), You Wu (Changsha University of Science and Technology, China), Yi Lei (Changsha University of Science and Technology, China), Guotan Liu (Changsha University of Science and Technology, China), and Ronghua Du (Changsha University of Science and Technology, China)</i>	
An Autoencoder-Driven FDIA Detection Method for Virtual Coupling Systems of Heavy-Haul Trains .....	862
<i>Wanwan Ren (Central South University, China), Jun Peng (Central South University, China), Rui Zhang (Changsha University, China), Jieqi Rong (Central South University, China), Boyu Shu (Central South University, China), Yongting Liu (Central South University, China), and Yingze Yang (Central South University, China)</i>	
A Physics-Informed Integrated Modeling Method for Lithium-ion Batteries .....	868
<i>Yunsheng Fan (Central South University, China), Zhiwu Huang (Central South University, China), Kaifu Guan (Central South University, China), Boyu Shu (Central South University, China), Yongjie Liu (Central South University, China), Zeyu Zhu (Central South University, China), Peinan He (Central South University, China), and Shuo Li (Changsha University of Science and Technology, China)</i>	
SOC Estimation of Supercapacitor Balancing Systems: A Switching Kalman Filter Approach .....	874
<i>Heng Li (Central South University, China), Peinan He (Central South University, China), Taozhen Chang (Central South University, China), and Shuo Li (Changsha University of Science and Technology, China)</i>	
Quantum Information Technology for Network Security: An Application-Focused Overview .....	881
<i>Huan Wang (China Electronics Technology Group Corporation, China) and Xiaoyang Lai (China Innovation Fund Management Co., Ltd., China)</i>	
A New Dataset for Intrusion Detection in Industrial Control System: A Gas Pipeline Testbed Study .....	887
<i>Longmin Deng (Wuhan University of Technology, China), Xuemin Zhang (Wuhan University of Technology, China), Qianrong Zheng (Wuhan University of Technology, China), Dongdong Zhao (Wuhan University of Technology, China), Junwei Zhou (Wuhan University of Technology, China), and Jianwen Xiang (Wuhan University of Technology, China)</i>	

## **BDCloud 2023**

Research on Pilot's Workload Based on Multisource Data .....	893
<i>Haibo Wang (Nanjing University of Aeronautics and Astronautics Nanjing, China), Mengyue Xu (Nanjing University of Aeronautics and Astronautics Nanjing, China), Gen Li (Nanjing University of Aeronautics and Astronautics Nanjing, China), Ting Pan (Nanjing University of Aeronautics and Astronautics Nanjing, China), Haiqing Si (Nanjing University of Aeronautics and Astronautics Nanjing, China), Haibo Liu (Nanjing University of Aeronautics and Astronautics Nanjing, China), Yixuan Li (Nanjing University of Aeronautics and Astronautics Nanjing, China), and Yijin Zhu (Nanjing University of Aeronautics and Astronautics Nanjing, China)</i>	

Efficient Giant Graph Unlearning via Push-Pull Tuning .....	900
<i>Fahao Chen (The University of Aizu, Japan), Peng Li (The University of Aizu, Japan), and Shui Yu (University of Technology Sydney, Australia)</i>	
Contrastive Learning-Based Generic Audio-to-Lyrics Alignment .....	908
<i>Zhenkun Jin (Wuhan Business University; Wuhan Research Institute of Posts and Telecommunications, China), Shuai Huang (Wuhan Research Institute of Posts and Telecommunications, China), Xin Nie (Hubei Key Laboratory of Distributed System Security; Hubei Engineering Research Center on BigData Security; Huazhong University of Science and Technology, China), Xinlei Zhou (Wuhan Research Institute of Posts and Telecommunications, China), Yuanyuan Yi (Huazhong University of Science and Technology, China), and Gefei Zhou (Huazhong University of Science and Technology, China)</i>	
BT-Duper: A Binomial-Tree Based Data Replication Offloading Method with Native RDMA Primitives .....	915
<i>Yang Yi (University of Science and Technology of China, China), Yuting Li (University of Science and Technology of China, China), Yun Xu (University of Science and Technology of China, China), Pengcheng Wang (Huawei, China), Yonghui Xu (Huawei, China), and Weiguang Wang (Huawei, China)</i>	
DQR-TTS: Semi-Supervised Text-to-Speech Synthesis with Dynamic Quantized Representation ....	923
<i>Jianzong Wang (Ping An Technology (Shenzhen) Co., Ltd.), Pengcheng Li (Ping An Technology (Shenzhen) Co., Ltd.; University of Science and Technology of China), Xulong Zhang (Ping An Technology (Shenzhen) Co., Ltd.), Ning Cheng (Ping An Technology (Shenzhen) Co., Ltd.), and Jing Xiao (Ping An Technology (Shenzhen) Co., Ltd.)</i>	
iNUMAlloc: Towards Intelligent Memory Allocation for AI Accelerators with NUMA .....	929
<i>Yuanchao Xu (Capital Normal University; Institute of Computing Technology, CAS, China), Ruyi Qian (Capital Normal University, China), Yida Wang (Capital Normal University, China), and Qirun Huo (Capital Normal University, China)</i>	
BAFD: A Bidirectional Adaptive Fault Diagnosis Algorithm For Multiprocessor Systems .....	937
<i>Hao Feng (Hainan University, China), Lin Chen (Hainan University, China), and Jiong Wu (Hainan University, China)</i>	
Detect Human Falls in an End-Edge-Cloud Orchestrated Architecture .....	945
<i>Peter Kubare (Huazhong University of Science and Technology), Xiaojun Hei (Huazhong University of Science and Technology), and Yuan Tian (Tongji Hospital, Huazhong University of Science and Technology)</i>	

## SocialCom 2023

### Social Computing Track

Jump off the Bandwagon? Characterizing Bandwagon Fans' Future Loyalty in Online NBA Fan Communities .....	953
<i>Yichen Wang (University of Colorado Boulder, USA) and Qin Lv (University of Colorado Boulder, USA)</i>	

Tweeting from Left to Right: Tracing the Dynamics of Emotional Messaging and Public Engagement During the 2018 vs. 2022 US Campaigns .....	961
<i>Meng-Jie Wang (University of Canterbury, New Zealand)</i>	
Style Transfer of Traditional Chinese Bamboo Flute Music Based on AI Model .....	972
<i>Ziqi Qin (Beijing National Day School)</i>	
Cross Domain Few Shot NER Via Data Enhancement Invariant Domain Feature Extraction Based on Diffusion Model .....	980
<i>Kunlun Guan (Beijing Information Science and Technology University, China) and Yangsen Zhang (Beijing Information Science and Technology University, China)</i>	
Ranking on Heterogeneous Manifold for Multimodal Information Retrieval .....	989
<i>Zhenkun Jin (Wuhan Business University, Wuhan Research Institute of Posts and Telecommunications, China), Xingshi Wan (Wuhan Research Institute of Posts and Telecommunications, China), Xin Nie (Huazhong University of Science and Technology, China), Xinlei Zhou (Wuhan Research Institute of Posts and Telecommunications, China), Yuanyuan Yi (Huazhong University of Science and Technology, China), and Gefei Zhou (Huazhong University of Science and Technology, China)</i>	
Large-Scale k Edge Server Placement Based on User Clustering and Intelligent Search .....	997
<i>Chengying Mao (Jiangxi University of Finance and Economics, China) and Haiquan Hu (Jiangxi University of Finance and Economics, China)</i>	

## SustainCom 2023

### Sustainable Computing and Communications

Routers' Energy Consumption Reduction with Load Saturation Awareness and Traffic Steering ...	1005
<i>Lijun Dong (Futurewei Technologies Inc., USA) and Richard Li (Futurewei Technologies Inc., USA)</i>	
A Learning Auction Mechanism for Video Streaming Transmission with Decoupling Uplink-Downlink Association .....	1011
<i>Yejin Liao (Nanjing University of Aeronautics and Astronautics, China) and Kun Zhu (Nanjing University of Aeronautics and Astronautics, China)</i>	

### Sustainable Systems and Technologies

Hierarchical Task Scheduling for Heterogeneous UAVs Based on Hybrid Genetic Algorithm .....	1018
<i>Ziming Zeng (Nanjing University of Aeronautics and Astronautics, China), Chao Dong (Nanjing University of Aeronautics and Astronautics, China), Xiaojun Zhu (Nanjing University of Aeronautics and Astronautics, China), and Lei Zhang (Nanjing University of Aeronautics and Astronautics, China)</i>	
Link Load Balancing Scheme for Elephant flow in SDN Data Center .....	1026
<i>Feifan Hao (University of Jinan, China), Shan Jing (University of Jinan, China), and Chuan Zhao (Quan Cheng Laboratory, China)</i>	

## Sustainable Methodologies and Applications

- MAS-DDPG: Multi-Sensor Self-Adaptive Scheduling for UAV Path Planning in Network-Unavailable Environments ..... 1034  
*Na Lin (Shenyang Aerospace University, China), Zhijiang Wang (Shenyang Aerospace University, China), and Liang Zhao (Shenyang Aerospace University, China)*
- Improved Virtual Force Algorithm-Based Fuzzy Clustering in Mobile Wireless Sensor Networks. 1042  
*Jintao Yang (University of South China, China), Minghua Wang (University of South China, China), Wenbo Chen (University of South China, China), and Shujing Xie (University of South China, China)*

## SpaCCS 2023

### Security Track

- Protecting Critical Infrastructure: Strategies for Managing Cybersecurity Risks in Nuclear Fusion Facilities ..... 1050  
*Olufunsho Falowo (University of Cincinnati, USA), Jess Kropczynski (University of Cincinnati, USA), and Chengcheng Li (University of Cincinnati, USA)*
- An Application Level Synchronization Method for Heterogeneous Redundant Structures ..... 1062  
*Hong Yu (Information Engineering University, China), Qinrang Liu (Information Engineering University), Chao Cui (Phytium Technology Co., Ltd., China), and Shuai Wei (Information Engineering University, China)*
- A Firmware Vulnerability Detection Method Based on Feature Filtering ..... 1069  
*Bing Xia (ZhongYuan University of Technology, China), Chongjun Tang (ZhongYuan University of Technology, China), Wenbo Liu (ZhongYuan University of Technology, China), Shihao Chu (ZhongYuan University of Technology, China), and Yu Dong (ZhongYuan University of Technology, China)*
- A Gradient-Guided Fuzzing Approach to Recover More Complete Control Flow Graph of Binary ..... 1077  
*Qianjin Wang (ZhongYuan University of Technology, China), Xiangdong Li (ZhongYuan University of Technology, China), Yuchen He (ZhongYuan University of Technology, China), and Chong Yue (ZhongYuan University of Technology, China)*
- An Online Detection System for LDoS Attack Based on XGBoost ..... 1083  
*Jialun Deng (Wuhan Institute of Technology, China), Li Cheng (Wuhan Institute of Technology, China), HaiWen Yuan (Wuhan Institute of Technology, China), Kuanlei Zheng (Wuhan Institute of Technology, China), Xuan Li (Wuhan Institute of Technology, China), and Quli Li (Wuhan Institute of Technology, China)*



OWETC: Open World Encrypted Traffic Classification Based on Semi-Supervised Class Incremental Learning .....	1089
<i>Zhao Meng (Wuhan University of Technology, China), Zhu Di (China Electronic Product Reliability and Environmental Testing Research Institut, China), Zhe Xia (Wu Han University of Technology, China), Jing Tian (Wuhan University of Technology, China), Jianwen Xiang (Wuhan University of Technology, China), and Lin Jun (China Electronic Product Reliability and Environmental Testing Research Institute, China)</i>	
An In-Kernel Inline Crypto Solution for eXpress Data Path With QuickAssist Technology: Design, Prototyping and Performance Evaluation .....	1097
<i>Zhan Xue (Intel Corporation, China), Magnus Karlsson (Intel Corporation, Sweden), Tao Yu (Intel Corporation, China), Aleksander Lobakin (Intel Corporation, Poland), Maciej Fijalkowski (Intel Corporation, Poland), and Jesse Brandeburg (Intel Corporation, USA)</i>	
Reversible Data Hiding Scheme Based on Prediction Error Bit-Plane Compression .....	1105
<i>Guo Yuan (Heilongjiang University, China), Chao Heng (Qiqihar University, China), Zhai Ping (Qiqihar University, China), Liu Ziqi (Heilongjiang University, China), Li Haibo (Heilongjiang University, China), and Li Wenpeng (Qiqihar University, China)</i>	
Resource-Limited Localized Adaptive Adversarial Training for Machine Learning Model .....	1113
<i>Mohammed Rajhi (Florida International University, USA; Jazan University, Saudi Arabia) and Niki Pissinou (Florida International University, USA)</i>	
Joining a Private Group with Friends Nearby Without PIN-Code .....	1121
<i>Kun Zhao (Xi'an Jiaotong University), Wei Xi (Xi'an Jiaotong University), Lingzhi Yi (Zhongnan University of Economics and Law), Wei Gong (The University of Science and Technology of China), Shuai Wang (Southeast University), and Yijing He (Xi'an Jiaotong University)</i>	
GPS L1 C/A Spoof Detection Through the Application of Deep Neural Networks .....	1129
<i>Hen-Geul Yeh (California State University, USA) and Geoffrey Daniel Farthing (California State University, USA)</i>	
BILAM: A BiLSTM-Based Model for Detecting Phishing Scams in Ethereum .....	1135
<i>Mingshun Ye (Guangdong University of Foreign Studies, China), Mingdong Tang (Guangdong University of Foreign Studies, China), and Weili Chen (Guangdong University of Foreign Studies, China)</i>	
CLN-VC: Text-Free Voice Conversion Based on Fine-Grained Style Control and Contrastive Learning with Negative Samples Augmentation .....	1143
<i>Yimin Deng (Ping An Technology (Shenzhen) Co., Ltd.; University of Science and Technology of China), Xulong Zhang (Ping An Technology (Shenzhen) Co., Ltd.), Jianzong Wang (Ping An Technology (Shenzhen) Co., Ltd.), Ning Cheng (Ping An Technology (Shenzhen) Co., Ltd.), and Jing Xiao (Ping An Technology (Shenzhen) Co., Ltd.)</i>	
AdvBinSD: Poisoning the Binary Code Similarity Detector via Isolated Instruction Sequences.....	1149
<i>Xiaoyu Yi (Shanghai Jiao Tong University, China), Gaolei Li (Shanghai Jiao Tong University, China), Ao Ding (Shanghai Jiao Tong University, China), Yan Zheng (China University of Political Science and Law, China), Yuqing Li (Wuhan University, China), and Jianhua Li (Shanghai Jiao Tong University, China)</i>	

## **Anonymity Track**

Cooperative Completing Tasks of Charging WRSNs with Multiple MUVs and Laser-Charged UAVs ...  
1157

*Chuanwen Luo (Beijing Forestry University, China), Ning Liu (Beijing Forestry University, China), Ting Chen (University of Electronic Science and Technology of China, China), Jia Cao (Beijing Forestry University, China), Yi Hong (Beijing Forestry University, China), Zhibo Chen (Beijing Forestry University, China), and Deying Li (Renmin University of China, China)*

A Signal-Channel Blind Signal Separation Method Based on Signal Type Difference for  
Time-Frequency Overlapped Signal ..... 1165

*Lihui Pang (Shenzhen Technology University, China), Yilong Tang (University of South China, China), Yulang Liu (University of South China, China), Bin Yang (University of South China, China), Wenwei Zhang (Shenzhen Technology University, China), and Qingyi Tan (University of South China, China)*

## **Author Index**