2024 10th International Conference on Big Data Computing and Communications (BigCom 2024)

Dalian, China
9-11 August 2024

IEEE Catalog Number: CFP24N32-POD
ISBN: 979-8-3315-0954-5

Copyright © 2024 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:	CFP24N32-POD
ISBN (Print-On-Demand):	979-8-3315-0954-5
ISBN (Online):	979-8-3315-0953-8
ISSN:	2767-2182

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

2024 10th International Conference on Big Data Computing and Communications (BIGCOM)

BIGCOM 2024

Table of Contents

Organizing Committee ..... **xi**
Program Committee ..... **xii**
Keynote I ..... **xv**
Keynote II ..... **xvi**
Keynote III ..... **xviii**

Architecture and Systems for Big Data

Utilizing Sensing Coil for Device Model Recognition in Qi-Compatible Wireless Charging 1
Shenyao Jiang (University of Science and Technology of China; Deqing Alpha Innovation Institute, China), Hao Zhou (University of Science and Technology of China; Deqing Alpha Innovation Institute, China), Xinyu Wang (University of Science and Technology of China; Deqing Alpha Innovation Institute, China), and Yixiao Chen (University of Science and Technology of China; Deqing Alpha Innovation Institute, China)

Dynamic Kubernetes Scheduling:Load and Resource Optimization in Collaborative Edge Computing 9
Tong Liu (University of Science and Technology of China, China), Fanping Zeng (University of Science and Technology of China, China), and Pengcheng Xia (University of Science and Technology of China, China)

Precise and Transferable Latency Prediction for Transformer 18
Yuanchi Liu (University of Science and Technology of China), Jiahang Xu (Microsoft Research Asia), Chengquan Feng (University of Science and Technology of China), and Haisheng Tan (University of Science and Technology of China)

Towards Efficient Inference on Mobile Device via Pruning 26
Zhiyuan Wang (University of Science and Technology of China, China) and Haisheng Tan (University of Science and Technology of China, China)

Algorithms for Big Data

FISH: Alleviating Cold Start for Serverless Computing with Memory Constraints 34
Xinyue Zhang (University of Science and Technology of China, China), Guopeng Li (University of Science and Technology of China, China), and Haisheng Tan (University of Science and Technology of China, China)

MedMM: A Multimodal Fusion Framework for 3D Medical Image Classification with Multigranular Text Guidance 42
Shanbo Zhao (School of Computer Science and Technology, Beijing Institute of Technology, China), Meihui Zhang (School of Computer Science and Technology, Beijing Institute of Technology, China), Xiaoqin Zhu (Capital Medical University, China), Junjie Li (Capital Medical University, China), Yunyun Duan (Capital Medical University, China), Zhizheng Zhuo (Capital Medical University, China), Yaou Liu (Capital Medical University, China), and Chuyang Ye (School of Computer Science and Technology, Beijing Institute of Technology, China)

Research on Credit Risk Control Model Based on Deep Learning 50
Baichengkang Lin (Xiamen University, China), Zhe Wu (Xiamen University, China), Lianfen Huang (Xiamen University, China), Zhibin Gao (Jimei University, China), and Yifeng Zhao (Xiamen University, China)

A Spatial-Temporal Neural Network Model Based on Meta Learning for Bus Arrival Time Prediction 57
Hongfei Sun (Zhida Technology, China), Feifan Li (Dalian University of Technology, China), and Lei Liu (Dalian University of Technology, China)

Intelligent Identification and Control Method for On-Orbit Risks of Assembled Spacecraft 65
Haocheng Zhou (Beijing Institute of Spacecraft System Engineering, China Academy of Space Technology, China), Jingyi Chong (Institute of Telecommunication and Navigation Satellite, China Academy of Space Technology, China), and Wei He (Beijing Institute of Spacecraft System Engineering, China Academy of Space Technology, China)

Application of Digital Twin Technology in Emergency Pressure Safety Design for Manned Spacecraft 72
Wei Li (Beijing Institute of Spacecraft System Engineering, China Academy of Space Technology, China), Haocheng Zhou (Beijing Institute of Spacecraft System Engineering, China Academy of Space Technology, China), and Jingyi Chong (Institute of Telecommunication and Navigation Satellite, China Academy of Space Technology, China)

Intelligent Identification and Analysis Method for Potential Faults of Spacecraft in Space Environment 80
Jingyi Chong (Institute of Telecommunication and Navigation Satellite, China Academy of Space Technology, China), Haocheng Zhou (Beijing Institute of Spacecraft System Engineering, China Academy of Space Technology, China), and Wei He (Beijing Institute of Spacecraft System Engineering, China Academy of Space Technology, China)

AI for Big Data

3D Gaze Estimation via Binocular Disparity and Feature Refinement 88
Chengxin Wang (University of Science and Technology Liaoning, China), Qiuxia Chen (Institute of Applied Artificial Intelligence of the Guangdong-Hong Kong-Macao Greater Bay Area Shenzhen Polytechnic, China), Ying Tian (School of Computer Science and Software Engineering, University of Science and Technology Liaoning, China), and Jinfeng Yang (Institute of Applied Artificial Intelligence of the Guangdong-Hong Kong-Macao Greater Bay Area Shenzhen Polytechnic, China)

Pre-Segmentation: A Data Augmentation-Based Strategy for Thinning ViT Models 96
Houbin Guo (Anhui University, China), Xing Guo (Anhui University, China; USTC-DEQING Alpha Innovation Institute), and Haohua Du (Beihang University, China; USTC-DEQING Alpha Innovation Institute)

FedDCS: Dynamical Client Selection for Federated Learning in Mobile Scenarios with Label Distribution Shift 103
Junjie Pang (Beihang University, China), Haohua Du (Beihang University, China), Zhiyi Liu (Beihang University, China), Xiaoya Xu (Beihang University, China), and YuanHao Feng (The Hong Kong Polytechnic University)

Convolutional Neural Networks Pruning Based on Energy Adaptation 111
Fan Guo (Anhui University, China), Xing Guo (Anhui University, China; USTC-DEQING Alpha Innovation Institute), and Haohua Du (Beihang University, China; USTC-DEQING Alpha Innovation Institute)

AdaViT: Task Adaptive ViT Compression Based on Module Replacement 118
Weijian Zhang (Anhui University, China), Xing Guo (Anhui University, China; USTC-DEQING Alpha Innovation Institute), and Haohua Du (Beihang University, China; USTC-DEQING Alpha Innovation Institute)

Fall Detection Related Human Activity Recognition by Millimeter-Wave Radar 126
Wenbin Liu (Ocean University of China, China), Yingjian Liu (Ocean University of China, China), Haoyu Yin (Ocean University of China, China), Qingmin Yuan (Ocean University of China, China), Ruoyu Wang (Ocean University of China, China), and Zhongwen Guo (Ocean University of China, China)

A Multi-Layer Satellite Internet of Things Architecture Based on ICN/SDN 134
Qingmin Yuan (Ocean University of China, China), Yingjian Liu (Ocean University of China, China), Wenbin Liu (Ocean University of China, China), Ruoyu Wang (Ocean University of China, China), Jinhui Liu (Ocean University of China, China), and Zhongwen Guo (Ocean University of China, China)

MultiVFL: A Training-Efficient Framework for Multiple Vertical Federated Learning 141
Ju Huang (University of Science and Technology of China, China), Lan Zhang (University of Science and Technology of China, China), Cheng Ding (Tencent, China), Dongbo Huang (Tencent, China), and Lan Xu (Tencent, China)

Active Open-Set Domain Adaptation 149
Yixuan Wang (University of Science and Technology of China, China) and Lan Zhang (University of Science and Technology of China, China)

Large-Scale Multi-Camera Person Trajectory Tracking Based on Low Sampling Rate of Camera 157
Yan Wang (Anhui University, China; Institute of Artificial Intelligence, Hefei Comprehensive National Science Center, China), Lan Zhang (University of Science and Technology of China, China), Xianwen Wang (Anhui University, China; Institute of Artificial Intelligence, Hefei Comprehensive National Science Center, China), Ke Ding (Institute of Artificial Intelligence, Hefei Comprehensive National Science Center, China), and Jin Yan (Institute of Artificial Intelligence, Hefei Comprehensive National Science Center, China)

Commonsense Selection and Performance Evaluation for Sarcasm Detection 165
Jianwei Zhang (Iwate University, Japan), Shoya Minakawa (Iwate University, Japan), Yuta Sasaki (Tokyo Institute of Technology, Japan), and Lin Li (Wuhan University of Technology, China)

GPT Attack for Adversarial Privacy Policies 173
Isaac Joy (Informatics Program, UIUC, USA), Jun Wu (Department of Computer Science, UIUC, USA), and Jingrui He (School of Information Sciences, UIUC, USA)

A Deep Bus Arrival Time Estimation Model Based on Bus Network 181
Guitao Qian (Zhida Technology, China), Feifan Li (Dalian University of Technology, China), and Lei Liu (Dalian University of Technology, China)

Security and Privacy for Big Data

Analysis of Local Operations Influence on the Entanglement of Two-Qubit States 189
Nina Sukhodoeva (University of Science and Technology of China, China) and Zhaofeng Su (University of Science and Technology of China, China)

Evaluating Differential Privacy in Federated Learning Based on Membership Inference Attacks 196
Peng He (Beijing Institute of Technology, China), Xinyu Wang (Beijing Institute of Technology, China), Weijiao Zhang (China Academy of Railway Sciences Cooperation Limited, China; The Center of National Railway Intelligent Transportation System Engineering and Technology, China), Zhongkai Wang (China Academy of Railway Sciences Cooperation Limited, China; The Center of National Railway Intelligent Transportation System Engineering and Technology, China), Song Wang (PICC Information Technology Company Limited, China), Chuangxin Ou (PICC Information Technology Company Limited, China), and Guozheng Li (Beijing Institute of Technology, China)

SymbolBack: Symbol-Level WiFi Backscatter Communication 204
Susheng Zhang (University of Science and Technology of China, China), Yubo Yan (University of Science and Technology of China, China), and Shanyue Wang (University of Science and Technology of China, China)

A Conditional Privacy-Preserving Certificateless Signature Scheme Based on Lattice 211
Pan Chen (Southeast University, China), Liquan Chen (Southeast University, China), Bo Yang (Southeast University, China), Qingyao Gu (Southeast University, China), and Lin Shi (Southeast University, China)

Enhancing Transferability of Adversarial Examples Through Randomization in Generative Adversarial Training 217
Yikun Zhao (University of Science and Techology of China, China)

Communication and Networking for Big Data

Towards Efficient Neural Video Delivery via Scalable and Dynamic Networks 225
Shan Jiang (University of Science and Technology of China, China) and Haisheng Tan (University of Science and Technology of China, China)

Adaptive Neurosurgeon: DNN Computing Latency Minimization for Mobile Edge Intelligence 233
Gang Wu (China Agricultural University, China), Qianru Wang (China Agricultural University, China), and Biao Hu (China Agricultural University, China)

MELoc: Indoor Localization System Integrating MUSIC and EM Algorithms 239
Siming Chen (University of Science and Technology of China; Deqing Alpha Innovation Institute, China), Yinnan Zhou (University of Science and Technology of China; Deqing Alpha Innovation Institute, China), and Hao Zhou (University of Science and Technology of China; Deqing Alpha Innovation Institute, China)

Encrypted Mining Traffic Detection Mechanism Based on TLS Handshake Message and Machine Learning 247
Jianlei Zhu (University of Science and Technology of China, China), Guilu Fu (University of Science and Technology of China, China), Wenchao Huang (University of Science and Technology of China, China), Boxuan Shi (National Computer Network Emergency Response Technical Team/Coordination, Center of China, China), and Yan Xiong (University of Science and Technology of China, China)

RACCOON: Online Content Recommendation and Edge-Assisted Caching for In-Vehicle Infotainment 255
Yufei You (Sun Yat-sen University), Xiaoxi Zhang (Sun Yat-sen University), Tianxiang Zhu (Sun Yat-sen University), Bo Rao (Sun Yat-sen University), Yihong Li (Sun Yat-sen University), Jingpu Duan (Pengcheng Laboratory), Lei Xue (Sun Yat-sen University), Ennan Zhai (Alibaba Cloud), and Xu Chen (Sun Yat-sen University)

RaCKDet: An Ensemble Learning Method for Network Intrusion Detection 263
Zijian Wang (Inner Mongolia Normal University, China) and Jiakun Sun (Sun Yat-Sen University, China)

OPR-RL: An Optimized Policy Based Routing Method Based on Reinforcement Learning 270
Zi-Xian Yang (NanJing University of Aeronautics and Astronautics, China), Xin-Xia Zheng (NanJing University of Aeronautics and Astronautics, China), and Ming Chen (NanJing University of Aeronautics and Astronautics, China)

Multi-Server Cooperative Video Caching Strategy Based on Deep Reinforcement Learning in Cloud-Edge Computing 276
Guanyu Li (Hohai University, China), Yingchi Mao (Hohai University, China), XinXin Peng (Huaneng Hydro Lancang Xiaowan Hydropower Plant, China), Haotian Zheng (Hohai University, China), and Zibo Wang (Hohai University, China)

Fine-Tunable Semantic Communication for Image Transmission 284
Peiyuan Si (Nanyang Technological University, Singapore), Renyang Liu (Yunnan University, China), Liangxin Qian (Nanyang Technological University, Singapore), Jun Zhao (Nanyang Technological University, Singapore), and Kwok-Yan Lam (Nanyang Technological University, Singapore)

Author Index **291**