

2024 IEEE 30th International Conference on Parallel and Distributed Systems (ICPADS 2024)

**Belgrade, Serbia
10-14 October 2024**



**IEEE Catalog Number: CFP24036-POD
ISBN: 979-8-3315-1597-3**

**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:	CFP24036-POD
ISBN (Print-On-Demand):	979-8-3315-1597-3
ISBN (Online):	979-8-3315-1596-6
ISSN:	1521-9097

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

CURRAN ASSOCIATES INC.
proceedings
.com

2024 IEEE 30th International Conference on Parallel and Distributed Systems (ICPADS) **ICPADS 2024**

Table of Contents

Message from General Chairs	xx
Message from Program Chairs	xxi
Organizing Committee	xxii
Program Committee	xxiii
Reviewers	xxv
Sponsors and Local Organizers	xxx

Wireless Sensing & Mobile Computing

mmHRR: Monitoring Heart Rate Recovery with Millimeter Wave Radar	1
<i>Ziheng Mao (Tsinghua University, China), Yuan He (Tsinghua University, China), Jia Zhang (Tsinghua University, China), Yimiao Sun (Tsinghua University, China), Yadong Xie (Tsinghua University, China), and Xiuzhen Guo (Zhejiang University, China)</i>	
Optimizing Data-Driven Federated Learning in UAV Networks	9
<i>Datian Li (University of Science and Technology of China, China), Mingjun Xiao (University of Science and Technology of China, China), Yin Xu (University of Science and Technology of China, China), and Jie Wu (Temple University, USA)</i>	
BreathPass: Ultrasounic Authentication by Chest and Abdomen Movement while Breathing	18
<i>Lingkun Li (Beijing Jiaotong University, China), Fan Dang (Tsinghua University, China), Duo Liu (Beijing Jiaotong University, China), and Zhichao Cao (Michigan State University, USA)</i>	
mmTAI: Biometrics-Assisted Multi-Person Tracking with mmWave Radar	26
<i>Yande Chen (Tsinghua University, China), Yuan He (Tsinghua University, China), Yimiao Sun (Tsinghua University, China), Awais Ahmad Siddiqi (Tsinghua University, China), Jia Zhang (Tsinghua University, China), and Xiuzhen Guo (Zhejiang University, China)</i>	
m ² Vib: 2D Vibration Measurement Using a Single mmWave Radar	34
<i>Haolin Wang (Shandong University, China), Wei Xu (Shandong University, China), Zezhao Li (Shandong University, China), Yanni Yang (Shandong University, China), and Zhijian Huang (National Key Laboratory of Science and Technology on Information System Security, China)</i>	

A Distributed Convergecast Algorithm for Dynamic Mobile Networks	42
<i>Aymeric Agon-Rambosson (Sorbonne Université, France), Jonathan Lejeune (Sorbonne Université, France), Julien Sopena (Sorbonne Université, France), and Pierre Sens (Sorbonne Université, France)</i>	
mmJaw: Remote Jaw Gesture Recognition with COTS mmWave Radar	52
<i>Awais Ahmad Siddiqi (Tsinghua University, China), Yuan He (Tsinghua University, China), Yande Chen (Tsinghua University, China), Yimiao Sun (Tsinghua University, China), Shufan Wang (Henan Normal University, China), and Yadong Xie (Tsinghua University, China)</i>	
Chameleon: An Adaptive System for Overlapping Keystroke Signal Separation and Identification	60
<i>Jiayi Zhao (Hong Kong University of Science and Technology (Guangzhou), China), Yongzhi Huang (Hong Kong University of Science and Technology (Guangzhou), China), Qipeng Xie (Hong Kong University of Science and Technology (Guangzhou), China), Weizheng Wang (City University of Hong Kong, China), Lu Wang (Shenzhen University, China), and Kaishun Wu (Hong Kong University of Science and Technology (Guangzhou), China)</i>	
UltraFace: Secure User-Friendly Facial Authentication on Smartphones Using Ultrasound	68
<i>Xinyue Fang (Zhejiang University, China), Jianwei Liu (Zhejiang University, China; Hangzhou City University, China), Yike Chen (Zhejiang University, China), and Jinsong Han (Zhejiang University, China)</i>	
Effective Search Strategy for Moving Targets in Unknown Environments Using Multiple Robots.....	76
<i>Shujin Ye (The Hang Seng University of Hong Kong, China), Ming-Yui Chang (University College London, United Kingdom), Tse-Tin Chan (The Education University of Hong Kong, China), Hai Liu (The Hang Seng University of Hong Kong, China), Yue Wang (The Education University of Hong Kong, China), and Lu Yu (The Hang Seng University of Hong Kong, China)</i>	
Cover More with Less: Eliminating Blind Spots for Surveillance Camera via Passive WiFi Sensing	84
<i>Khairul Mottakin (University of Michigan-Dearborn, USA), Jinhua Guo (University of Michigan-Dearborn, USA), and Zheng Song (University of Michigan-Dearborn, USA)</i>	
SoundFlower: A Robust Sound Source Localization System for Voice Assistants	92
<i>Manni Liu (Michigan State University, U.S.A.) and Zhichao Cao (Michigan State University, U.S.A.)</i>	
VRFfall: Cross Vision-RF Fall Detection with Camera and mmWave Radar	100
<i>Yanying Zhu (The Hong Kong University of Science and Technology(Guangzhou), China), Haotian Song (The Hong Kong University of Science and Technology(Guangzhou), China), Kaishun Wu (The Hong Kong University of Science and Technology(Guangzhou), China), Min Sun (China Mobile Information Technology, China), and Li Zhou (China Mobile Information Technology, China)</i>	

Aortic Stenosis Detection by Improved Inception Convolution Network-Enabled Pulse Wave	108
<i>Ruotong Yang (Beijing University of Posts and Telecommunications, China), Le Kang (Beijing University of Posts and Telecommunications, China), Anfu Zhou (Beijing University of Posts and Telecommunications, China), Hao Cui (Capital Medical University, China), and Huadong Ma (Beijing University of Posts and Telecommunications, China)</i>	

Security & Privacy

Keep Me Updated: An Empirical Study of Proprietary Vendor Blobs in Android Firmware	116
<i>Elliott Wen (The University of Auckland, New Zealand), Jiaxing Shen (Lingnan University, Hong Kong), and Burkhard Wuensche (The University of Auckland, New Zealand)</i>	

Simple But Powerful Beginning: Metamorphic Verification Framework for Cryptographic Hardware Design	126
<i>Jianjun Xu (National University of Defense Technology, China), Jiang Wu (National University of Defense Technology, China), Jiayu He (National University of Defense Technology, China), Deheng Yang (Academy of Military Sciences, China), and Xiaoguang Mao (National University of Defense Technology, China)</i>	

SummSlim: A Universal and Automated Approach for Debloating Container Images	132
<i>Zhicong Zhang (Institute of Information Engineering, Chinese Academy of Sciences, China & School of Cyber Security, University of Chinese Academy of Sciences, China), Heqing Huang (Institute of Information Engineering, Chinese Academy of Sciences, China), Shaowen Xu (Institute of Information Engineering, Chinese Academy of Sciences, China & School of Cyber Security, University of Chinese Academy of Sciences, China), Qihang Zhou (Institute of Information Engineering, Chinese Academy of Sciences, China), Tianshu Zhang (Institute of Information Engineering, Chinese Academy of Sciences, China & School of Cyber Security, University of Chinese Academy of Sciences, China), Xiaoqi Jia (Institute of Information Engineering, Chinese Academy of Sciences, China & School of Cyber Security, University of Chinese Academy of Sciences, China), and Weijuan Zhang (Institute of Information Engineering, Chinese Academy of Sciences, China)</i>	

Privacy-Preserving Compression for Efficient Collaborative Inference	142
<i>Yuzhe Luo (University of Chinese Academy of Sciences, China), Ji Qi (Institute of Software, Chinese Academy of Sciences, China), Jiageng Yu (Institute of Software, Chinese Academy of Sciences, China), Ruizhi Chen (Institute of Software, Chinese Academy of Sciences, China), Ke Gao (Institute of Software, Chinese Academy of Sciences, China), Ling Li (Institute of Software, Chinese Academy of Sciences, China), and Chen Zhao (Institute of Software, Chinese Academy of Sciences, China)</i>	

A Local Differential Privacy Extension Scheme for Sensitive Locations of Hotspot Areas	152
<i>Ruowei Gui (Xi'an Jiaotong University, China), Xingjun Zhang (Xi'an Jiaotong University, China), and Xiaolin Gui (Xi'an Jiaotong University, China)</i>	

Financial Fraud Defense Strategy based on Gradient Compensated Asynchronous Federated Learning	158
<i>Tongrui Liu (Dalian University of Technology, China), Yizhi Zhou (Dalian University of Technology, China), Zhipeng Song (Dalian University of Technology, China), Xibei Jia (Shenzhen Audaque Data Technology Co., Ltd., China), Shan Wu (Dalian University of Technology, China), and Heng Qi (Dalian University of Technology, China)</i>	
LiteCrypt: Enhancing IoMT Security with Optimized HE and Lightweight Dual-Authorization	166
<i>Qipeng Xie (Hong Kong University of Science and Technology, China), Weizheng Wang (City University of Hong Kong, China), Yongzhi Huang (Hong Kong University of Science and Technology, China), Mengyao Zhang (Harvard T.H. Chan School of Public Health, United States), Shuai Shang (University of Electronic Science and Technology of China, China), Linshan Jiang (National University of Singapore, Singapore), Salabat Khan (Hong Kong University of Science and Technology, China), and Kaishun Wu (Hong Kong University of Science and Technology, China)</i>	
TUSH-Key: Transferable User Secrets on Hardware Key	176
<i>Sibi Chakkaravarthy Sethuraman (VIT-AP University, India), Aditya Mitra (VIT-AP University, India), Anisha Ghosh (VIT-AP University, India), and Rakesh Thoppaen Suresh Babu (Hexaware Technologies, United States of America)</i>	
Towards Lightweight User Identification of Anonymous Cryptocurrency Wallet via Encrypted Traffic Correlation	186
<i>Xiangdong Kong (Beijing Institute of Technology, China), Jizhe Jia (Beijing Institute of Technology, China), Jinhe Wu (Beijing Institute of Technology, China), Meng Shen (Beijing Institute of Technology, China), and Liehuang Zhu (Beijing Institute of Technology, China)</i>	
FLoomChecker: Repelling Free-riders in Federated Learning via Training Integrity Verification	194
<i>Guanghao Liang (Donghua University, China), Shan Chang (Donghua University, China), Minghui Dai (Donghua University, China), and Hongzi Zhu (Shanghai Jiaotong University, China)</i>	

Big Data & Large Models

Self-Supervised Adversarial Hashing for Large-Scale Image Retrieval	202
<i>Yuan Cao (Ocean University of China, China), Xue Xu (Ocean University of China, China), Junwei Liu (Ocean University of China, China), and Xiangru Chen (Ocean University of China, China)</i>	
STZIP-GNN: A Robust Model for Taxi Demand Prediction in Sparse Urban Environments	210
<i>Yifei Shen (Lingnan University, China) and Jiaxing Shen (Lingnan University, China)</i>	

Jointly Trajectory Representation Learning on Road Network and Semantics using On-Road IoT Data	218
<i>Longfei Gao (Shenyang Aerospace University, China), Ying Zhao (Shenyang Aerospace University, China), Jiajia Li (Shenyang Aerospace University, China), Jing Zhang (Shenyang Aerospace University, China), Yu Yang (The Education University of Hong, China), and Na Guo (Shenyang Aerospace University, China)</i>	
MLETune: Streamlining Database Knob Tuning via Multi-LLMs Experts Guided Deep Reinforcement Learning	226
<i>Wenlong Dong (UESTC, China), Wei Liu (UESTC, China), Rui Xi (UESTC, China), Mengshu Hou (UESTC, China), and Shuhuan Fan (UESTC, China)</i>	
GraphFlow: A Fast and Accurate Distributed Streaming Graph Computation Model	236
<i>Zheheng Liang (Information Center Guangdong Power Grid Limited Liability Company, China; China Southern Power Grid, China), Yingying Zheng (State Key Lab of Computer Science at ISCAS; University of CAS, China), Sheng Bi (Guangzhou Power Supply Bureau, China), Chaosheng Yao (Information Center Guangdong Power Grid Limited Liability Company, China; China Southern Power Grid, China), Jiayan Wang (Guangzhou Power Supply Bureau, China), Lijie Xu (State Key Lab of Computer Science at ISCAS; University of CAS, China), Shuping Ji (University of Toronto, Canada), Wei Wang (State Key Lab of Computer Science at ISCAS; University of CAS, China; Nanjing Institute of Software Technology; University of CAS, China), and Shikai Duan (Ant Group-Payment Business Group, China)</i>	
FedMCP: Parameter-Efficient Federated Learning with Model-Contrastive Personalization	246
<i>Qianyi Zhao (East China Normal University, China), Chen Qu (University of Massachusetts Amherst, USA), Cen Chen (East China Normal University, China), Mingyuan Fan (East China Normal University, China), and Yanhao Wang (East China Normal University, China)</i>	
Optimizing Big Data Analytics Architecture for Edge Computing Using Container Technology	254
<i>Hong Peng (LiaoNing University, China), YunTian Bai (LiaoNing University, China), GuanYing Kang (LiaoNing University, China), Yang Li (LiaoNing University, China), and TingWei Chen (LiaoNing University, China)</i>	

Cloud and Edge Computing

Enhancing Large Language Models with Knowledge Graphs for Robust Question Answering	262
<i>Zhui Zhu (Tsinghua University, China), Guangpeng Qi (Inspur Yunzhou Industrial Internet Co., Ltd, China), Guangyong Shang (Inspur Yunzhou Industrial Internet Co., Ltd, China), Qingfeng He (Tsinghua University, China), Weichen Zhang (Tsinghua University, China), Ningbo Li (Tsinghua University, China), Yunzhi Chen (Inspur Yunzhou Industrial Internet Co., Ltd, China), Lijun Hu (Inspur Yunzhou Industrial Internet Co., Ltd, China), Wenqiang Zhang (Inspur Yunzhou Industrial Internet Co., Ltd, China), and Fan Dang (Tsinghua University, China)</i>	

Accelerating Hierarchical Federated Learning with Model Splitting in Edge Computing	270
<i>Xiangnan Wang (University of Science and Technology of China, China), Yang Xu (University of Science and Technology of China, China), Hongli Xu (University of Science and Technology of China, China), Zhipeng Sun (University of Science and Technology of China, China), Yunming Liao (University of Science and Technology of China, China), and Ji Qi (China Mobile (Suzhou) Software Technolog Co., Ltd, China)</i>	
A Review of Data Placement and Replication Strategies Based on Machine Learning	278
<i>Amir Najjar (Université de Toulouse, France), Riad Mokadem (Université de Toulouse, France), and Jean-Marc Pierson (Université de Toulouse, France)</i>	
SwitchFlow: Optimizing HPC Workflow Performance with Heterogeneous Serverless Frameworks	286
<i>Hao Chen (Nanchang University, China), Yucong Dong (Nanchang University, China), Xin Wen (Jiangxi Academy of Water Science and Engineering, China), and Zichen Xu (Nanchang University, China)</i>	
Accelerating Cold Start of Thread-Level Sandbox Using Snapshot and Tfork	294
<i>Jianing You (Tianjin University, China), Yukang Chu (Tianjin University, China), and Laiping Zhao (Tianjin University, China)</i>	
Synergy: Collaborating Centralized and Local Scheduling for Serverless Functions	302
<i>Hanmei Chen (Tianjin University, China), Laiping Zhao (Tianjin University, China), Yanan Yang (China Telecom, China), Jianing You (Tianjin University, China), and Keqiu Li (Tianjin University, China)</i>	
Optimized Click Prediction on Mobile Devices via Device-Cloud Synergy	310
<i>Shuyuan Pan (Soochow University, China), Anqi Lu (Harbin Institute of Technology, China), Youbing Hu (Harbin Institute of Technology, China), Lingzhi Li (Soochow University, China), and Zhijun Li (Soochow University, China; Harbin Institute of Technology, China)</i>	
DICFaaS: Parallel and Scalable Data Integrity Computation for Serverless Systems	318
<i>Tianchen Xiong (Shanghai Jiao Tong University, China; Shanghai Key Laboratory of Scalable Computing and Systems, China) and Bo Peng (Shanghai Jiao Tong University, China; Shanghai Key Laboratory of Scalable Computing and Systems, China)</i>	
Optimal Power Control for Over-the-Air Federated Learning with Gradient Compression	326
<i>Mengzhe Ruan (City University of Hong Kong Shenzhen Research Institute; City University of Hong Kong), Yunhe Li (City University of Hong Kong Shenzhen Research Institute; City University of Hong Kong), Weizhou Zhang (National University of Singapore), Linqi Song (City University of Hong Kong Shenzhen Research Institute; City University of Hong Kong), and Weitao Xu (City University of Hong Kong Shenzhen Research Institute; City University of Hong Kong)</i>	
AdaDiffAD: Adaptively Segmenting Diffusion Models for Time Series Anomaly Detection in Dynamic JointCloud Environment	334
<i>Chao Ma (Wuhan University, China), Lin Yi (Wuhan University, China), Linjiang Zhou (Wuhan University, China), Zepeng Wang (Wuhan University, China), Xiaochuan Shi (Wuhan University, China), and Weiping Zhu (Wuhan University, China)</i>	

Joint DRL and ASL-Based “Cloud-Edge-End” Collaborative Caching Optimization for Metaverse Scenarios	342
<i>Zheng Wan (Jiangxi University of Finance and Economics, China), Shenglu Zhao (Jiangxi University of Finance and Economics, China), Xiaogang Dong (Jiujiang University, China), Zhekai Huang (Jiangxi University of Finance and Economics, China), and Yifeng Tan (Jiangxi University of Finance and Economics, China)</i>	
Flexible LAN-WAN Orchestration for Communication Efficient Federated Learning over Large-Scale Mobile Devices	350
<i>Jinliang Yuan (Tsinghua University, China), Qing Li (Beijing University of Posts and Telecommunications, China), Fan Dang (Tsinghua University, China), Xiaofang Mu (Taiyuan Normal University, China; Shanxi Key Laboratory of Intelligent Optimization Computing and Blockchain Technology, China), Hui Qi (Taiyuan Normal University, China; Shanxi Key Laboratory of Intelligent Optimization Computing and Blockchain Technology, China), Mengwei Xu (Beijing University of Posts and Telecommunications, China), and Shangguang Wang (Beijing University of Posts and Telecommunications, China)</i>	
A Multi-Path Orchestration Method for Cloud-Edge Data Transmission Based on DRL	358
<i>Zhihui Wang (Qilu University of Technology, China; Shandong Fundamental Research Center for Computer Science, China), Xubing Dou (Qilu University of Technology, China; Shandong Fundamental Research Center for Computer Science, China), Shuyun Li (Qilu University of Technology, China; Shandong Fundamental Research Center for Computer Science, China), Huan Ma (Qilu University of Technology, China; Shandong Fundamental Research Center for Computer Science, China), Xinchang Zhang (Shandong Normal University, China), and Maoli Wang (QuFu normal university, China)</i>	
NAP: Network Adaptive Proxy for Dynamic Traffic Management in Edge Computing	366
<i>Zhongjun Mao (Nanjing University of Aeronautics and Astronautics, China), Xin Li (Nanjing University of Aeronautics and Astronautics, China; Collaborative Innovation Center of Novel Software Technology and Industrialization, China), and Yanling Bu (Nanjing University of Aeronautics and Astronautics, China; Collaborative Innovation Center of Novel Software Technology and Industrialization, China)</i>	
Temporal Coverage Optimization for Epoch-Based Vehicular Crowdsensing Recruitment	374
<i>Ziying Pan (Xiamen University, China), Yongxuan Lai (Xiamen University, China; Longyan University, China), Yi Fan (Qiannan Normal University for Nationalities, China), Yiling Huang (Jinguang Primary School, China), Liang Song (Xiamen University, China), and Fan Yang (Xiamen University, China)</i>	
Efficient Point Cloud Analytics on Edge Devices	382
<i>Kunxiong Zhu (The Hong Kong University of Science and Technology (Guangzhou), China), Zhenlin Wu (The Hong Kong University of Science and Technology (Guangzhou), China), and Hongyuan Liu (The Hong Kong University of Science and Technology (Guangzhou), China)</i>	

Machine Learning Systems

All Federated or Not: Optimizing Personal Model Performance in Cross-Silo Federated Learning	390
<i>Juan Li (Nanjing University of Aeronautics and Astronautics, China), Yanmin Zhu (Shanghai Jiao Tong University, China), Jie Wu (Temple University, USA), Weifan Wu (Nanjing University of Aeronautics and Astronautics, China), Tianzi Zang (Nanjing University of Aeronautics and Astronautics, China), and Lu Liu (Nanjing University of Aeronautics and Astronautics, China)</i>	
Leaf: Learning-Based Stream-Level Fair Scheduling for Deep Learning Accelerators	400
<i>Yida Wang (Capital Normal University, China), Bojun Cao (Capital Normal University, China), Mengjuan Gao (Capital Normal University, China), Qinwen Shi (Capital Normal University, China), and Yuanchao Xu (Capital Normal University, China)</i>	
Accurate Traffic State Prediction with Deep Learning – Analyzing Statistical Aides for Identifying Anomalous Traffic Trends	408
<i>Jaxon Hancock (Michigan State University, USA) and Jian Ren (Michigan State University, USA)</i>	
AI-Blueprint: A Real-Time System for Automated Identification and Analysis of Electrical Blueprints	415
<i>Chao Gu (University of Science and Technology of China, China), Ye Tian (University of Science and Technology of China, China), Jiahui Hou (University of Science and Technology of China, China), and Xiangyang Li (University of Science and Technology of China, China)</i>	
LLMAir: Adaptive Reprogramming Large Language Model for Air Quality Prediction	423
<i>Jinxiao Fan (Beijing University of Posts and Telecommunications, China), Haolin Chu (Beijing University of Posts and Telecommunications, China), Liang Liu (Beijing University of Posts and Telecommunications, China), and Huadong Ma (Beijing University of Posts and Telecommunications, China)</i>	
LGDB-Net : Dual-Branch Path for Building Extraction from Remote Sensing Image	431
<i>Ronghuan Zhang (Qilu University of Technology (Shandong Academy of Sciences), China; Shandong Provincial Key Laboratory of Computer Networks, Shandong Fundamental Research Center for Computer Science, China), Jing Zhao (Qilu University of Technology (Shandong Academy of Sciences), China; Shandong Provincial Key Laboratory of Computer Networks, Shandong Fundamental Research Center for Computer Science, China), Ming Li (Shandong University of Traditional Chinese Medicine, China), and Qingzhi Zou (Qilu University of Technology (Shandong Academy of Sciences), China; Shandong Provincial Key Laboratory of Computer Networks, Shandong Fundamental Research Center for Computer Science, China)</i>	

FERI : Feature Enhancement and Relational Interaction for Image-Text Matching	439
<i>Yu Zhang (Qilu University of Technology (Shandong Academy of Sciences), China; Shandong Provincial Key Laboratory of Computer Networks, Shandong Fundamental Research Center for Computer Science, China), Jianqiang Zhang (Shandong Branch of China Mobile Communication Group Design Institute Co., China), Gongpeng Song (Shandong Branch of China Mobile Communication Group Design Institute Co., China), Qin Lu (Qilu University of Technology (Shandong Academy of Sciences), China; Shandong Provincial Key Laboratory of Computer Networks, Shandong Fundamental Research Center for Computer Science, China), and Shuo Zhao (Qilu University of Technology (Shandong Academy of Sciences), China; Shandong Provincial Key Laboratory of Computer Networks, Shandong Fundamental Research Center for Computer Science, China)</i>	
Intent-Aware Cross Attention for Next POI Recommendation	447
<i>Yanling Long (Shanghai Jiao Tong University, China), Yanmin Zhu (Shanghai Jiao Tong University, China), and Mengyuan Jing (Shanghai Jiao Tong University, China)</i>	
Hypergraph Neural Networks Based on Enclosing Subgraph Extraction for Link Prediction	455
<i>Liang Chen (Beijing University of Chemical Technology, China), Ying Zhao (Beijing University of Chemical Technology, China), and Atul Sajjanhar (Deakin University, Australia)</i>	
MIMO Based Uncertainty-Aware Learning-to-Rank Query Optimizer	462
<i>Jincan Xiong (UESTC, China), Rui Xi (UESTC, China), Xue Chen (UESTC, China), Zihan Yan (UESTC, China), Junxin Zhu (UESTC, China), and Mengshu Hou (UESTC, China)</i>	

Interdisciplinary Distributed Systems and Applications

DI-Tree: A Dual-Ended Interval Tree for Efficient Event Matching in Content-Based Pub/Sub Systems	471
<i>Junshen Li (Shanghai Jiao Tong University, China), Haiyang Ren (Zhejiang Normal University, China), Zhengyu Liao (Zhejiang Normal University, China), Wanghua Shi (Shanghai Jiao Tong University, China), Shiyu Qian (Shanghai Jiao Tong University, China; Shanghai Key Laboratory of Trusted Data Circulation and Governance in Web3, China), Guangtao Xue (Shanghai Jiao Tong University, China; Shanghai Key Laboratory of Trusted Data Circulation and Governance in Web3, China), Jian Cao (Shanghai Jiao Tong University, China; Shanghai Key Laboratory of Trusted Data Circulation and Governance in Web3, China), and Zhonglong Zheng (Zhejiang Normal University, China)</i>	
Python to Kubernetes: A Programming and Resource Management Framework for Compute and Data-Intensive Applications	479
<i>Andrey Nagiyev (University of Vienna, Austria), Enes Bajrovic (University of Vienna, Austria), and Siegfried Benkner (University of Vienna, Austria)</i>	
Practical Deterministic Transaction Processing with Low-cost Re-execution	487
<i>Xingchen Li (Harbin Institute of Technology, China), Xinyuan Wang (Harbin Institute of Technology, China), and Hejiao Huang (Harbin Institute of Technology, China)</i>	

BuildEnVR: An Immersive Analysis System for Environmental Field	496
<i>Zhengan Zhou (Tsinghua University), Kebin Liu (Tsinghua University; Fuzhou Fuyao Institute for Advanced Study), Yantong Xie (Carnegie Mellon University), Hangxu Jin (Tsinghua University), Shi Liu (Tsinghua University), Ruiqing Wang (Tsinghua University), Haitian Zhao (Tsinghua University), Borong Lin (Tsinghua University), Xiaofang Mu (Taiyuan Normal University; Shanxi Key Laboratory of Intelligent Optimization Computing and Blockchain Technology), and Hui Qi (Taiyuan Normal University; Shanxi Key Laboratory of Intelligent Optimization Computing and Blockchain Technology)</i>	
UAV Swarm Collaborative Transmission Optimization for Machine Learning Tasks	504
<i>Liangchen Chao (Zhengzhou University, China), Bo Zhang (Zhengzhou University, China), Hengpeng Guo (Zhengzhou University, China), Fangheng Ji (Zhengzhou University, China), and Junfeng Li (Zhengzhou University, China)</i>	
MDL: Multi-Granularity Distribution Features Learning for Unsupervised Person Re-Identification	512
<i>Fangheng Ji (Zhengzhou University, China), Bo Zhang (Zhengzhou University, China), Liangchen Chao (Zhengzhou University, China), Hengpeng Guo (Zhengzhou University, China), and Junfeng Li (Zhengzhou University, China)</i>	
BELFAL: A Blockchain-Based Ensemble Learning Framework for Anti-Money Laundering in Crypto-Currency Markets	520
<i>Ziye Li (Renmin University of China, China), Ruizhe Yao (Renmin University of China, China), Dong Yang (Renmin University of China, China), Yifei Zhang (Renmin University of China, China), Hanyu Mao (Renmin University of China, China), and Yong Yuan (Renmin University of China, China)</i>	
PowerGest: Self-Powered Gesture Recognition for Command Input and Robotic Manipulation	528
<i>Jiarong Li (Tsinghua University, China), Qinghao Xu (Tsinghua University, China), Zhancong Xu (Tsinghua University, China), Changshuo Ge (Tsinghua University, China), Liguang Ruan (Tsinghua University, China), Xiaojun Liang (Pengcheng Laboratory, China), Wenbo Ding (Tsinghua University, China), Weihua Gui (Central South University, China), and Xiao-Ping Zhang (Tsinghua University, China)</i>	

Internet of Things & Cyber-Physical Systems

Prolonging The Range of Low-Power Visible Light Communication Systems with M-FSK	536
<i>Mengyu Kang (University of Electronic Science and Technology of China, China), Jiyi Wu (University of Electronic Science and Technology of China, China), Jiacheng Li (University of Electronic Science and Technology of China, China), Yi Zhou (University of Electronic Science and Technology of China, China), Zhiwei Zhao (University of Electronic Science and Technology of China, China), and Yaxin Zhou (University of Electronic Science and Technology of China, China)</i>	

A Comprehensive Evaluation of Bluetooth Low Energy Mesh	544
<i>Yize Zhao (Yanshan University, China), Lin Wang (Yanshan University, China), Zijuan Liu (Tsinghua University, China), Yifan Xu (Tsinghua University, China), Fan Dang (Tsinghua University, China), Xu Wang (Tsinghua University, China), Haitian Zhao (Tsinghua University, China), and Xin Miao (Tsinghua University, China)</i>	
A QoE-Aware Adaptive Energy-Efficient Transmission Scheduling Method	552
<i>Yankun Yuan (Yanshan University, China), Lin Wang (Yanshan University, China), Chonghui Xiao (National Computer Network Emergency Response Technical Team/Coordination Center of China, China), Zijuan Liu (Tsinghua University, China), Fan Dang (Tsinghua University, China), Xu Wang (Tsinghua University, China), Haitian Zhao (Tsinghua University, China), and Xin Miao (Tsinghua University, China)</i>	
Learning Triple-View Representation Discrepancy for Multivariate Time Series Anomaly Detection with Multi-Scale Patching	560
<i>Wei Liu (Anhui University of Finance and Economics, China), Wanying Zhang (Anhui University of Finance and Economics, China), Yating Jiang (Anhui University of Finance and Economics, China), Shan Chang (Donghua University, China), and Sun Zhang (Anhui University of Finance and Economics, China)</i>	
Autonomous Cyber Defense using Graph Attention Network Enhanced Reinforcement Learning ..	568
<i>Yihang Shi (Changzhou University, China), Huajun Zhang (Changzhou University, China), Lin Shi (Changzhou University, China), and Shoukun Xu (Changzhou University, China)</i>	
Machine Learning-Empowered Network Measurement: A Critical Path to Traffic Anomaly Detection in IoT-Enabled Smart Grid	578
<i>Hongrui Zang (State Grid Jilin Electric Power Company Limited Communication Company Branch, China), Hongbo Liu (State Grid Jilin Electric Power Company Limited Communication Company Branch, China), Wei Sun (State Grid Jilin Electric Power Company Limited Communication Company Branch, China), Guangyuan Zhang (State Grid Jilin Electric Power Company Limited Communication Company Branch, China), and Xiangyu Kong (Dalian University of Technology, China)</i>	
CHESS: Concurrent Charging with Efficient Phase Scheduling	585
<i>Dié Wu (University of Electronic Science and Technology of China, China; Sichuan Normal University, China; Chengdu Aerospace Communication Device Company Limited, China), Chenglong Zhang (Sichuan Normal University, China), Jingwen Li (Sichuan Normal University, China), Tang Liu (Sichuan Normal University, China), Kun She (University of Electronic Science and Technology of China, China), and Jianhong Zhao (Chengdu Aerospace Communication Device Company Limited, China)</i>	
From Agents to Robots: A Training and Evaluation Platform for Multi-robot Reinforcement Learning	593
<i>Zhixuan Liang (The Hong Kong Polytechnic University, Hong Kong SAR), Jiannong Cao (The Hong Kong Polytechnic University, Hong Kong SAR), Shan Jiang (The Hong Kong Polytechnic University, Hong Kong SAR), Divya Saxena (The Hong Kong Polytechnic University, Hong Kong SAR), Rui Cao (The Hong Kong Polytechnic University, Hong Kong SAR), and Huafeng Xu (The Hong Kong Polytechnic University, Hong Kong SAR)</i>	

Sensor-Integrated Transformer-RF Model for HAR	601
<i>Yisen Kang (Central South University, China), Zheng Wang (Hunan University, China), Xiaoqi Sun (Hunan University, China), Huan Wang (Langfang Normal University, China), Ruiqi Lu (Hunan University, China), Dengpeng Zou (Central South University, China), Mingyuan Liao (State Grid Hunan Electric Power Company Limited, China), Xiaokang Shi (Hunan University, China), Yanwen Wang (Hunan University, China), and Renfa Li (Hunan University, China)</i>	
Towards LLM-Powered Ambient Sensor Based Multi-Person Human Activity Recognition	609
<i>Xi Chen (Orange Innovation, France), Julien Cumin (Orange Innovation, France), Fano Ramparany (Orange Innovation, France), and Dominique Vaufreydaz (Univ Grenoble Alpes, France)</i>	
Pruning Blockchain Protocols for Efficient Access Control in IoT Systems	617
<i>Yongtao Huang (University of Texas at Dallas), I-Ling Yen (University of Texas at Dallas), and Farokh Bastani (University of Texas at Dallas)</i>	

Blockchain

BachLedger: Orchestrating Parallel Execution with Dynamic Dependency Detection and Seamless Scheduling	625
<i>Yi Yang (Tsinghua University, China), Guangyong Shang (Inspur Yunzhou Industrial Internet Co., Ltd, China), Guangpeng Qi (Inspur Yunzhou Industrial Internet Co., Ltd, China), Zhen Ma (Inspur Yunzhou Industrial Internet Co., Ltd, China), Yaxiong Liu (Inspur Yunzhou Industrial Internet Co., Ltd, China), Jiazhou Tian (Tsinghua University, China), Aocheng Duan (Xidian University, China), Meng Zhang (Inspur Yunzhou Industrial Internet Co., Ltd, China), Jingying Li (Inspur Yunzhou Industrial Internet Co., Ltd, China), and Xuan Ding (Tsinghua University, China)</i>	
Design and Optimization of Smart Contracts for Cross-Domain Sharing of Sensitive Data	633
<i>Manqing Zhu (Tianjin University, China), Lingxiao Wang (Tianjin University, China), and Xiaohong Li (Tianjin University, China)</i>	
FEMD: Feature Enhancement-Aided Multimodal Feature Fusion Approach for Smart Contract Vulnerability Detection	641
<i>Juan Li (Qinghai Normal University, China), Rui Li (Xidian University; Qinghai Normal University, China), Youshui Lu (Xi'an Jiaotong University, China), Bowen Cai (University of Minnesota - Twin City, USA), Yulin Cao (Qinghai Normal University, China), Hang Lin (Qinghai Normal University, China), Xingxing Li (Qinghai Normal University, China), and Chan Li (Qinghai Normal University, China)</i>	

Scaling Permissioned Blockchain through LSM Disaggregation across Execution and Storage Nodes	649
<i>Jiazhou Tian (Tsinghua University, China), Guangpeng Qi (Inspur Yunzhou Industrial Internet Co., Ltd, China), Guangyong Shang (Inspur Yunzhou Industrial Internet Co., Ltd, China), Zhen Ma (Inspur Yunzhou Industrial Internet Co., Ltd, China), Yaxiong Liu (Inspur Yunzhou Industrial Internet Co., Ltd, China), Meng Zhang (Inspur Yunzhou Industrial Internet Co., Ltd, China), Jingying Li (Inspur Yunzhou Industrial Internet Co., Ltd, China), Delun Wu (Xidian University, China), Yi Yang (Tsinghua University, China), and Xuan Ding (Tsinghua University, China)</i>	
MARS: Multi-Agent Deep Reinforcement Learning for Real-Time Workflow Scheduling in Hybrid Clouds with Privacy Protection	657
<i>Long Cheng (North China Electric Power University, China), Haoyang He (North China Electric Power University, China), Yan Gu (North China Electric Power University, China), Qingzhi Liu (Wageningen University and Research, Netherlands), Zhiming Zhao (University of Amsterdam, Netherlands), and Fang Fang (North China Electric Power University, China)</i>	

High-Performance Computing & Data Center

VAKY: Scheduling In-Network Aggregation for Distributed Deep Training Acceleration	667
<i>Penglai Cui (Huawei Technologies Co., Ltd., China), Heng Pan (Computer Network Information Center, Chinese Academy of Sciences, China), Jianer Zhou (Peng Cheng Laboratory, China), Qinghua Wu (Institute of Computing Technology, Chinese Academy of Sciences, China), Zhaohua Wang (Computer Network Information Center, Chinese Academy of Sciences, China), and Zhenyu Li (Institute of Computing Technology, Chinese Academy of Sciences, China)</i>	
Optimization of One-to-Many Communication Primitives for Dragonfly Topologies	675
<i>José Duro (Universitat Politècnica de València, Spain), Adrián Castelló (Universitat Politècnica de València, Spain), María E. Gómez (Universitat Politècnica de València, Spain), Julio Sahuquillo (Universitat Politècnica de València, Spain), and Enrique Quintana (Universitat Politècnica de València, Spain)</i>	
Priority-Aware Deadlock Recovery Algorithm for Multi-Chiplet Systems	684
<i>Zhiqiang Chen (National University of Defense Technology, China; Key Laboratory of Advanced Microprocessor Chips and Systems, China), Yongwen Wang (National University of Defense Technology, China; Key Laboratory of Advanced Microprocessor Chips and Systems, China), Hongwei Zhou (National University of Defense Technology, China; Key Laboratory of Advanced Microprocessor Chips and Systems, China), and Mengjin Li (National University of Defense Technology, China; Key Laboratory of Advanced Microprocessor Chips and Systems, China)</i>	
Seasonal Study of user Demand and IT System usage in Datacenters	693
<i>Damien Landré (Université de Franche-Comté, France; Université Toulouse 3, France), Laurent Philippe (Université de Franche-Comté, France), and Jean-Marc Pierson (Université Toulouse 3, France)</i>	

Analysis of Parallel Graph Applications	703
<i>Funda Atik (Washington University, USA), Serif Yesil (NVIDIA, USA), Hamza Ouarnoughi (Université Polytechnique Hauts-de-France, France), Smail Niar (Université Polytechnique Hauts-de-France, France), and Ozcan Ozturk (Sabanci University, Turkey)</i>	
Generic and ML Workloads in an HPC Datacenter: Node Energy, Job Failures, and Node-Job Analysis	710
<i>Xiaoyu Chu (Vrije Universiteit, the Netherlands), Daniel Hofstätter (TU Wien, Austria), Shashikant Ilager (TU Wien, Austria), Sacheendra Talluri (Vrije Universiteit, the Netherlands), Duncan Kampert (SURF, the Netherlands), Damian Podareanu (SURF, the Netherlands), Dmitry Duplyakin (National Renewable Energy Laboratory, USA), Ivona Brandic (TU Wien, Austria), and Alexandru Iosup (Vrije Universiteit, the Netherlands)</i>	
Parallel K-Means on GPU using Warp-Centric Strategies	720
<i>Michel B. Cordeiro (Federal University of Parana, Brazil) and Wagner M. Nunan Zola (Federal University of Parana, Brazil)</i>	
The Bicameral Cache: a Split Cache for Vector Architectures	728
<i>Susana Rebolledo (University of Cantabria, Spain), Borja Perez (University of Cantabria, Spain), Jose Luis Bosque (University of Cantabria, Spain), and Peter Hsu (Peter Hsu Consulting, Inc., USA)</i>	
TensorPolyMul: Accelerating Polynomial Multiplication in NTT-Unfriendly Lattice-Based Cryptography Using Tensor Cores	737
<i>Yi Bian (University of Chinese Academy of Sciences, China), Fangyu Zheng (University of Chinese Academy of Sciences, China), and Jiwu Jing (University of Chinese Academy of Sciences, China)</i>	
Lightweight Operating System Services for Incremental Checkpointing in Speculative Discrete Event Simulation on Linux Platforms	745
<i>Federica Montesano (Tor Vergata University of Rome, Italy), Romolo Marotta (Tor Vergata University of Rome; Big Data e Quantum Computing, Italy), and Francesco Quaglia (Tor Vergata University of Rome, Italy)</i>	
HDCl: Hybrid Data Center Based on IPFS with High-Reliability	753
<i>Haowei Li (Beijing Information Science and Technology University, China), Canqiang Li (Tsinghua University, China), Yiyang Zhao (Tsinghua University, China), Yan Zhu (Tsinghua University, China), and Yunbo Zuo (Beijing Information Science and Technology University, China)</i>	

Theory & Protocols

PPaxos: An Adaptive Pull-Based Group Consensus Protocol for Edge Networks	761
<i>Wei Hao (Tianjin University of Technology, China), Guangping Xu (Tianjin University of Technology, China), Jianshe Wang (Tianjin University of Technology, China), and Yanyan Wen (Tianjin University of Technology, China)</i>	

ICPADS2024

Generative AI Enabled Robotic Process Automation: A Practical Case Study	769
<i>Abdul Latif (University of Wollongong in Dubai, United Arab Emirates), Mai ElBarachi (University of Wollongong in Dubai, United Arab Emirates), George Tsaramirsis (University of Wollongong in Dubai, United Arab Emirates), and Fazal Qudus Khan (University of Swat, Pakistan)</i>	
Author Index	777