42ND IEEE INTERNATIONAL PERFORMANCE COMPUTING AND COMMUNICATIONS CONFERENCE

IEEE IPCCC 2023

IEEE

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ANAHEIM, CALIFORNIA, USA

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IEEE IPCCC 2023

Message from the IPCCC 2023 General Chairs

On behalf of the conference executive committee, it is our great pleasure to welcome everyone to the 42nd IEEE International Performance, Computing, and Communications Conference (IPCCC 2023) at Anaheim, California, USA, the home of the "Happiest Place on Earth".

IPCCC 2023 brings together researchers worldwide to exchange their latest research insights and innovations in computer and communication systems, as well as to inspire each other through presentations and interactions.

We want to express our heartfelt gratitude to many people who have made this conference possible. Firstly, we would like to thank all the authors for choosing IPCCC as a channel to present their quality research. Secondly, we would like to express our appreciation to Program Chairs Prof. Ruozhou Yu and Prof. Song Fu, all members of the Technical Program Committee, as well as external reviewers for their tremendous effort and hard work in paper selection. Thirdly, we would like to sincerely thank our organizing committee members, including but not limited to, Board Chair and Financial Chair Nasr Ullah, General Vice-Chair Prof. Gürkan Solmaz, Workshop Chair Prof. Jack Zhang, Poster Chair Prof. Matthias Wübbeling, Edas Chair Xiaojian Wang and Huayi Qi, Publication Chair Venugopal Mani, Publicity Chairs Prof. Fan Li, Prof. Zhuojun Duan, Prof. Florian Klingler, Web Chair Neil Nelson, Registration Chair Jack Chen, and Ex-Officio Consultant Kathlene Hurt, for their fantastic support and collaboration. It has been a privilege for us to work with such a marvelous group of dedicated professionals.

Last but not least, we would like to thank IEEE Computer Society and Technical Committee on Computer Communications (TCCC) for their continuing sponsorship of this conference. We do hope that you will enjoy the keynote, the technical programs, the workshop, and the poster session and will make new connections. Have a wonderful time at IPCCC 2023.

■ **Feng Wang and Xiuzhen (Susan) Cheng , IPCCC 2023 General Chairs**

Message from the IPCCC 2023 Technical Program Chairs

Welcome to the 42nd IEEE International Performance Computing and Communications Conference (IPCCC 2023)! This year, we are glad to host the conference, with most sessions in-person, in Anaheim, California, USA, whereas some sessions will be remote due to on-going travel restrictions.

IPCCC 2023 received 127 paper submissions (99 full, 21 short, 7 poster papers). Out of these submissions, 33 papers were accepted as full papers (acceptance ratio of 26%). Each paper was thoroughly reviewed by at least three reviewers. In addition, 22 papers were accepted as short papers and four as poster papers. Full papers, short papers, and poster papers are all included in the IPCCC conference proceedings.

We would like to express our sincere gratitude to all who have contributed to the IPCCC 2023 program. First, we thank the authors of all paper submissions, regardless of the papers' acceptance status, for their efforts and submitting their quality research work to IPCCC. Second, we are grateful for the support of 104 Technical Program Committee (TPC) members for their fair, timely, and constructive reviews. The work of the authors and the TPC members contribute to the quality of the conference. Third, we thank the IPCCC 2023 Organizing Committee and Steering Committee for their support. Finally, we would like to welcome all attendees to the conference and we greatly appreciate your participation. We are sure that you will find the IPCCC 2023 program interesting, and we hope you will enjoy the experiences provided by the conference.

■ **Ruozhou Yu and Song Fu, IPCCC 2023 Technical Program Chairs**

THE INTERNATIONAL PERFORMANCE, COMPUTING AND COMMUNICATIONS CONFERENCE IS THE PREMIER IEEE CONFERENCE PRESENTING RESEARCH IN THE PERFORMANCE OF COMPUTER AND COMMUNICATIONS SYSTEMS. FOR FOUR DECADES IPCCC HAS BEEN A RESEARCH FORUM FOR ACADEMIC, INDUSTRIAL AND GOVERNMENT RESEARCHERS.

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■ All Program Times are USA Pacific Standard Time (PST) ■

ANNOUNCING IPCCC 2024

Orlando, Florida USA
November. 22-24 2024

■ **PAPER ABSTRACT DUE:**
May 15th, 2024

■ **FULL PAPER DUE (REGULAR, POSTER, WORKSHOP):**
May 31th, 2024

■ **FULL PAPER ACCEPTANCE NOTICE:**
July 15th, 2024

■ **WORKSHOP & POSTER PAPERS ACCEPTANCE NOTICE: August 1, 2024**

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IPCC 2023 Day One ▪ Friday, November 17TH

▪ **Registration Opens:** 12:00 PST ▪ **Opening Remarks & Introduction:** 13:00-13:15 PST

Session 1.0: Keynote Speaker: 13:15-14:30 PST ▪ Chairs: Feng Wang & Ruozhou Yu ▪ Room: Garden A

Distributed AI in the New World of Device-Edge-Cloud Computing

▪ **Professor Ling Liu** ▪
School of Computer Science - Georgia Institute of Technology

[See Page 7 for Keynote Details]

Break - Garden Patio: 14:30-14:45

Session 1.1A: Federated and Efficient ML

14:45-16:00 PST ▪ Chair: Honglu Jiang
[Room: Garden A]

An Adaptive Sampling Strategy for Federal Graph Neural Networks in Internet of Things: Tingqi Wang, Xu Zheng (University of Electronic Science and Technology of China, China), Liyun Yang (China Electronics Standardization Institute, China), Rong Xiang (Chengdu Mengsheng Electronic Company, China)

Adaptive Edge-Level Personalization on Hierarchical Federated Learning*: Lihua Song, Jing Li (North China University of Technology, China), Honglu Jiang (Miami University, USA), Shuhua Wei (North China University of Technology, China), Yufei Guo (George Washington University, USA)

Evaluation of Pruning Techniques*: Shvetha S Kumar, Reshma R Nayak, Jismi S Kannampuzha (The University of Texas at Austin, USA), Sahil Rai, Jeeho Ryoo (British Columbia Institute of Technology, Canada), Lizy K John (The University of Texas at Austin, USA)

Session 1.1B: Mobile and Wireless Networks

14:45-16:00 PST ▪ Chair: Xianglong Feng
[Room: Garden BC]

Low-Latency High-Reliability Industrial MAC Protocol for 6G Networks: Ahmed Mahmoud Salama (The University of Arizona, USA), Bin Xie, Jayanta Debnath (InfoBeyond Technology LLC, USA), Anup Kumar (University Of Louisville, USA)

Can MPTCP Proxy Practically Improve Cellular Communication?: Reza Poorzare (Data-Centric Software Systems Research Group at the Institute of Applied Research Karlsruhe Universi, Germany); Oliver P. Waldhorst (Karlsruhe University of Applied Sciences, Germany)

Pathloss Analysis and Modelling for 5G Communication in U-SPACE*: Stanley Chukwuebuka Nwabuona, Radheshyam Singh, Michael S. Berger, Sarah Ruepp, Lars Dittmann (Technical University of Denmark, Denmark)

Session 1.2A: Sensing, IoT and Internet

16:00-17:35 PST ▪ Chair: Venugopal Mani
[Room: Garden A]

Routing for Intermittently-Powered Sensing Systems: Gaosheng Liu (Vrije Universiteit Amsterdam, The Netherlands); Lin Wang (Paderborn University, Germany & Vrije Universiteit Amsterdam, The Netherlands)

DynaES: Dynamic Energy Scheduling for Energy Harvesting Environmental Sensors : Jianwei Hao, Mosopefoluwa Emmanuel Oni, In Kee Kim, Lakshmish Ramaswamy (University of Georgia, USA)

Parity Shadow Stack: Dynamic Instrumentation Based Control Flow Security for IoT Devices: Charles Qing Cao (University of Tennessee, USA)

A Scheme to Introduce New Reachability Domains on the Internet*: Souvik Das, Kamil Sarac (University of Texas at Dallas, USA)

Reception and Poster Session

18:30-20:30 PST ▪ Chair: Neil Nelson ▪ Tiffany Room

Reception: Poster Session

Autonomy and Fatigue in Human-Robot Teams:
Max Parks, Mark Allison (The University of Michigan-Flint, USA)

Redesigning Mobile Crowd Sensing's Selection Logic to Ensure Participant's Diversity:
Jiahui Jin, Ting Li, Yijun Liu (Emory University, USA)

Machine Learning Load Balancing Algorithms in SDN-Enabled Massive IoT Networks:
Aaron Harbin (Kennesaw State Univrsity, USA);
Kane Baldwin, Jui Mhatre, Ahyoung Lee, Hoseon Lee (Kennesaw State University, USA)

An Artificial Neural Network Model for Mapping Extreme Precipitation Events:
Hela Hammami (University of Montpellier, University of Carthage, Higher School of Communication of Tunis, Tunisia), Sadok El Asmi (Sup'Com, Tunisia)

Reception: Best Paper Candiates

CORN: Cloud-Optimized RDMA Networking:
Jung-Hwan Cha, Shinhyeok Kang, Yewon Kang, Hansaem Seo, Jungeun Lee, Jongsung Kim (Samsung SDS, South Korea); Minsung Jang (AT&T Labs, USA)

Routing for Intermittently-Powered Sensing Systems:
Gaosheng Liu (Vrije Universiteit Amsterdam, The Netherlands); Lin Wang (Paderborn University, Germany & Vrije Universiteit Amsterdam, The Netherlands)

Theory vs. Practice in Modeling Edge Storage Systems:
Oleg Kolosov (Technion - Israel Institute of Technology, Israel); Mehmet Aktas, Emina Soljanin (Rutgers University, USA); Gala Yadgar (Technion - Israel Institute of Technology, Israel)

*Denotes Short Paper

IPCCC 2023 Day Two ▪ Saturday, November 18TH

Session 2.3A: ML in Security, Privacy & Performance (Virtual), 07:30-09:00 PST ▪ Chair: Pengfei Hu
[Room: Garden A]

The Potential Utility of Image Descriptions: User Identity Linkage Across Social Networks Based on MultiModal Self-Attention Fusion: Yunfeng Li, Gaopeng Gou, Gang Xiong, Zhen Li, Mingxin Cui (Chinese Academy of Sciences, China)

Denoising Network of Dynamic Features for Enhanced Malware Classification: Siyuan Li, Hui Wen, Liting Deng (Chinese Academy of Sciences, China), Yu Zhou (Jiangsu Provincial Public Security Department, China), Wenyuan Zhang, Zhi Li, Limin Sun (China Academy of Science, China)

UDAD: An Accurate Unsupervised Database Anomaly Detection Method *: Huazhen Zhong (University of Chinese Academy of Sciences, China), Fan Zhang (China Mobile Communications Group, China), Yining Zhao, Weifang Zhang (China Mobile Information Technology Center, China), Wenjie Xiao, Xuehai Tang, Liangjun Zang (Chinese Academy of Sciences, China)

Identifying Exposed ICS Remote Management Device Using Multimodal Feature in the Wild: Liuxing Su (University of Chinese Academy of Sciences & Chinese Academy of Sciences, China), Zhenzhen Li, Gaopeng Gou, Zhen Li, Gang Xiong (Chinese Academy of Sciences, China), Chengshang Hou (University of Chinese Academy of Sciences & Chinese Academy of Sciences, China)

Predicting the GNSS Pseudo-Measurement with a Hybrid Multi-Head Attention for Tightly-Coupled Navigation: Hongfu Xu (Beijing University of Posts and Telecommunications, China)

Sparse Sequential Recommendation with Interactions and Intentions Contrastive Learning*: Hengxia Wang, Jinghua Zhu (Heilongjiang University, China)

Session 2.3B: Cloud & Internet (Virtual)
07:30-09:00 PST ▪ Chair: Gürkan Solmaz
[Room: Garden BC]

Based on Deep Reinforcement Learning with Context Network and Experience Pool Optimization for Mix-Flow Scheduling in SD-DCN: Chao-Xuan Zheng, Wai-Xi Liu, Zhen-zheng Guo, Jian-yu Zhang (Guangzhou University, China)

iWriter: An Offloading Method for Indirectly Writing Remote Data: Yuting Li (University of Science and Technology of China, China); Yun Xu (University of science and Technology of China, China); Pengcheng Wang, Yonghui Xu, Weiguang Wang (Huawei Technologies Co., LTD, China); Yang Yi (University of Science and Technology of China, China)

BCN: A Fast Notified Backpressure Congestion Management: Xingyu Hu (National University of Defense Technology & Chinese Academy of Sciences, China), Dezun Dong, Hu Dinghuang, Yuan Lu, Yang Bai, Yong Dong (National University of Defense Technology, China)

OS Packet Processing Mechanism Simulation Architecture for Enabling Digital Twins of Networks in ns-3: Keyang Chang, Yimin Du, Min Liu, Jinglin Shi, Yiqing Zhou, Yongkang Li (Chinese Academy of Sciences, China)

Heuristic Fast Routing in Large-Scale Deterministic Network: Mengyu Wang, Shuyong Zhu, Linghao Wang, Wenxiao Li, Yujun Zhang (Chinese Academy of Sciences, China)

Location-Based Prefix Aggregation in Satellite-Ground Networks: Sitian Huang, Dongchao Ma, YuZhu Jin (North China University of Technology, China), Mingwei Xu (Tsinghua University, China)

Break - Garden Patio: 09:00-09:30

Session 2.4A Edge Computing – 09:30-11:00 PST ▪ Chair: Dejun Yang [Room: Garden A]

Optimal Task Offloading for Edge Computing with Stochastic Task Arrivals: Jun Xu (Nanjing Normal University, China), Dejun Yang (Colorado School of Mines, USA)

Theory vs. Practice in Modeling Edge Storage Systems: Oleg Kolosov (Technion - Israel Institute of Technology, Israel), Mehmet Aktas, Emina Soljanin (Rutgers University, USA), Gala Yadgar (Technion - Israel Institute of Technology, Israel)

UAV-Assisted Computation Offloading in Vehicular Networks*: Insaf Rzig (Higher School of Communication of Tunis, Tunisia), Wael Jaafar (Superior Technology School, Canada), Maha Jebalia, Sami Tabbane (Higher School of Communication of Tunis, Tunisia)

GPU-based Parallel Computing for VANETs: Current State and Future Prospects*: Abinash Borah (Oklahoma State University, USA), Anirudh Paranjothi (Oklahoma State University & Stillwater, USA)

Session 2.4B Cloud Communication – 09:30-11:00 PST ▪ Chair: Haoyu Song [Room: Garden BC]

Achieving Zero-Copy Serialization for Datacenter RPC: Tianfan Zhang, Huaping Zhou, Chengyuan Huang, Chen Tian (Nanjing University, China), Wei "CS" Zhang (University of Connecticut, USA), Xiaoliang Wang (Nanjing University, China), Yi Wang (Nanjing University of Posts and Telecommunications, China), Ahmed M. Abdelmoniem (Queen Mary University of London, United Kingdom & Assiut University, Egypt), Matthew Tan (West Windsor Plainsboro High School South, USA), Wanchun Dou (Nanjing University, China), Guihai Chen (Shanghai Jiao Tong University, China)

CORN: Cloud-Optimized RDMA Networking: Jung-Hwan Cha, Shinhyeok Kang, Yewon Kang, Hansaem Seo, Jungeun Lee, Jongsung Kim (Samsung SDS, South Korea), Minsung Jang (AT&T Labs, USA)

How to Adapt RDMA Congestion Control Algorithm Based on Local Conditions*: Yizhou Gong, Zhang Wei, Chen Yunfang (Nanjing University of Posts and Telecommunications, China), Chao Tu, Wanting Tian (Viscore Technologies, China), Yunqu Liu (Viscore Technologies, Canada)

Dynamic and Load-Aware Flowlet for Load Balancing in Data Center Networks*: Carol K Song (USA), Haoyu Song (Futurewei Technologies, USA), Chen Qian (University of California at Santa Cruz, USA)

Lunch - Garden Patio: 11:00-12:30

Session 2.5A: ML Applications & Methods
12:30-14:00 PST ▪ Chair: Wael Jaafar [Room: Garden A]

AEWF: Autoencoder-Based Website Fingerprinting in Data-Limited Scenarios: Jianjun Lin (University of Chinese Academy of Sciences, China), Bo Sun (National Computer Network Emergency Response Technical Team/ Coordination Center of China, China)

A Dual-View Semi-Supervised Learning Framework for Combinatorial Few-shot Fault Diagnosis: Yumeng Liu (Chinese Academy of Sciences & University of Chinese Academy of Sciences, China), Wenzhang Zhong, Ke Yan, Ling Tian (University of Electronic Science and Technology of China, China)

Placement Optimization and Resource Allocation in UxNB-Enabled Sliced 5G Networks*: Nesrine El Ghoul (Private Higher School of Engineering and Technology, Tunisia), Wael Jaafar (Superior Technology School, Canada), Jihene Ben Abderrazak (Private Higher School of Engineering and Technology, Tunisia)

AggTree: A Routing Tree With In-Network Aggregation for Distributed Training*: Jianglong Nie, Wenfei Wu (Peking University, China)

Session 2.5B: Cloud and Sustainability – 12:30-14:00 PST ▪ Chair: Feng Wang [Room: Garden BC]

PERF-Expert: Novel Approach for Dynamically Forecasting the Performance of Cloud-Based Integrations with Zero Performance Tests: Nadheesh Jihan (WSO2, Sri Lanka), Malith Jayasinghe (WSO2, USA), Srinath Perera (WSO2 & University of Moratuwa, Sri Lanka), Caucidheesan Krishnamoorthy (University of Westminster, Sri Lanka)

Karasu: A Collaborative Approach to Efficient Cluster Configuration for Big Data Analytics: Dominik Scheinert, Philipp Wiesner, Thorsten Wittkopp (Technical University Berlin, Germany), Lauritz Thamsen (University of Glasgow, United Kingdom), Jonathan Will, Odej Kao (Technical University Berlin, Germany)

Evaluating the Carbon Impact of Large Language Models at the Inference Stage*: Brad Everman (The AMMO Group, USA), Trevor Villwock, Dayuan Chen, Noe Soto (Texas State University, USA), Oliver Zhang (Strake Jesuit College Preparatory, USA), Ziliang Zong (Texas State University, USA)

Reducing Cloud Expenditures and Carbon Emissions via Virtual Machine Migration and Downsizing*: Nathan Huang, Anthony Li, Sophia Zhang (USA), Ziliang Zong (Texas State University, USA)

IPCCC 2023 Day Two ▪ Saturday, November 18TH [Continued]

Session 2.6A: Security – 14:00-15:30 PST ▪ Chair: Xin Yuan

[Room: Garden A]

A Comprehensive Defense Approach Targeting the Computer Vision Based Cheating Tools in FPS Video Games: Anh Nhu, Hieu Phan, Chang Liu, Xianglong Feng (Miami University, USA)

IoT Botnet Classification Using CNN-Based Deep Learning*: Nahid Ebrahimi Majd, Dhatri Sai Kumar Reddy Gudipelly (California State University San Marcos, USA)

Performance of Software-Based Encrypted MPI Communication over Container Clusters*: Mohsen Gavahi, Abu Naser, Mehran Sadeghi Lahijani, Cong Wu, Zhi Wang, Xin Yuan (Florida State University, USA)

Performance Modeling of Blockchains with Fixed Block Intervals: Bo Li, Hanwen Zhang, Chenhao Jiang, Zhongcheng Li and Yi Sun (Institute of Computing Technology, Chinese Academy of Sciences, China)

Break - Garden Patio:15.30-16.00

Session 2.7A: Security & Privacy (Virtual)

16:00-17:30 PST ▪ Chair: Matthias Wuebbeling

[Room: Garden A]

TBP: Tree structure Burst-Sequence Padding Defense Against Website Fingerprinting: Yankun Wang, Yongjun Wang, Junjie Huang, Yongxin Chen (National University of Defense Technology, China)

Shrink: Identification of Encrypted Video Traffic Based on QUIC: Weitao Tang (University of Chinese Academy of Sciences, China), Meijie Du, Zhao Li, Shu Li, Zhou Zhou, Qingyun Liu (Chinese Academy of Sciences, China)

UID-Auto-Gen: Extracting Device Fingerprinting from Network Traffic: Haoyu Bin, Sen Zhao, Zhi Li, Nan Yu, Rongrong Xi, Hongsong Zhu, Limin Sun (Chinese Academy of Sciences, China)

FuzzyCAT: A Framework for Network Configuration Verification Based on Fuzzing: Jianfei Cai, Guozheng Yang, Jingju Liu, Yi Xie (National University of Defense Technology, China)

HCPP: A Data-Oriented Framework to Preserve Privacy During Interactions with Healthcare Chatbot: Ziyan Cai, Xin Chang, Ping Li (Tsinghua University, China)

STAD: A Traffic Anomaly Detection Technology Based on Siamese Neural Network*: Zinuo Yin (PLA Strategic Support Force Information Engineering University, China); Ma Hailong, Tao Hu (National Digital Switching System Engineering and Technology Research Center, China)

Session 2.7B: New Applications, Architectures & Networks (Virtual)

16:00-17:45 PST ▪ Chair: Minghui Xu [Room: Garden BC]

Bitcoin Mixing Service Detection Based on Spatio-Temporal Information Representation of Transaction Graph: Hanzhi Yang (Chinese Academy of Sciences & University of Chinese Academy of Sciences, China), Zhenzhen Li, Gaopeng Gou, Junzheng Shi, Gang Xiong, Zhen Li (Chinese Academy of Sciences, China)

ChainDet: A Traffic-Based Detection Method of Microservice Chains: Chunyang Zheng, Jinfa Wang, Shuaizong Si, Weidong Zhang, Hong Li, Limin Sun (Chinese Academy of Sciences, China)

Fuzzy Hierarchy Analysis Based Microservice Splitting Result Evaluation: Ke Zhao, Junfeng Zhao (Inner Mongolia University, China)

Trade-off Between Completion Time and Cost of Data Transfers in Dedicated HPNs*: Liudong Zuo (California State University Dominguez Hills, USA), Daqing Yun (Harrisburg University, USA)

Enhancing ADHD Detection using DIVA Interview-Based Audio Signals and a Two-Stream Network*: Shuanglin Li (Newcastle University, United Kingdom), Yang Sun (University of Oxford, United Kingdom), Rajesh Nair (Cumbria, Northumberland, Tyne and Wear NHS Foundation Trust, United Kingdom), Syed Mohsen Naqvi (Newcastle University, United Kingdom)

Bi-Level Sampling: Improved Clients Selection in Heterogeneous Settings for Federated Learning*: Danyang Xiao, Congcong Zhan, Jialun Li, Weigang Wu (Sun Yat-Sen University, China)

Towards Flexible and Compact Encoded DNS Messages Using CBOR Structures*: Arnol Lemogue (IMT Atlantique & IRISA, France); Ivan Martinez (NOKIA Bell Labs, France); Laurent Toutain (France); Ahmed Bouabdallah (Institut Mines Telecom / IMT Atlantique & IRISA, France)

IPCCC 2023 Day Three ▪ Sunday, November 19TH

WS1: Workshop Session 1 ▪ 08:30-9:45 PST ▪ Chair: Qingxue Zhang [Room: Garden BC]

On the Fly Deep Neural Network Optimization Control for Low-Power Computer Vision: Ishmeet Kaur, Adwaita Janardhan Jadhav (Apple, USA)

Intrusion Detection in IoT leveraged by Multi-Access Edge Computing Using Machine Learning: Dongjin Li, Nahid Ebrahimi Majd (California State University San Marcos, USA)

Customized Hybrid Deep Learning Model for Road Accident Detection Based on CCTV Images: Sherimon Puliprathu Cherian (Arab Open University, Oman), Vinu Sherimon (University of Technology and Applied Sciences, Oman), Yousuf Al Hussaini (Arab Open University, Oman), Ambily Merlin Kuruvilla (Mahatma Gandhi University, Kerala, India), Ajit Mammen Varghese, Harikrishnan D (Saintgits College of Applied Sciences, Oman)

Anomaly Detection and Attack Classification in IoT Networks Using Machine Learning: Kyungbin Lee, Nahid Ebrahimi Majd (California State University San Marcos, USA)

Empowering Local Wood Detection with YOLO5 and Convolutional Neural Network Architecture: Abdulaziz Alshammari (Imam Mohammad Ibn Saud Islamic University, Saudi Arabia)

Break - Garden Patio: 09:45-10:00

WS2: Workshop Session 2 ▪ 10:00-11:15 PST ▪ Chair: Qingxue Zhang [Room: Garden BC]

Holistic Security Approach in Cybersecurity Services for Datacenters and Telecommunication Operators: Kasim Oztoprak, Yusuf Tuncelx (Konya Food and Agriculture University, Turkey)

Deep Reinforcement Learning Based Partial Offloading in Small Cell MEC: Han Li (Beijing Jiaotong University, China), Pingyi Fan (Tsinghua University, China), Khaled B. Letaief (The Hong Kong University of Science and Technology, Hong Kong)

A Model Compression Method Using Significant Data and Knowledge Distillation: Beibei Xu (Nanjing Tech University, China)

SAR Ship Target Detection Using SAR Images: Muhammad Yasir (China University of Petroleum, China)

Collaborative Edge Caching for Panoramic Video Streaming: Zheng Wan, Mingyang Ma, Xuelin Liu (Jiangxi University of Finance and Economics, China)

▪ End of IPCCC 2023 Conference ▪

*Denotes Short Paper

IPCCC 2023: Keynote Speaker

Distributed AI in the New World of Device-Edge-Cloud Computing

Professor Ling Liu
School of Computer Science - Georgia Institute of Technology

Friday, November 17TH ▪ 13:15-14:30 PST ▪ Room: Garden A

ABSTRACT

The rapid growth of wireless mobile broadband communication networks has fueled new capabilities in scalable device-to-edge-to-cloud continuum, ranging from increased data rates of 1~10 Gbps, ultra-low latencies of 1ms or less, larger coverage with massive number of devices connected 24x7. These advances have enabled exciting new edge native applications, such as Augmented Reality/Virtual Reality (AR/VR), video analytics, and 3D on-device intelligence. However, unlike Clouds, edge clients have little elasticity in computing and communication resources. Edge devices are intermittently connected to the Internet, inherently heterogeneous in computing resource, and more exposed to privacy and security violations.

In this keynote, I will use on-device intelligence and distributed AI as two emerging and complimentary distributed learning paradigms in navigating this device-edge-cloud continuum, while considering resilience, privacy, and multi-tenancy of shared and heterogeneous resources. I will describe alternative distributed learning architectures and optimization strategies, enabling edge system adaptability and robustness, while preserving good application fidelity (level of accuracy).

BIOGRAPHY

Professor Ling Liu is a full professor in the School of Computer Science at Georgia Institute of Technology. She directs the research programs in the Distributed Data Intensive Systems Lab (DiSL), examining various aspects of big data systems and analytics. Professor Liu is an elected IEEE Fellow, a recipient of IEEE Computer Society Technical Achievement Award (2012), and a recipient of the best paper awardfrom numerous top venues, including IEEE ICDCS, WWW, ACM CCGrid, IEEE Cloud.

Professor Liu served as the editor in chief of IEEE Transactions on Service Computing (2013-2016) and is currently the editor in chief of ACM Transactions on Internet Computing (since 2019). Her current research is primarily supported by National Science Foundation, CISCO, and IBM.

For more information on Professor Ling Liu:
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