

IEEE/ACM IWQoS 2021 Program

Day 1, June 25th

Friday, 9:00am-11:40am & 12:30pm-19:15pm, 25 June 2021 (Tokyo Time)

Friday, 8:00am-10:40am & 11:30am-18:15pm, 25 June 2021 (Beijing Time)

Thursday, 20:00pm-22:40pm & 23:30pm-6:15am, 24 June 2021 (New York Time)

Friday 1:00am-3:40am & 4:30am-11:15am, 25 June 2021 (London Time)

IEEE/ACM IWQoS Opening

Session Chair: Ruidong Li, Kanazawa University, Japan

Friday, 9:00am-9:20am, 25 June 2021 (Tokyo Time)

Friday, 8:00am-8:20am, 25 June 2021 (Beijing Time)

Thursday, 20:00pm-20:20pm, 24 June 2021 (New York Time)

Friday, 1:00am-1:20am 25 June 2021 (London Time)

Keynote 1

Friday, 9:20am-10:20am, 25 June 2021 (Tokyo Time)

Friday, 8:20am-9:20am, 25 June 2021 (Beijing Time)

Thursday, 20:20pm-21:20pm, 24 June 2021 (New York Time)

Friday, 1:20am-2:20am 25 June 2021 (London Time)

Title: Challenges in Developing B5G/6G Communication Systems

Speaker: Hideyuki Tokuda (National Institute of Information and Communications Technology, Japan)

Chair: Hitoshi Asaeda, NICT, Japan

Virtual Break

Session 1: Video Streaming

Session Chair: Vijay Gopalakrishnan, AT&T Labs -Research, USA

Friday, 10:30am-11:40am, 25 June 2021 (Tokyo Time)

Friday, 9:30am-10:40am, 25 June 2021 (Beijing Time)

Thursday, 21:30pm-22:40pm, 24 June 2021 (New York Time)

Friday, 2:30am-3:40am, 25 June 2021 (London Time)

Optimizing Quality of Experience for Long-Range UAS Video Streaming

Russell Shirey (Purdue University & US Air Force, USA); Sanjay Rao and Shreyas Sundaram (Purdue University, USA)

QoS-Aware Network Energy Optimization for Danmu Video Streaming in WiFi Networks

Nan Jiang and Mehmet Can Vuran (University of Nebraska-Lincoln, USA); Sheng Wei (Rutgers University, USA); Lisong Xu (University of Nebraska-Lincoln, USA)

Understanding and Improving User Engagement in Adaptive Video Streaming

Chunyu Qiao and Jiliang Wang (Tsinghua University, China); Yanan Wang (IQIYI Science & Technology Co., Ltd., China); Yunhao Liu (Tsinghua University & The Hong Kong University of Science and Technology, China); Hu Tuo (IQIYI Science & Technology Co., Ltd., China)

Soudain: Online Adaptive Profile Configuration for Real-time Video Analytics

Kun Wu and Yibo Jin (Nanjing University, China); Weiwei Miao (Communication Bureau, State Grid Jiangsu Electric Power Company, China); Zeng Zeng (State Grid Jiangsu Electric Power CO., LTD., China); Zhuzhong Qian, Jingmian Wang, Mingxian Zhou and Tuo Cao (Nanjing University, China)

Best Paper and IWQoS 2022

Session Chair: Ruidong Li, Kanazawa University, Japan

Friday, 11:40am-12:00pm, 25 June 2021 (Tokyo Time)

Friday, 10:40am-11:00am, 25 June 2021 (Beijing Time)

Thursday, 22:40pm-23:00pm, 24 June 2021 (New York Time)

Friday, 3:40am-4:00am, 25 June 2021 (London Time)

Virtual Lunch Break

Session 2: Transport & Security

Session Chair: Danda Rawat, Howard University, USA

Friday, 12:30pm-13:40pm, 25 June 2021 (Tokyo Time)

Friday, 11:30am-12:40am, 25 June 2021 (Beijing Time)

Thursday, 23:30pm-0:40am, 24 June 2021 (New York Time)

Friday, 4:30am-5:40am, 25 June 2021 (London Time)

ASAP: Anti-Spoofing Aphorism using Path-analysis

Eric Muhati and Danda B. Rawat (Howard University, USA)

Lightning: A Practical Building Block for RDMA Transport Control

Qingkai Meng and Fengyuan Ren (Tsinghua University, China)

Helm: Credit-based Data Center Congestion Control to Achieve Near Global-Optimal SRTF

Jiao Zhang and Jiaming Shi (Beijing University of Posts and Telecommunications, China); Yuxuan Gao (BUPT, China); Yunjie Liu (Beijing University of Posts and Telecommunications, China)

MASK: Practical Source and Path Verification based on Multi-AS-Key

Songtao Fu, Ke Xu and Qi Li (Tsinghua University, China); Xiaoliang Wang (Capital Normal University, China); Su Yao, Guo Yangfei and Xinle Du (Tsinghua University, China)

Virtual Break

Session 3: Federated Learning

Session Chair: Baochun Li, University of Toronto, Canada

Friday, 13:50pm-15:00pm, 25 June 2021 (Tokyo Time)

Friday, 12:50pm-14:00pm, 25 June 2021 (Beijing Time)

Friday, 0:50am-2:00am, 25 June 2021 (New York Time)

Friday, 5:50am-7:00am, 25 June 2021 (London Time)

FedEraser: Enabling Efficient Client-Level Data Removal from Federated Learning Models

Gaoyang Liu and Xiaoqiang Ma (Huazhong University of Science and Technology, China); Yang Yang (Hubei University, China); Chen Wang (Huazhong University of Science and Technology, China); Jiangchuan Liu (Simon Fraser University, Canada)

BatFL: Backdoor Detection on Federated Learning in e-Health

Binhan Xi, Shaofeng Li, Jiachun Li and Hui Liu (Shanghai Jiao Tong University, China); Hong Liu (East China Normal University, China); Haojin Zhu (Shanghai Jiao Tong University, China)

Optimizing Federated Learning on Device Heterogeneity with A Sampling Strategy

Xiaohui Xu, Sijing Duan, Jinrui Zhang, Yunzhen Luo and Deyu Zhang (Central South University, China)

Glint: Decentralized Federated Graph Learning with Traffic Throttling and Flow Scheduling

Tao Liu and Peng Li (The University of Aizu, Japan); Yu Gu (Hefei University of Technology, China)

Virtual Break

Session 4: NFV

Session Chair: Zehua Guo, Beijing Institute of Technology, China

Friday, 15:10pm-16:20pm, 25 June 2021 (Tokyo Time)

Friday, 14:10pm-15:20pm, 25 June 2021 (Beijing Time)

Friday, 2:10am-3:20am, 25 June 2021 (New York Time)

Friday, 7:10am-8:20am, 25 June 2021 (London Time)

Gost: Enabling Efficient Spatio-Temporal GPU Sharing for Network Function Virtualization

Andong Zhu and Deze Zeng (China University of Geosciences, China); Lin Gu (Huazhong University of Science and Technology, China); Peng Li (The University of Aizu, Japan); Quan Chen (Shanghai Jiao Tong University, China)

A-DDPG: Attention Mechanism-based Deep Reinforcement Learning for NFV

Nan He, Song Yang and Fan Li (Beijing Institute of Technology, China); Stojan Trajanovski (Microsoft, United Kingdom (Great Britain)); Fernando A. Kuipers (Delft University of Technology, The Netherlands); Xiaoming Fu (University of Goettingen, Germany)

Towards Chain-Aware Scaling Detection in NFV with Reinforcement Learning

Lin He, Lishan Li and Ying Liu (Tsinghua University, China)

LightNF: Simplifying Network Function Offloading in Programmable Networks

Xiang Chen (Peking University, Pengcheng Lab, and Fuzhou University, China); Qun Huang (Peking University, China); Wang Peiqiao (Fuzhou China, China); Zili Meng (Tsinghua University, China); Hongyan Liu (Zhejiang University, China); Yuxin Chen (University of Science and Technology of China, China); Dong Zhang (Fuzhou University, China); Haifeng Zhou (Zhejiang University, China); Boyang Zhou (Zhejiang Lab, China); Chunming Wu (College of Computer Science, Zhejiang University, China)

Virtual Break

Session 5: Blockchain & Security

Session Chair: Jinsong Han, Zhejiang University, China

Friday, 16:30pm-17:40pm, 25 June 2021 (Tokyo Time)

Friday, 15:30pm-16:40pm, 25 June 2021 (Beijing Time)

Friday, 3:30am-4:40am, 25 June 2021 (New York Time)

Friday, 8:30am-9:40am, 25 June 2021 (London Time)

Secure and Scalable QoS for Critical Applications

Marc Wyss, Giacomo Giuliani and Markus Legner (ETH Zürich, Switzerland); Adrian Perrig (ETH Zurich Switzerland & Carnegie Mellon University, USA)

A Novel Proof-of-Reputation Consensus for Storage Allocation in Edge Blockchain Systems

Jiarui Zhang, Yaodong Huang, Fan Ye and Yuanyuan Yang (Stony Brook University, USA)

Accelerating Transactions Relay in Blockchain Networks via Reputation

Mengqian Zhang (Shanghai Jiao Tong University, China); Yukun Cheng (Suzhou University of Science and Technology, China); Xiaotie Deng (Peking University, China); Bo Wang and Jan Xie (Cryptape Technology Co., Ltd., China); Yuanyuan Yang and Jiarui Zhang (Stony Brook University, USA)

Protecting Your Offloading Preference: Privacy-aware Online Computation Offloading in Mobile Blockchain

Dawei Wei, Ning Xi, Jianfeng Ma and Jiayi Li (Xidian University, China)

Virtual Break

Short Paper Session 1: Videos, Memory, and Data Center

Session Chair: Anna Lina Ruscelli, Scuola Superiore Sant'Anna, Italy

Friday, 17:50pm-19:15pm, 25 June 2021 (Tokyo Time)

Friday, 16:50pm-18:15pm, 25 June 2021 (Beijing Time)

Friday, 4:50am-6:15am, 25 June 2021 (New York Time)

Friday, 9:50am-11:15am, 25 June 2021 (London Time)

ReCLive: Real-Time Classification and QoE Inference of Live Video Streaming Services

Sharat Chandra Madanapalli (University of New South Wales, Australia); Alex Mathai (BITS Pilani, India); Hassan Habibi Gharakheili (University of New South Wales, Sydney, Australia); Vijay Sivaraman (University of New South Wales, Australia)

Multivariate Time Series Forecasting exploiting Tensor Projection Embedding and Gated Memory Network

Zhenxiong Yan and Kun Xie (Hunan University, China); Xin Wang (Stony Brook University, USA); Dafang Zhang (Hunan University, China); Gaogang Xie (CNIC Chinese Academy of Sciences & University of Chinese Academy of Sciences, China); Kenli Li (Hunan University, China); Jigang Wen (Chinese Academy of Science & Institute of Computing Technology, China)

Smartbuf: An Agile Memory Management for Shared-Memory Switches in Datacenters

Hamed Rezaei, Hamidreza Almasi and Balajee Vamanan (University of Illinois at Chicago, USA)

Workload Migration across Distributed Data Centers under Electrical Load Shedding

Linfeng Shen (Simon Fraser University, Canada); Fangxin Wang (The Chinese University of Hong Kong, Shenzhen, China); Feng Wang (University of Mississippi, USA); Jiangchuan Liu (Simon Fraser University, Canada)

A Crowd-driven Dynamic Neural Architecture Searching Approach to Quality-aware Streaming Disaster Damage Assessment

Yang Zhang, Ruohan Zong, Ziyi Kou, Lanyu Shang and Dong Wang (University of Notre Dame, USA)

Multipath-aware TCP for Data Center Traffic Load-balancing

Yu Xia (Sichuan Normal University, China); Jinsong Wu (Universidad de Chile, Chile); Jingwen Xia (University of Electronic Science and Technology of China, China); Ting Wang (East China Normal University & Shanghai Key Laboratory of Trustworthy Computing, China); Sun Mao (Sichuan Normal University, China)

Day 2, June 26th

Saturday, 9:00am-12:10pm & 12:30pm-19:05pm, 26 June 2021 (Tokyo Time)

Saturday, 8:00am-11:10am & 11:30pm-18:05pm, 26 June 2021 (Beijing Time)

Friday, 20:00pm-23:10pm & 23:30pm-6:05am, 25 June 2021 (New York Time)

Saturday, 1:00am-4:10am & 4:30am-11:05am, 26 June 2021 (London Time)

Keynote 2

Saturday, 9:00am-10:00am, 26 June 2021 (Tokyo Time)

Saturday, 8:00am-9:00am, 26 June 2021 (Beijing Time)
Friday, 20:00pm-21:00pm, 25 June 2021 (New York Time)
Saturday, 1:00am-2:00am, 26 June 2021 (London Time)

Title: Enhancing Scalability and Liquidation in QoS Lightning Networks

Speaker: Jie Wu (Temple University, USA)

Chair: Wenjing Lou, Virginia Tech., USA

Session 6: Cloud & Storage

Session Chair: Claudio Righetti, Telecom Argentina, Argentina

Saturday, 10:10am-11:20am, 26 June 2021 (Tokyo Time)

Saturday, 9:10am-10:20am, 26 June 2021 (Beijing Time)

Friday, 21:10pm-22:20pm, 25 June 2021 (New York Time)

Saturday, 2:10am-3:20am, 26 June 2021 (London Time)

Towards Private Similarity Query based Healthcare Monitoring over Digital Twin Cloud Platform

Yandong Zheng, Rongxing Lu, Yunguo Guan and Songnian Zhang (University of New Brunswick, Canada); Jun Shao (Zhejiang Gongshang University, China)

Secure Outsourced Top- k Selection Queries against Untrusted Cloud Service Providers

Xixun Yu (Xidian University, China & University of Delaware, USA); Yidan Hu and Rui Zhang (University of Delaware, USA); Zheng Yan (Xidian University & Aalto University, China); Yanchao Zhang (Arizona State University, USA)

EC-Scheduler: A Load-Balanced Scheduler to Accelerate the Straggler Recovery for Erasure Coded Storage Systems

Xinzhe Cao, Gen Yang, Yunfei Gu and Chentao Wu (Shanghai Jiao Tong University, China); Jie Li (Shanghai Jiaotong University, China); Guangtao Xue and Minyi Guo (Shanghai Jiao Tong University, China); Yuanyuan Dong and Yafei Zhao (Alibaba Group, China)

A Proactive Failure Tolerant Mechanism for SSDs Storage Systems based on Unsupervised Learning

Hao Zhou, Zhiheng Niu, Gang Wang and Xiaoguang Liu (Nankai University, China); Dongshi Liu, Bingnan Kang, Hu Zheng and Yong Zhang (Huawei, China)

Poster Session

Session Chair: Yuki Koizumi, Osaka University, Japan

Saturday, 11:30am-12:10pm, 26 June 2021 (Tokyo Time)

Saturday, 10:30am-11:10am, 26 June 2021 (Beijing Time)

Friday, 22:30pm-23:10pm, 25 June 2021 (New York Time)

Saturday, 3:30am-4:10am, 26 June 2021 (London Time)

MoDEMS: Optimizing Edge Computing Migrations for User Mobility

Taejin Kim (Carnegie Mellon University, USA); Siqi Chen (University of Colorado Boulder, USA); Youngbin Im (Ulsan National Institute of Science and Technology, Korea (South)); Xiaoxi Zhang (Sun Yat-sen University, China); Sangtae Ha (University of Colorado Boulder, USA); Carlee Joe-Wong (Carnegie Mellon University, USA)

High-QoE DASH live streaming using reinforcement learning

Bo Wei (Waseda University, Japan); Hang Song (The University of Tokyo, Japan); Jiro Katto (Waseda University, Japan)

Joint Optimization of Multi-user Computing Offloading and Service Caching in Mobile Edge Computing

Zhang Zhenyu and Huan Zhou (China Three Gorges University, China); Dawei Li (Montclair State University, USA)

Adaptive Search Area Configuration for Location-based P2P Networks

Hiroki Hanawa, Takumi Miyoshi, Taku Yamazaki and Thomas Silverston (Shibaura Institute of Technology, Japan)

Virtual Lunch Break

Keynote 3

Saturday, 12:30pm-13:30pm, 26 June 2021 (Tokyo Time)

Saturday, 11:30am-12:30pm, 26 June 2021 (Beijing Time)

Friday, 23:30pm-0:30am, 25 June 2021 (New York Time)

Saturday, 4:30am-5:30am, 26 June 2021 (London Time)

Title: Edge Computing Meets Mission-critical Industrial Applications

Speaker: Albert Y. Zomaya (University of Sydney, Australia)

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| Chair: Jiannong Cao, The Hong Kong Polytechnic University, Hongkong |
| Virtual Break |
| <p>Session 7: System & Memory</p> <p>Session Chair: Jun Li, City University of New York, USA</p> <p>Saturday, 13:40pm-14:50pm, 26 June 2021 (Tokyo Time)</p> <p>Saturday, 12:40pm-13:50pm, 26 June 2021 (Beijing Time)</p> <p>Saturday, 0:40am-1:50am, 26 June 2021 (New York Time)</p> <p>Saturday, 5:40am-6:50am, 26 June 2021 (London Time)</p> |
| <p>Supporting Flow-Cardinality Queries with $O(1)$ Time Complexity in High-speed Networks</p> <p>Qingjun Xiao (SouthEast University of China, China); Xiongqin Hu (Southeast University, China); Shigang Chen (University of Florida, USA)</p> <p>Practical Root Cause Localization for Microservice Systems via Trace Analysis</p> <p>Zeyan Li (Tsinghua University, China); Junjie Chen (Tianjin University, China); Rui Jiao and Nengwen Zhao (Tsinghua University, China); Zhijun Wang, Shuwei Zhang, Yanjun Wu, Long Jiang and Leiqin Yan (China Minsheng Bank, China); Zikai Wang (Bizseer, China); Zhekang Chen (BizSeer, China); Wenchi Zhang (Bizseer Technology Co., Ltd., China); Xiaohui Nie (Tsinghua University, China); Kaixin Sui (Bizseer Technology Co., Ltd., China); Dan Pei (Tsinghua University, China)</p> <p>Load Balancing in Heterogeneous Server Clusters: Insights From a Product-Form Queueing Model</p> <p>Mark van der Boor and Céline Comte (Eindhoven University of Technology, The Netherlands)</p> <p>AIR: An AI-based TCAM Entry Replacement Scheme for Routers</p> <p>Yuchao Zhang and Peizhuang Cong (Beijing University of Posts and Telecommunications, China); Bin Liu (Tsinghua University, China); Wendong Wang (Beijing University of Posts and Telecommunications, China); Ke Xu (Tsinghua University, China)</p> |
| Virtual Break |
| <p>Session 8: Traffic Analytics and Engineering</p> <p>Session Chair: Kui Wu, University of Victoria, Canada</p> <p>Saturday, 15:00pm-16:10pm, 26 June 2021 (Tokyo Time)</p> |

Saturday, 14:00pm-15:10pm, 26 June 2021 (Beijing Time)

Saturday, 2:00am-3:10am, 26 June 2021 (New York Time)

Saturday, 7:00am-8:10am, 26 June 2021 (London Time)

Byte-Label Joint Attention Learning for Packet-grained Network Traffic Classification

Kelong Mao (Tsinghua University, China); Xi Xiao (Graduate School at Shenzhen, Tsinghua University, China); Guangwu Hu (Shenzhen Institute of Information Technology, China); Xiapu Luo (The Hong Kong Polytechnic University, Hong Kong); Bin Zhang (Peng Cheng Laboratory, China); Shutao Xia (Tsinghua University, China)

DarkTE: Towards Dark Traffic Engineering in Data Center Networks with Ensemble Learning

Renhai Xu (Tianjin University, China); Wenxin Li (Tianjin University & Hong Kong University of Science and Technology); Keqiu Li and Xiaobo Zhou (Tianjin University, China); Heng Qi (Dalian University of Technology, China)

BCAC: Batch Classifier based on Agglomerative Clustering for traffic classification in a backbone network

Hua Wu, Xiying Chen, Guang Cheng, Xiaoyan Hu and Youqiong Zhuang (Southeast University, China)

Efficient Fine-Grained Website Fingerprinting via Encrypted Traffic Analysis with Deep Learning

Meng Shen, Zhenbo Gao and Liehuang Zhu (Beijing Institute of Technology, China); Ke Xu (Tsinghua University, China)

Virtual Break

Session 9: Privacy

Session Chair: Shui Yu, University of Technology Sydney, Australia

Saturday, 16:20pm-17:30pm, 26 June 2021 (Tokyo Time)

Saturday, 15:20pm-16:30pm, 26 June 2021 (Beijing Time)

Saturday, 3:20am-4:30am, 26 June 2021 (New York Time)

Saturday, 8:20am-9:30am, 26 June 2021 (London Time)

Privacy-Preserving Optimal Recovering for the Nearly Exhausted Payment Channels

Minze Xu, Yuan Zhang, Fengyuan Xu and Sheng Zhong (Nanjing University, China)

Privacy-Preserving Approximate Top-k Nearest Keyword Queries over Encrypted Graphs

Meng Shen and MingHui Wang (Beijing Institute of Technology, China); Ke Xu (Tsinghua University, China); Liehuang Zhu (Beijing Institute of Technology, China)

A Behavior Privacy Preserving Method towards RF Sensing

Jianwei Liu (Zhejiang University & Xi'an Jiaotong University, China); Chaowei Xiao (University of Michigan, ann arbor, USA); Kaiyan Cui (Xi'an Jiaotong University & The Hong Kong Polytechnic University, China); Jinsong Han (Zhejiang University & School of Cyber Science and Technology, China); Xian Xu and Kui Ren (Zhejiang University, China); Xufei Mao (Dongguan University of Tech, China)

Differential Privacy-Preserving User Linkage across Online Social Networks

Xin Yao (Central South University & Arizona State University, China); Rui Zhang (University of Delaware, USA); Yanchao Zhang (Arizona State University, USA)

Virtual Break

Short Paper Session 2: Learning-based Approaches

Session Chair: Yanjiao Chen, Zhejiang University, China

Saturday, 17:40pm-19:05pm, 26 June 2021 (Tokyo Time)

Saturday, 16:40pm-18: 05pm, 26 June 2021 (Beijing Time)

Saturday, 4:40am-6:05am, 26 June 2021 (New York Time)

Saturday, 9:40am-11:05am, 26 June 2021 (London Time)

Can Online Learning Increase the Reliability of Extreme Mobility Management?

Yuanjie Li (Tsinghua University, China); Esha Datta (University of California, Davis, USA); Jiaxin Ding (Shanghai Jiao Tong University, China); Ness B. Shroff (The Ohio State University, USA); Xin Liu (University of California Davis, USA)

SuperClass: A Deep Duo-Task Learning Approach to Improving QoS in Image-driven Smart Urban Sensing Applications

Yang Zhang, Ruohan Zong, Lanyu Shang, Md Tahmid Rashid and Dong Wang (University of Notre Dame, USA)

SeqAD: An Unsupervised and Sequential Autoencoder Ensembles based Anomaly Detection Framework for KPI

Na Zhao, Biao Han and Yang Cai (National University of Defense Technology, China);
Jinshu Su (National University of Defence Technology, China)

DeepDelivery: Leveraging Deep Reinforcement Learning for Adaptive IoT Service Delivery

Yan Li, Deke Guo and Xiaofeng Cao (National University of Defense Technology, China);
Feng Lyu (Central South University, China); Honghui Chen (National University of
Defense Technology, China)

LCL: Light Contactless Low-delay Load Monitoring via Compressive Attentional Multi-label Learning

Xiaoyu Wang, Hao Zhou, Nikolaos M. Freris and Wangqiu Zhou (University of Science and
Technology of China, China); Xing Guo (Anhui University, China); Zhi Liu (The
University of Electro-Communications, Japan); Yusheng Ji (National Institute of
Informatics, Japan); Xiang-Yang Li (University of Science and Technology of China,
China)

GreenTE.ai: Power-Aware Traffic Engineering via Deep Reinforcement Learning

Tian Pan (Beijing University of Posts and Telecommunications, China); Xiaoyu Peng
(BUPT, China); Qianqian Shi (Beijing University of Posts and Telecommunications,
China); Zizheng Bian (BUPT, China); Xingchen Lin and Enge Song (Beijing University of
Posts and Telecommunications, China); Fuliang Li (Northeastern University, China);
Yang Xu (Fudan University, China); Tao Huang (Beijing University of Posts and
Telecommunications, China)

Virtual Break

Day 3, June 27th

Sunday, 9:00am-11:20am & 12:30pm-19:15pm, 27 June 2021 (Tokyo Time)

Sunday, 8:00am-10:20am & 11:30pm-18:15pm, 27 June 2021 (Beijing Time)

Saturday, 20:00pm-22:20am & 23:30pm-6:15am, 26 June 2021 (New York Time)

Sunday, 1:00am-3:20am & 4:30am-11:15am, 27 June 2021 (London Time)

Keynote 4

Sunday, 9:00am-10:00am, 27 June 2021 (Tokyo Time)

Sunday, 8:00am-9:00am, 27 June 2021 (Beijing Time)

Saturday, 20:00pm-21:00am, 26 June 2021 (New York Time)

Sunday, 1:00am-2:00am, 27 June 2021 (London Time)

Title: Brain-inspired Networking and QoE Control

Speaker: Masayuki Murata (Osaka University, Japan)

Chair: Hitoshi Asaeda, NICT, Japan

Virtual Break

Session 10: Edge Computing

Session Chair: Fangxin Wang, Chinese University of Hong Kong (Shenzhen), China

Sunday, 10:10am-11:20am, 27 June 2021 (Tokyo Time)

Sunday, 9:10am-10:20am, 27 June 2021 (Beijing Time)

Saturday, 21:10pm-22:20am, 26 June 2021 (New York Time)

Sunday, 2:10am-3:20am, 27 June 2021 (London Time)

Neuron Manifold Distillation for Edge Deep Learning

Zeyi Tao (William and Mary, USA); Qi Xia (The College of William and Mary, USA); Qun Li (College of William and Mary, USA)

Computation Offloading Scheduling for Deep Neural Network Inference in Mobile Computing

Yubin Duan and Jie Wu (Temple University, USA)

Drag-JDEC: A Deep Reinforcement Learning and Graph Neural Network-based Job Dispatching Model in Edge Computing

Zhaoyang Yu, Wenwen Liu, Xiaoguang Liu and Gang Wang (Nankai University, China)

Joint D2D Collaboration and Task Offloading for Edge Computing: A Mean Field Graph Approach

Xiong Wang (The Chinese University of Hong Kong, Hong Kong); Jiancheng Ye (Huawei, Hong Kong); John C.S. Lui (The Chinese University of Hong Kong, Hong Kong)

Virtual Lunch Break

Session 11: Reinforcement Learning

Session Chair: En Wang, Jilin University, China

Sunday, 12:30pm-13:40pm, 27 June 2021 (Tokyo Time)

Sunday, 11:30am-12:40pm, 27 June 2021 (Beijing Time)

Saturday, 23:30pm-0:40am, 26 June 2021 (New York Time)

Sunday, 4:30am-5:40am, 27 June 2021 (London Time)

DATE: Disturbance-Aware Traffic Engineering with Reinforcement Learning in Software-Defined Networks

Minghao Ye (New York University, USA); Junjie Zhang (Fortinet, Inc., USA); Zehua Guo (Beijing Institute of Technology, China); H. Jonathan Chao (NYU Tandon School of Engineering, USA)

A Multi-Objective Reinforcement Learning Perspective on Internet Congestion Control

Zhenchang Xia (WUHAN University, China); Yanjiao Chen (Zhejiang University, China); Libing Wu, Yu-Cheng Chou, Zhicong Zheng and Haoyang Li (Wuhan University, China); Baochun Li (University of Toronto, Canada)

Throughput Maximization for Wireless Powered Communication: Reinforcement Learning Approaches

Yanjun Li, Xiaofeng Su and Huatong Jiang (Zhejiang University of Technology, China); Chung Shue Chen (Nokia Bell Labs, France)

Distributed and Adaptive Traffic Engineering with Deep Reinforcement Learning

Nan Geng, Mingwei Xu, Yuan Yang, Chenyi Liu, Jiahai Yang, Qi Li and Shize Zhang (Tsinghua University, China)

Virtual Break

Session 12: IoT & Data Processing

Session Chair: Anurag Kumar, Indian Institute of Science, India

Sunday, 13:50pm-15:00pm, 27 June 2021 (Tokyo Time)

Sunday, 12:50pm-14:00pm, 27 June 2021 (Beijing Time)

Sunday, 0:50am-2:00am, 27 June 2021 (New York Time)

Sunday, 5:50am-7:00am, 27 June 2021 (London Time)

EXTRA: An Experience-driven Control Framework for Distributed Stream Data Processing with a Variable Number of Threads

Teng Li, Zhiyuan Xu, Jian Tang and Kun Wu (Syracuse University, USA); Yanzhi Wang (Northeastern University, USA)

Isolayer: The Case for an IoT Protocol Isolation Layer

Jiamei Lv, Gonglong Chen and Wei Dong (Zhejiang University, China)

No Wait, No Waste: A Novel and Efficient Coordination Algorithm for Multiple readers in RFID Systems

Qiuying Yang and Xuan Liu (Hunan University, China); Song Guo (The Hong Kong Polytechnic University, Hong Kong)

Snapshot for IoT: Adaptive Measurement for Multidimensional QoS Resource

Yuyu Zhao, Guang Cheng, Chunxiang Liu and Zihan Chen (Southeast University, China)

Virtual Break

Session 13: Performance

Session Chair: Yifei Zhu, Shanghai Jiao Tong University, China

Sunday, 15:10pm-16:20pm, 27 June 2021 (Tokyo Time)

Sunday, 14:10pm-15:20pm, 27 June 2021 (Beijing Time)

Sunday, 2:10am-3:20am, 27 June 2021 (New York Time)

Sunday, 7:10am-8:20am, 27 June 2021 (London Time)

HierTopo: Towards High-Performance and Efficient Topology Optimization for Dynamic Networks

Jing Chen, Zili Meng, Yaning Guo and Mingwei Xu (Tsinghua University, China); Hongxin Hu (University at Buffalo, USA)

wCompound: Enhancing Performance of Multipath Transmission in High-speed and Long Distance Networks

Rui Zhuang, Yitao Xing, Wenjia Wei, Yuan Zhang, Jiayu Yang and Kaiping Xue (University of Science and Technology of China, China)

Demystifying the Relationship Between Network Latency and Mobility on High-Speed Rails: Measurement and Prediction

Xiangxiang Wang and Jiangchuan Liu (Simon Fraser University, Canada); Fangxin Wang (The Chinese University of Hong Kong, Shenzhen, China); Ke Xu (Tsinghua University, China)

Time-expanded Method Improving Throughput in Dynamic Renewable Networks

Jianhui Zhang, Siqi Guan and Jiacheng Wang (Hangzhou Dianzi University, China);

Liming Liu (Hangzhou Dianzi University, China); Hanxiang Wang (Hangzhou Dianzi University, China); Feng Xia (Federation University Australia, Australia)

Virtual Break

Session 14: Systems

Session Chair: Jian Li, University of Science and Technology of China, China

Sunday, 16:30pm-17:40pm, 27 June 2021 (Tokyo Time)

Sunday, 15:30pm-16:40pm, 27 June 2021 (Beijing Time)

Sunday, 3:30am-4:40am, 27 June 2021 (New York Time)

Sunday, 8:30am-9:40am, 27 June 2021 (London Time)

Eunomia: Efficiently Eliminating Abnormal Results in Distributed Stream Join Systems

Jie Yuan (Huazhong University of Science and Technology, China); Yonghui Wang (Huazhong University of Science and Technology, China); Hanhua Chen, Hai Jin and Haikun Liu (Huazhong University of Science and Technology, China)

Exploiting Outlier Value Effects in Sparse Urban CrowdSensing

En Wang, Mijia Zhang, Yongjian Yang and Yuanbo Xu (Jilin University, China); Jie Wu (Temple University, USA)

PQR: Prediction-supported Quality-aware Routing for Uninterrupted Vehicle Communication

Wenquan Xu, Xuefeng Ji and Chuwen Zhang (Tsinghua University, China); Beichuan Zhang (University of Arizona, USA); Yu Wang (Temple University, USA); Xiaojun Wang (Dublin City University, Ireland); Yunsheng Wang (Kettering University, USA); Jianping Wang (City University of Hong Kong, Hong Kong); Bin Liu (Tsinghua University, China)

ChirpMu: Chirp Based Imperceptible Information Broadcasting with Music

Yu Wang, Xiaojun Zhu and Hao Han (Nanjing University of Aeronautics and Astronautics, China)

Virtual Break

Short Paper Session 3: Blockchain

Session Chair: Aniruddh Rao Kabbinala, Samsung R&D institute India - Bangalore

Sunday, 17:50pm-19:15pm, 27 June 2021 (Tokyo Time)

Sunday, 16:50pm-18:15pm, 27 June 2021 (Beijing Time)

Sunday, 4:50am-6:15am, 27 June 2021 (New York Time)

Sunday, 9:50am-11:15am, 27 June 2021 (London Time)

Revisiting Double-Spending Attacks on the Bitcoin Blockchain: New Findings

Jian Zheng, Canlin Li and Huawei Huang (Sun Yat-Sen University, China); Zibin Zheng (Sun Yat-sen University, China); Song Guo (The Hong Kong Polytechnic University, Hong Kong)

BESURE: Blockchain-Based Cloud-Assisted eHealth System with Secure Data Provenance

Shiyu Li, Yuan Zhang and ChunXiang Xu (University of Electronic Science and Technology of China, China); Nan Cheng (Xidian University, China); Zhi Liu (The University of Electro-Communications, Japan); Sherman Shen (University of Waterloo, Canada)

Cumulus: A Secure BFT-based Sidechain for Off-chain Scaling

Fangyu Gai (University of British Columbia, Canada); Jianyu Niu (The University of British Columbia, Canada); Seyed Ali Tabatabaee, Chen Feng and Mohammad Jalalzai (University of British Columbia, Canada)

Robust P2P Connectivity Estimation for Permissionless Bitcoin Network

Hsiang-Jen Hong, Wenjun Fan and Simeon Wuthier (University of Colorado Colorado Springs, USA); Jinoh Kim (Texas A&M University-Commerce, USA); Xiaobo Zhou (University of Colorado, Colorado Springs, USA); C. Edward Chow (University of Colorado at Colorado Springs, USA); Sang-Yoon Chang (University of Colorado Colorado Springs, USA)

Automated Quality of Service Monitoring for 5G and Beyond Using Distributed Ledgers

Tooba Faisal (Kings College London, United Kingdom (Great Britain)); Damiano Di Francesco Maesa (University of Cambridge & Istituto di Informatica e Telematica, Consiglio Nazionale delle Ricerche, United Kingdom (Great Britain)); Nishanth Sastry (University of Surrey, United Kingdom (Great Britain)); Simone Mangiante (Vodafone, United Kingdom (Great Britain))

Coded Matrix Chain Multiplication

Xiaodi Fan (CUNY Graduate Center); Angel Saldivia (Florida International University, USA); Pedro Soto (CUNY Graduate Center); Jun Li (City University of New York, USA)

Day 4, June 28th

Monday, 9:00am-12:10pm & 12:30pm-17:40pm, 28 June 2021 (Tokyo Time)

Monday, 8:00am-11:10pm & 11:30pm-16:40pm, 28 June 2021 (Beijing Time)

Sunday, 20:00pm-23:10pm & 23:30pm-4:40am, 27 June 2021 (New York Time)

Monday, 1:00am-4:10am & 4:30am-9:40am, 28 June 2021 (London Time)

Session 15: Mobile and Wireless Networks

Session Chair: Dan Wang, The Hong Kong Polytechnic University, Hongkong

Monday, 9:00am-10:10am, 28 June 2021 (Tokyo Time)

Monday, 8:00am-9:10pm, 28 June 2021 (Beijing Time)

Sunday, 20:00pm-21:10pm, 27 June 2021 (New York Time)

Monday, 1:00am-2:10am, 28 June 2021 (London Time)

CUP: Cellular Ultra-light Probe-based Available Bandwidth Estimation

Lixing Song (Rose-Hulman Institute of Technology, USA); Emir Halepovic (AT&T Labs - Research, USA); Alamin Mohammed and Aaron D Striegel (University of Notre Dame, USA)

Charging on the Move: Scheduling Static Chargers with Tunable Power for Mobile Devices

Tao Wu (National University of Defense Technology, China); Panlong Yang (University of Science and Technology of China, China); Haipeng Dai (Nanjing University & State Key Laboratory for Novel Software Technology, China)

Stateful-BBR - An Enhanced TCP for Emerging High-Bandwidth Mobile Networks

Lingfeng Guo (Chinese University of Hong Kong, Hong Kong); Yan Liu and Wenzheng Yang (Tencent, China); Yuming Zhang and Jack Y. B. Lee (The Chinese University of Hong Kong, Hong Kong)

IMP: Impedance Matching Enhanced Power-Delivered-to-Load Optimization for Magnetic MIMO Wireless Power Transfer System

Wangqiu Zhou, Hao Zhou and Wenxiong Hua (University of Science and Technology of China, China); Fengyu Zhou (University of Science and Technology of China, China); Xiang Cui (University of Science and Technology of China, China); Suhua Tang and Zhi Liu (The University of Electro-Communications, Japan); Xiang-Yang Li (University of Science and Technology of China, China)

Virtual Break

Session 16: Data & Processing

Session Chair: Hanhua Chen, Huazhong University of Science and Technology, China

Monday, 10:20am-11:30am, 28 June 2021 (Tokyo Time)

Monday, 9:20am-10:30pm, 28 June 2021 (Beijing Time)

Sunday, 21:20pm-22:30pm, 27 June 2021 (New York Time)

Monday, 2:20am-3:30am, 28 June 2021 (London Time)

FairCrowd: Fair Human Face Dataset Sampling via Batch-Level Crowdsourcing Bias Inference

Ziyi Kou, Yang Zhang, Lanyu Shang and Dong Wang (University of Notre Dame, USA)

When Virtual Network Operator Meets E-Commerce Platform: Advertising via Data Reward

Qi Cheng and Hangguan Shan (Zhejiang University, China); Weihua Zhuang (University of Waterloo, Canada); Tony Q. S. Quek (Singapore University of Technology and Design, Singapore); Zhaoyang Zhang (Zhejiang University, China)

FedACS: Federated Skewness Analytics in Heterogeneous Decentralized Data Environments

Zibo Wang and Yifei Zhu (Shanghai Jiao Tong University, China); Dan Wang (The Hong Kong Polytechnic University, Hong Kong); Zhu Han (University of Houston, USA)

GraphCP: An I/O-Efficient Concurrent Graph Processing Framework

Xianghao Xu (Huazhong University of Science and Technology, China); Fang Wang (Wuhan National Laboratory for Optoelectronics, China); Hong Jiang (University of Texas at Arlington, USA); Yongli Cheng (FuZhou University, China); Dan Feng (Huazhong University of Science and Technology, China); Yongxuan Zhang (Huazhong University of Science & Technology, China); Peng Fang (Huazhong University of Science and Technology, China)

Industrial Talk

Monday, 11:30am-12:10pm, 28 June 2021 (Tokyo Time)

Monday, 10:30am-11:10pm, 28 June 2021 (Beijing Time)

Sunday, 22:30pm-23:10pm, 27 June 2021 (New York Time)

Monday, 3:30am-4:10am, 28 June 2021 (London Time)

Title: TBD

Speaker: Miya Kohno (CTO, Cisco Systems G.K.)

Chair: Hitoshi Asaeda, NICT, Japan

Virtual Lunch Break

Short Paper Session 4: Edge and Cloud

Session Chair: Huaming Wu, Tianjin University, China

Monday, 12:30pm-13:55pm, 28 June 2021 (Tokyo Time)

Monday, 11:30am-12:55pm, 28 June 2021 (Beijing Time)

Sunday, 23:30pm-0:55am, 27 June 2021 (New York Time)

Monday, 4:30am-5:55am, 28 June 2021 (London Time)

Online Cloud Resource Provisioning Under Cost Budget for QoS Maximization

Yu Liu (Stony Brook University, USA); Niangjun Chen (Singapore University of Technology and Design, Singapore); Zhenhua Liu and Yuanyuan Yang (Stony Brook University, USA)

FuzzySkyline: QoS-Aware Fuzzy Skyline Parking Recommendation Using Edge Traffic Facilities

Yinglong Li (Zhejiang University of Technology, China); Jiaye Zhang and Tieming Chen (Zhejiang University of Technology, China); Weiru Liu (University of Bristol, United Kingdom (Great Britain))

Towards Robust Multi-Tenant Clouds Through Multi-Constrained VM Placement

Yutong Zhai, Gongming Zhao and Hongli Xu (University of Science and Technology of China, China); Yangming Zhao (University at Buffalo, USA); Jiawei Liu and Xingpeng Fan (University of Science and Technology of China, China)

Joint Resource Placement and Task Dispatching in Mobile Edge Computing across Timescales

Xinliang Wei and Yu Wang (Temple University, USA)

Robustness-Aware Real-Time SFC Routing Update in Multi-Tenant Clouds

Huaqing Tu, Gongming Zhao and Hongli Xu (University of Science and Technology of China, China); Yangming Zhao (University at Buffalo, USA); Yutong Zhai (University of Science and Technology of China, China)

Joint Service Placement for Maximizing the Social Welfare in Edge Federation

Sheng Chen and Baochao Chen (Tianjin University, China); Junjie Xie (National University of Defense Technology, China); Xiulong Liu, Deke Guo and Keqiu Li (Tianjin University, China)

Virtual Break

Short Paper Session 5: Performance Modeling and Measurements

Session Chair: Yuchao Zhang (Beijing University of Posts and Telecommunications, China)

Monday, 14:05pm-15:30pm, 28 June 2021 (Tokyo Time)

Monday, 13:05pm-14:30pm, 28 June 2021 (Beijing Time)

Monday, 1:05am-2:30am, 28 June 2021 (New York Time)

Monday, 6:05am-7:30am, 28 June 2021 (London Time)

A Reality-Conforming Approach for QoS Performance Analysis of AFDX in Cyber-Physical Avionics Systems

Boyang Zhou and Liang Cheng (Lehigh University, USA)

Controlling the Maximum Link Estimation Error in Network Performance Tomography

Cuiying Feng (University of Victoria, Canada); Luning Wang (City University of Hong Kong, Hong Kong); Kui Wu (University of Victoria, Canada); Jianping Wang (City University of Hong Kong, Hong Kong)

Continuous Flow Measurement with SuperFlow

Zongyi Zhao and Xingang Shi (Tsinghua University, China); Arpit Gupta (UC Santa Barbara, USA); Qing Li (Southern University of Science and Technology, China); Zhiliang Wang, Bin Xiong and Xia Yin (Tsinghua University, China)

Clean: Minimize Switch Queue Length via Transparent ECN-proxy in Campus Networks

Xiaojie Huang, Jiaqing Dong, Wenzheng Yang and Chen Tian (Nanjing University, China); Jun Zhou, Yi Kai and Mingjie Cai (Huawei Technologies, China); Nai Xia, Wanchun Dou and Guihai Chen (Nanjing University, China)

Scalable Hardware Content Router: Architecture, Modeling and Performance

Bin Liu, Huichen Dai, Wenquan Xu, Tong Yun and Ji Miao (Tsinghua University, China)

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| <p>FlexNF: Flexible Network Function Orchestration on the Programmable Data Plane Hanyu Zhao (Tsinghua University, China); Qing Li and Jingpu Duan (Southern University of Science and Technology, China); Yong Jiang (Graduate School at Shenzhen, Tsinghua University, China); Kai Liu (Pengcheng Laboratory, Shenzhen, China)</p> |
| <p>Virtual Break</p> |
| <p>Short Paper Session 6: Wireless, Scheduling, and Security Session Chair: Peng Li, University of Aizu, Japan Monday, 15:40pm-17:20pm, 28 June 2021 (Tokyo Time) Monday, 14:40pm-16:30pm, 28 June 2021 (Beijing Time) Monday, 2:40am-4:20pm, 28 June 2021 (New York Time) Monday, 7:40am-9:20am, 28 June 2021 (London Time)</p> |
| <p>Designing Approximate and Deployable SRPT Scheduler: A Unified Framework Zhiyuan Wang (The Chinese University of Hong Kong, Hong Kong); Jiancheng Ye, Dong Lin and Yipei Chen (Huawei, Hong Kong); John C.S. Lui (The Chinese University of Hong Kong, Hong Kong)</p> <p>Secure and Efficient Task Matching with Multi-keyword in Multi-requester and Multi-worker Crowdsourcing Kan Yang and Senjuti Dutta (University of Memphis, USA)</p> <p>pSAV: A Practical and Decentralized Inter-AS Source Address Validation Service Framework Jiamin Cao, Ying Liu, Liu MingXing and Lin He (Tsinghua University, China); Yihao Jia (Huawei Technologies Co., Ltd., China); Fei Yang (Beijing Huawei Digital Technologies Co., Ltd., China)</p> <p>Design of Robust and Efficient Edge Server Placement and Server Scheduling Policies Shizhen Zhao, Xiao Zhang and Peirui Cao (Shanghai Jiao Tong University, China); Xinbing Wang (Shanghai Jiaotong University, China)</p> <p>To share or not to share: reliability assurance via redundant cellular connectivity in Connected Cars Emeka Obiodu (King's College London, United Kingdom (Great Britain)); Abdullahi Abubakar (University of Surrey, United Kingdom (Great Britain)); Aravindh Raman</p> |

(Telefonica I+D, Spain); Nishanth Sastry (University of Surrey, United Kingdom (Great Britain)); Simone Mangiante (Vodafone, United Kingdom (Great Britain))

ModelCoder: A Fault Model based Automatic Root Cause Localization Framework for Microservice Systems

Yang Cai and Biao Han (National University of Defense Technology, China); Jie Li (Shanghai Jiao Tong University, Japan); Na Zhao (National University of Defense Technology, China); Jinshu Su (National University of Defence Technology, China)

QoE-assured Live Video Streaming Based on Coalition Game in 5G eMBMS Networks

Xiaobin Tan and Simin Li (University of Science and Technology of China, China); Yangyang Liu (University of Science & Technology of China, China); Quan Zheng and Dezheng Liu (University of Science and Technology of China, China)

Virtual Break

Closing Session

Session Chair: Ruidong Li, Kanazawa University, Japan

Monday, 17:30pm-17:40pm, 28 June 2021 (Tokyo Time)

Monday, 16:30pm-16:40pm, 28 June 2021 (Beijing Time)

Monday, 4:30am-4:40pm, 28 June 2021 (New York Time)

Monday, 9:30am-9:40am, 28 June 2021 (London Time)