The 18th IEEE International Conference on Mobility, Sensing and Networking (MSN 2022)

December 14-16, 2022 · Guangzhou, China (Virtual Conference)

Conference Program and Information Booklet

Co-organized and Co-sponsored by



Technically Co-Sponsored by

Advanced Program Summary (Beijing Time, UTC+8)

14 December 2022 (Wednesday)			
8:30-10:00	WS-NMIC	WS-CSIHTIS	Tutorial（pending）
10:00-10:30	Virtual coffee break		
10:30-12:00	WS-AI2OT	WS-ECAISS	WS-UEIOT
12:00-14:00	Virtual lunch break		
14:00-14:30	Opening Ceremony		
14:30-15:15	Keynote 1-Prof. Zhang		
15:15-15:30	Virtual coffee break		
15:30-16:15	Keynote 2-Prof. Dressler		
16:15-16:30	break		
16:30-18:00	T1-1:Radio Networks	T2-1: Federated Learning and Edge Computing	T3-1: Privacy
15 December 2022 (Thursday)			
09:00-09:45	Keynote 3-Prof. Xing		
09:45-10:45	Panel		
10:45-11:00	Virtual coffee break		
11:00-12:30	T1-2: Ride-sharing and IoT	T2-2: Task Offloading	T3-2: Attack and Security
12:30-14:00	Virtual lunch break		
14:00-15:30	T1-3: Wireless Networks	T2-3: Edge Computing	T3-3: Blockchain
15:00-16:00	Virtual coffee break		
16:00-17:30	T1-4: Mobile and Fog Computing	T2-4: IoT	T3-4: Analysis and Detection
16 December 2022 (Friday)			
09:00-10:30	T1-5: Networking and Management	T4-1: Algorithm Based on Big Data	T6-1: Smart City
10:30-11:00	Virtual coffee break		
11:00-12:30	T5-1: Systems	T4-2: Prediction, Detection and Classification	T6-2: Smart Home and Healthcare
12:30-14:00	Virtual lunch break		
14:00-15:30	T5-2: Testbed and Simulation	T4-3: Federated Learning	T6-3: RFID and Optimization
15:30-16:00	Virtual coffee break		
16:00-17:30	T6-5: Other Areas	T4-4: Reinforcement Learning	T6-4: Multimedia Application
17:30-18:00	Closing		

Keynote 1: 14:30-15:15 14 December 2022 (Wednesday) Room-1

Session Chair: (TBD)

Keynote Speech 1

Understanding and Pushing the Sensing Limits of WiFi/4G/5G Signals

Prof. Daqing Zhang
Peking University and IP Paris

Abstract

WiFi/4G/5G based wireless sensing has attracted a lot of attention from both academia and industry in the last decade. However, fundamental questions such as the sensing limit, sensing boundary and sensing quality of WiFi/4G/5G signals have not been answered, making the wireless sensing system design and deployment in a trial-and-error manner. In this talk, I will first introduce the Fresnel zone model as a generic theoretic basis for device-free and contactless human sensing with WiFi/4G/5G signals. Then we propose to define and deploy the Sensing Signal to Noise Ratio (SSNR) as a new metric to reveal the sensing limit, sensing boundary and sensing signal quality of WiFi/4G/5G-based human sensing systems. We further apply the SSNR metric to show how we can push the sensing range of a commodity WiFi-based human respiration monitoring system to more than 30 meters by exploiting the time, space and frequency diversity of WiFi signals.

Biography

Daqing Zhang is a Chair Professor with Peking University, China and IP Paris, France. His research interests include ubiquitous computing, context-aware computing, big data analytics and Intelligent IoT. He has published more than 300 technical papers in leading conferences and journals, where his work on context model and WiFi-based sensing theory is widely accepted by pervasive computing, mobile computing and service computing communities. He is the winner of the Ten Years CoMoRea Impact Paper Award at IEEE PerCom 2013 and Ten Years Most Influential Paper Award at IEEE UIC 2019, the Best Paper Award Runner-up at ACM MobiCom 2022, the Distinguished Paper Award of IMWUT (Ubicomp 2021), Honorable Mention Award at ACM UbiComp 2015 and 2016, etc.. He served as the general or program chair for more than a dozen of international conferences, and in the editorial board of IEEE Pervasive Computing and Proceeding of ACM IMWUT. Daqing Zhang is a Fellow of IEEE and Member of Academy of Europe.

Keynote 2: 15:30-16:15 14 December 2022 (Wednesday) Room-1

Session Chair: (TBD)

Keynote Speech 2

Toward Virtualized Edge Computing

Prof. Falko Dressler
TU Berlin

Abstract

We will discuss the challenges and opportunities of the connected cars vision in relation to the need for distributed data management solutions ranging from the vehicle to the mobile edge and to the data centers. Vehicular networking solutions have been investigated for more than a decade but recent standardization efforts just enable a broad use of this technology to build large scale Intelligent Transportation Systems (ITS). Modern 5G networks promise to provide all means for communication in this domain, particularly when integrating Mobile Edge Computing (MEC). However, it turns out that despite the many advantages, it is unlikely that such services will be provided with sufficient coverage. As a novel concept, vehicle micro clouds have been proposed that bridge the gap between fully distributed vehicular networks based on short range device to device communication and 5G-based infrastructure. Using selected application examples, we assess the advantages of such systems. We conclude the talk by shedding light on future virtual edge computing concepts that will enable edge computing even considering minimal deployment and coverage of 5G MEC.

Biography

Falko Dressler is full professor and Chair for Telecommunication Networks at the School of Electrical Engineering and Computer Science, TU Berlin. He received his M.Sc. and Ph.D. degrees from the Dept. of Computer Science, University of Erlangen in 1998 and 2003, respectively. Dr. Dressler has been associate editor-in-chief for IEEE Trans. on Mobile Computing and Elsevier Computer Communications as well as an editor for journals such as IEEE/ACM Trans. on Networking, IEEE Trans. on Network Science and Engineering, Elsevier Ad Hoc Networks, and Elsevier Nano Communication Networks. He has been chairing conferences such as IEEE INFOCOM, ACM MobiSys, ACM MobiHoc, IEEE VNC, IEEE GLOBECOM. He authored the textbooks Self-Organization in Sensor and Actor Networks published by Wiley & Sons and Vehicular Network.

Keynote 3: 09:00-09:45 15 December 2022 (Thursday) Room-1

Session Chair: (TBD)

Keynote Speech 3

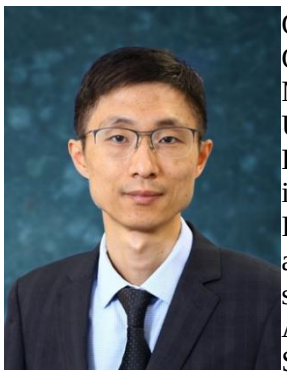
Real-Time AI for Infrastructure-assisted Autonomous Driving

Prof. Guoliang Xing
The Chinese University of Hong Kong

Abstract

Autonomous driving will greatly improve the mobility and safety of future transportation. However, recent pilot commercial deployments have caused widespread concerns about the reliability and safety of existing autonomous driving systems. In particular, many recent accidents are caused by the delayed or erroneous perception by autonomous vehicles. Despite the significant progress on machine learning algorithms and new vehicular sensors, the limited perception capability of a single car remains the major challenge of large-scale commercial deployment of autonomous driving.
An emerging technical paradigm to address this grand challenge is to improve the safety of autonomous vehicles by leveraging intelligent roadside infrastructure such as lampposts equipped with sensors and compute units. In this talk, I will discuss our recent work on real-time AI technologies for infrastructure-assisted autonomous driving. First, we have developed and deployed the world's largest open smart lamppost testbed on CUHK campus. Consisting of 25 roadside units equipped with network coding-enabled wireless multi-hop networks and advanced sensors including LiDAR, mmWave radar, thermal cameras, our testbed offers various real-time services such as target detection and dynamic route planning for autonomous vehicles. Second, we propose a novel real-time deep learning task framework RT-mDL, which integrate model compression and real-time scheduling to systematically optimize concurrent execution of multiple deep learning tasks. RT-mDL enables edge platforms such as roadside units and connected vehicles to perform multiple concurrent deep learning tasks simultaneously with limited compute and communication resources. Third, I will present VI-Eye and VIPS, the first systems for real-time 3D perception fusion of vehicle and infrastructure with centimeter accuracy, leading to vehicular perception enhancement, robust object detection/tracking, localization, and navigation. Lastly, I will discuss milliEye, a new real-time mmWave radar and camera fusion system for robust object detection on the edge platforms, which requires only a small amount of labeled image/radar data through a decoupled learning architecture.

Biography



Guoliang Xing is currently a Professor of Information Engineering at The Chinese University of HongKong. Previously, he was a faculty member at Michigan State University. He received the D.Sc. degree from Washington University in St. Louis, in 2006. He received three Best Paper Awards and seven Best Paper Nominations/Runner-Ups at leading international conferences, including ICNP, IPSN, MobiCom, and IoTDI. His research interests include Internet of Things (IoT), Autonomous Driving, Smart Health, Edge Computing, and wireless networking. Several mobile technologies developed in his lab were successfully transferred to the industry. He received the U.S. NSF CAREER Award in 2010 and the Withrow Distinguished Faculty Award from Michigan State University in 2014. He has published 150+ papers which have been cited for 10,000+. He is a Fellow of IEEE.

Panel: 15:45-17:15 15 December 2022 (Thursday) Room-1

(TBD)

Technical Program (Beijing Time, UTC+8)

Wednesday, 14 December 2022

Wednesday, 14 December 2022 | 00:30-02:00 (London Time)
Wednesday, 14 December 2022 | 08:30-10:00 (Beijing Time)
Tuesday, 13 December 2022 | 19:30-21:00 (New York Time)

The 4th International Workshop on Network Meets Intelligent Computations (NMIC 2022)

Session 1(8:30-10:00)
Session Chair: (TBD)

Interval Matching Algorithm for Task Scheduling with Time Varying Resource Constraints
Weiguan Li, Jialun Li, Yujie Long and Weigang Wu

Privacy protection scheme based on certificateless in VSNs environment
Yanfei Lu, Suzhen Cao, Yi Guo, Qizhi He, Zixuan Fang and Junjian Yan

Measurement and Analysis: Does QUIC Outperform TCP?
Xiang Qin, Xiaochou Chen, Wenju Huang, Yi Xie and Yixi Zhang

Binary Neural Network with P4 on Programmable Data Plane
Junming Luo, Waixi Liu, Miaoquan Tan and Haosen Chen

Semi-Supervised Learning Based on Reference Model for Low-resource TTS
Xulong Zhang, Jianzong Wang, Ning Cheng and Jing Xiao

RTSS: Robust Tuple Space Search for Packet Classification
Jiayao Wang, Ziling Wei, Baosheng Wang, Shuhui Chen and Jincheng Zhong

A Novel Reliability Evaluation Method Based on Improved Importance Algorithm for SCADA
Zhu Zhaoqian, Chen Yenan and Li Linsen

Evolutionary Discrete Optimization Inspired by Zero-Sum Game Theory
Ruiran Yu

Research on data collection and energy supplement mechanism in WRSN based on UAV: a method to maximize energy supplement efficiency
Wen Xie, Xiangyu Bai and Yaru Ren

Wednesday, 14 December 2022 | 00:30-02:00 (London Time)
Wednesday, 14 December 2022 | 08:30-10:00 (Beijing Time)
Tuesday, 13 December 2022 | 19:30-21:00 (New York Time)

The 1st International Workshop on Cryptographic Security and Information Hiding Technology for IoT System (CSIHTIS 2022)

Session 1 (8:30-10:00)
Session Chair: (TBD)

Semantic Image Synthesis via Location Aware Generative Adversarial Network
Jiawei Xu, Rui Liu, Jing Dong, Pengfei Yi, Wanshu Fan and Dongsheng Zhou

Low-Complexity Code Clone Detection using Graph-based Neural Networks
Hu Liu, Hui Zhao, Changhao Han and Lu Hou

Publishing Weighted Graph with Node Differential Privacy
Aixin Lin, Xuebin Ma and Ganghong Liu

SSA and BPNN based Efficient Situation Prediction Model for Cyber Security
Minglong Cheng, Guoqing Jia, Weidong Fang, Zhiwei Gao and Wuxiong Zhang

IA-DD: An SDN Topological Poisoning Attack Defense Scheme Based on Blockchain
Bin Gu, Xingwei Wang, Kaiqi Yang, Qiang He and Yu Wang

Low-power Robustness Learning Framework for Adversarial Attack on Edges
Bingbing Song, Haiyang Chen, Jiashun Suo and Wei Zhou

Wednesday, 14 December 2022 | 2:30-04:00 (London Time)
Wednesday, 14 December 2022 | 10:30-12:00 (Beijing Time)
Tuesday, 13 December 2022 | 21:30-23:00 (New York Time)

The 4th International Workshop on Artificial Intelligence Applications in Internet of Things (AI^{2}OT 2022)

Session 1 (10:30-12:00)
Session Chair: (TBD)

Image Classification of Alzheimer's Disease based on Residual Bilinear and Attentive Models
Xue Lin, Yushui Geng, Jing Zhao and Wenfeng Jiang

Anslysing and Evaluating Complementarity of Multi-Modaility Data Fusion in AD diagnosis
Zhaodong Chen, Fengtao Nan, Yun Yang, Jiayu Wang and Po Yang

MetaSpeech: Speech Effects Switch Along with Environment for Metaverse
Xulong Zhang, Jianzong Wang, Ning Cheng and Jing Xiao

Potential Game Based Connectivity Preservation for UAV-Assisted Public Safety Rescue
Jingjing Wang, Yanjing Sun, Bowen Wang and Toshimitsu Ushio

Three-dimensional Key Distribution Scheme in Wireless Sensor Networks
Wanqing Wu, Ziyang Zhang, Yahua Dong and Caixia Ma

Application identification under Multi-Service Integration Platform
Ziyang Wu and Yi Xie

UAV Visual Navigation System based on Digital Twin
Jingsi Miao and Ping Zhang

Applications of Reinforcement Learning in Virtual Network Function Placement: A Survey
Cong Zhou, Baokang Zhao, Jing Tao and Baosheng Wang

Wednesday, 14 December 2022 | 2:30-04:00 (London Time)
Wednesday, 14 December 2022 | 10:30-12:00 (Beijing Time)
Tuesday, 13 December 2022 | 21:30-23:00 (New York Time)

The 4th International Workshop on Edge Computing and Artificial Intelligence based Sensor-Cloud System (ECAISS 2022)

Session 1 (10:30-12:00)
Session Chair: (TBD)

An Adaptive Data Rate-Based Task Offloading Scheme in Vehicular Networks
Chaofan Chen, Wendi Nie, Yaoxin Duan, Victor C.S. Lee, Kai Liu and Huamin Li

HCA Operator: A Hybrid Cloud Auto-scaling Tooling for Microservice Workloads
Yuyang Wang, Fan Zhang and Samee U.Khan

Multi-UAV Joint Observation, Communication, and Policy in MEC
Shuai Liu and Yuebin Bai

Federated Learning for Heterogeneous Mobile Edge Device:A Client Selection Game
Tongfei Liu, Hui Wang and Maode Ma

Learning-based Computation Offloading in LEO Satellite Networks
Juan Luo, Quanwei Fu, Fan Li, Ying Qiao and Ruoyu Xiao

The Short-Term Passenger Flow Prediction Method for Urban Rail Transit Based on CNN-LSTM with Attention Mechanism
Yang Liu, Chen Mu and Pingping Zhou

Linguistic-Enhanced Transformer with CTC Embedding for Speech Recognition
Xulong Zhang, Jianzong Wang, Ning Cheng, Mengyuan Zhao, Zhiyong Zhang and Jing Xiao

Viewing Flowers at their Most Beautiful Moments: A Crowd Sensing Application
Weifeng Xiong, Fangwan Huang, Zhiyong Yu, Xianwei Guo, Binwei Lin and Qiquan Cai

Lightweight YOLOV4 algorithm for underwater whale detection
Lili He, Defeng Du, Hongtao Bai and Kai Wang

Anti-jamming Channel Allocation in UAV-Enabled Edge Computing: A Stackelberg Game Approach
Yuan Xinwang, Xie Zhidong and Tan Xin

Wednesday, 14 December 2022 | 2:30-04:00 (London Time)
Wednesday, 14 December 2022 | 10:30-12:00 (Beijing Time)
Tuesday, 13 December 2022 | 21:30-23:00 (New York Time)

The 3rd International Workshop on Ubiquitous Electric Internet of Things (UEIoT 2022)

Session 1 (10:30-12:00)
Session Chair: (TBD)

Intelligent rush repair of unmanned distribution network based on deep reinforcement learning
Yue Zhao, Yang Chuan, Shi Pu, Xuwen Han, Shiyu Xia and Yanqi Xie

Energy Minimization for IRS-assisted UAV-empowered Wireless Communications
Yangzhe Liao, Jiaying Liu, Quan Yu, Qingsong Ai, Quan Liu and Xiaojun Zhai

Trajectory Planning Model for Vehicle Platoons at Off-ramp
Xinyu Chen, Chen Mu and Yu Kong

Space-Air-Ground-Aqua Integrated Intelligent Network: Vision, and Potential Techniques
Jinhui Huang, Junsong Yin and Shuangshuang Wang

Fast Detection of Multi-Direction Remote Sensing Ship Object Based on Scale Space Pyramid

Ziying Song, Li Wang, Guoxin Zhang, Caiyan Jia, Jiangfeng Bi, Haiyue Wei, Yongchao Xia, Chao Zhang and Lijun Zhao

Fire Detection Scheme in Tunnels Based on Multi-source Information Fusion
Zhang Tianyu, Liu Yi, Fang Weidong, Jia Gentuan and Qiu Yunzhou

Improving Imbalanced Text Classification with Dynamic Curriculum Learning
Xulong Zhang, Jianzong Wang, Ning Cheng and Jing Xiao

Intelligent optimization and allocation strategy of emergency repair resources based on big data
Jiangdong Liu, Yue Zhao, Bo Wang, Jie Gao, Li Xu and Ying Ma

Main Conference Day 1 (Beijing Time, UTC+8)

Wednesday, 14 December 2022

Wednesday, 14 December 2022 | 06:00-06:30 (London Time)
Wednesday, 14 December 2022 | 14:00-14:30 (Beijing Time)
Wednesday, 14 December 2022 | 01:00-01:30 (New York Time)

Opening Ceremony

Wednesday, 14 December 2022 | 06:30-07:15 (London Time)
Wednesday, 14 December 2022 | 14:30-15:15 (Beijing Time)
Wednesday, 14 December 2022 | 01:30-02:15 (New York Time)

Keynote Speech 1: Understanding and Pushing the Sensing Limits of WiFi/4G/5G Signals
Prof. Daqing Zhang, Peking University and IP Paris
Session Chair: (TBD)

Wednesday, 14 December 2022 | 07:30-08:15 (London Time)
Wednesday, 14 December 2022 | 15:30-16:15 (Beijing Time)
Wednesday, 14 December 2022 | 02:30-03:15 (New York Time)

Keynote Speech 2: Toward Virtualized Edge Computing
Prof. Falko Dressler, TU Berlin
Session Chair: (TBD)

Wednesday, 14 December 2022 | 8:30-10:00 (London Time)
Wednesday, 14 December 2022 | 16:30-18:00 (Beijing Time)
Wednesday, 14 December 2022 | 03:30-05:00 (New York Time)

Track 1 Session 1: Radio Networks (Room-2, 16:30-18:00)
Session Chair: (TBD)

Human Occlusion in Ultra-wideband Ranging: What Can the Radio Do for You? (invited paper)
Vu Anh Minh Le, Matteo Trobinger, Davide Vecchia and Gian Pietro Picco

Deep Reinforcement Learning Based Radio Resource Selection Approach for C-V2X Mode 4 in Cooperative Perception Scenario
Chenhua Wei, Xiaojun Tan and Hui Zhang

A Quality-Aware Rendezvous Framework for Cognitive Radio Networks
Hai Liu, Lu Yu, Chung Keung Poon, Zhiyong Lin, Yiu-Wing Leung and Xiaowen Chu

Rendezvous Delay-Aware Multi-Hop Routing Protocol for Cognitive Radio Networks
Zengqi Zhang, Sheng Sun, Min Liu, Zhongcheng Li and Qiuping Zhang

Wednesday, 14 December 2022 | 8:30-10:00 (London Time)
Wednesday, 14 December 2022 | 16:30-18:00 (Beijing Time)
Wednesday, 14 December 2022 | 03:30-05:00 (New York Time)

Track 2 Session 1: Federated Learning and Edge Computing (Room-3, 16:30-18:00)
Session Chair: (TBD)

Fine-grained Cloud Edge Collaborative Dynamic Task Scheduling Based on DNN Layer-Partitioning (invited paper)
Xilong Wang, Xin Li, Ning Wang and Xiaolin Qin

Edge-assisted Federated Learning in Vehicular Networks (invited paper)
Giuseppe La Bruna, Carlos Mateo Risma Carletti, Riccardo Rusca, Claudio Casetti, Carla Fabiana Chiasserini, Marina Giordanino and Roberto Tola

CFedPer: Clustered Federated Learning with Two-Stages Optimization for Personalization
Zhipeng Gao, Yan Yang, Chen Zhao and Zijia Mo

Shielding Federated Learning: Mitigating Byzantine Attacks with Less Constraints
Minghui Li, Junyu Shi, Wei Wan, Jianrong Lu, Shengshan Hu and Leo Yu Zhang

Incremental Unsupervised Adversarial Domain Adaptation for Federated Learning in IoT Networks (short paper)
Yan Huang, Mengxuan Du, Jinfeng Ma, Haifeng Zheng and Xinxin Feng

Wednesday, 14 December 2022 | 8:30-10:00 (London Time)
Wednesday, 14 December 2022 | 16:30-18:00 (Beijing Time)
Wednesday, 14 December 2022 | 03:30-05:00 (New York Time)

Track 3 Session 1: Privacy (Room-4, 16:30-18:00)
Session Chair: (TBD)

Approximate Shortest Distance Queries with Advanced Graph Analytics over Large-scale Encrypted Graphs
Yuchuan Luo, Dongsheng Wang, Shaojing Fu, Ming Xu, Yingwen Chen and Kai Huang

Tangless: Optimizing Cost and Transaction Rate in IOTA by Using Lyapunov Optimization Theory
Yinfeng Chen, Yu Guo and Rongfang Bie

Cloud-assisted Road Condition Monitoring with Privacy Protection in VANETs
Lemei Da, Yujue Wang, Yong Ding, Bo Qin, Xiaochun Zhou, Hai Liang and Huiyong Wang

Towards Event-driven Misbehavior Detection Mechanism in Social Internet of Vehicles
Chenchen Lv, Yue Cao, Lexi Xu, Shitao Zou, Yongdong Zhu and Zhili Sun

RDP-WGAN: Image Data Privacy Protection based on Rényi Differential Privacy (short paper)
Xuebin Ma, Ren Yang and Maobo Zheng

Main Conference Day 2 (Beijing Time, UTC+8)

Thursday, 15 December 2022

Thursday, 15 December 2022 | 01:00-01:45 (London Time)
Thursday, 15 December 2022 | 09:00-09:45 (Beijing Time)
Wednesday, 14 December 2022 | 20:00-20:45 (New York Time)

Keynote Speech 3: Real-Time AI for Infrastructure-assisted Autonomous Driving
Prof. Guoliang Xing , The Chinese University of Hong Kong
Session Chair: (TBD)

Thursday, 15 December 2022 | 01:45-02:45 (London Time)
Thursday, 15 December 2022 | 09:45-10:45 (Beijing Time)
Wednesday, 14 December 2022 | 20:45-21:45 (New York Time)

Panel Discussion
Prof. Huadong Ma, Beijing University of Posts and Telecommunications

Thursday, 15 December 2022 | 3:00-4:30 (London Time)
Thursday, 15 December 2022 | 11:00-12:30 (Beijing Time)
Wednesday, 14 December 2022 | 22:00-00:30 (New York Time)

Track 1 Session 2: Ride-sharing and IoT (Room-2, 11:00-12:30)
Session Chair: (TBD)

Sample-based Prophet for Online Ride-sharing with Fairness (invited paper)
Baoju Li, En Wang, Funing Yang, Yongjian Yang, Wenbin Liu, Zijie Tian, Junyu Liu and Wanbo Zheng

Traffic Light Routing Based on Node State Awareness in Delay Tolerant Networks (invited paper)
Tong Wang, Jianqun Cui, Yanan Chang, Feng Huang and Yi Yang

Optimized sustainable strategy in Aerial Terrestrial IoT Network
Tiantian Wang, Lei Liu and Tong Ding

Crowdsourcing Mobile Data for a Passive Indoor Positioning System - The MAA Case Study
Ran Guan and Robert Harle

Thursday, 15 December 2022 | 3:00-4:30 (London Time)
Thursday, 15 December 2022 | 11:00-12:30 (Beijing Time)
Wednesday, 14 December 2022 | 22:00-00:30 (New York Time)

Track 2 Session 2 : Task Offloading (Room-3, 11:00-12:30)
Session Chair: (TBD)

Joint Task Partition and Computation Offloading for Latency-Sensitive Services in Mobile Edge Networks (invited paper)
Xiaoqin Song, Guoliang Xing and Fang Liu

Enabling Heterogeneous Domain Adaptation in Multi-inhabitants Smart Home Activity Learning
Md Mahmudur Rahman, Mahta Mousavi, Peri Tarr and Mohammad Arif Ul Alam (t2s4-t2s2)

Priority-Aware Task Offloading and Resource Allocation in Vehicular Edge Computing Networks
Ye Wang, Yanheng Liu, Zemin Sun, Lingling Liu, Jiahui Li and Geng Sun

Task Offloading in Fog: A Matching-driven Multi-User Multi-Armed Bandit Approach (short paper)
Qing Zhang, Mingjun Xiao and Yin Xu

MACC: MEC-Assisted Collaborative Caching for Adaptive Bitrate Videos in Dense Cell Networks (short paper)
Haojia He, Songtao Guo, Lu Yang and Ying Wang

Thursday, 15 December 2022 | 3:00-4:30 (London Time)
Thursday, 15 December 2022 | 11:00-12:30 (Beijing Time)
Wednesday, 14 December 2022 | 22:00-00:30 (New York Time)

Track 3 Session 2: Attack and Security (Room-4, 11:00-12:30)
Session Chair: (TBD)

Accelerating Adversarial Attack using Process-in-Memory Architecture (invited paper)
Shiyi Liu, Sathwika Bavikadi, Tanmoy Sen, Haiying Shen, Purab Ranjan Sutradhar, Amlan Ganguly, Sai Manoj Pudukotai Dinakarrao and Brian Smith

PhysioGait: Context-Aware Physiological Context Modeling for Person Re-identification Attack on Wearable Sensing
James Osullivan and Mohammad Arif Ul Alam

Secure Deduplication Against Frequency Analysis Attacks
Hang Chen, Guanxiong Ha, Yuchen Chen, Haoyu Ma and Chunfu Jia

Breaking Distributed Backdoor Defenses for Federated Learning in Non-IID Settings
Jijia Yang, Jiangang Shu and Xiaohua Jia

Thursday, 15 December 2022 | 6:00-7:30 (London Time)
Thursday, 15 December 2022 | 14:00-15:30 (Beijing Time)
Thursday, 15 December 2022 | 01:00-02:30 (New York Time)

Track 1 Session 3: Wireless Networks (Room-2, 14:00-15:30)
Session Chair: (TBD)

Crowdsourced Image Driven PM2.5 Estimation based on Hybrid 3-Channel Feature Map
Jiaxuan Wang, Muyan Yao, Ruipeng Gao and Dan Tao (t1s5-t1s3)

An Energy-equilibrium Opportunity network routing algorithm based on Game theory and Historical similarity rate
Gang Xu, Ming Song, Hongzhi Fu, Baoqi Huang, Fengqi Wei and Qinfu Si

Opportunistic Network Routing Strategy Based on Relay Node Collaboration
Gang Xu, Xiaoying Yang, Ruijie Hang, Baoqi Huang, Fengqi Wei and Qinfu Si

Characterizing Energy Sources in Outdoor Wireless Sensor Networks (short paper)
Robert Hartung, Jan Käberich, Christian Bunzeck and Lars Wolf

A Calculus with Mobility for Wireless Networks (short paper)
Wanling Xie, Huibiao Zhu and Xi Wu

Thursday, 15 December 2022 | 6:00-7:30 (London Time)
Thursday, 15 December 2022 | 14:00-15:30 (Beijing Time)
Thursday, 15 December 2022 | 01:00-02:30 (New York Time)

Track 2 Session 3: Edge Computing (Room-3, 14:00-15:30)
Session Chair: (TBD)

Leakage Detection via Edge Processing in LoRaWAN-based Smart Water Distribution Networks (invited paper)
Domenico Garlisi, Gabriele Restuccia, Ilenia Tinnirello, Francesca Cuomo and Ioannis Chatzigiannakis

EdgeMan: Ensuring Real-Time Service for Containerized Edge Systems
Wenzhao Zhang, Wei Dong, Geng Ren and Yi Gao

LoRaDrone: Enabling Low-Power LoRa Data Transmission via a Mobile Approach
Ciyuan Chen, Junzhou Luo, Zhuqing Xu, Runqun Xiong, Zhimeng Yin, Jingkai Lin and Dian Shen

Online Service Provisioning and Updating in QoS-aware Mobile Edge Computing
Shuaibing Lu, Jie Wu, Pengfan Lu, Jiamei Shi, Ning Wang and Juan Fang

Thursday, 15 December 2022 | 6:00-7:30 (London Time)
Thursday, 15 December 2022 | 14:00-15:30 (Beijing Time)
Thursday, 15 December 2022 | 01:00-02:30 (New York Time)

Track 3 Session 3: Blockchain (Room-4, 14:00-15:30)
Session Chair: (TBD)

Blockchain Based Secure Outsourcing Data Integrity Auditing for Internet of Things in Cloud-edge Environment (invited paper)
Yangfei Lin, Celimuge Wu, Yusheng Ji, Jie Li and Zhi Liu

Trusted-Committee-Based Secure and Scalable BFT Consensus for Consortium Blockchain
Liaoliao Feng, Yan Ding, Keming Wang, Xiang Fu and Junsheng Chang

An Efficient and Secure Node-sampling Consensus Mechanism for Blockchain Systems
Zhelin Liang, Hao Xu, Xiulong Liu, Shan Jiang and Keqiu Li

An atomic member addition mechanism for permissioned blockchain based on autonomous rollback
Qihui Zhou, Xianglin Dang, Yazhe Wang and Zhen Xu

CDTP: A Copyright-preserving Decentralized Data Trading Platform Based on Blockchain (short paper)
Heng Tian and Mingjun Xiao

Thursday, 15 December 2022 | 8:00-9:30 (London Time)
Thursday, 15 December 2022 | 16:00-17:30 (Beijing Time)
Thursday, 15 December 2022 | 03:00-04:30 (New York Time)

Track 1 Session 4: Mobile and Fog Computing (Room-2, 16:00-17:30)
Session Chair: (TBD)

Proactive Handover Mechanism for Blockage Avoidance in Indoor VLC Networks (invited paper)
Anna Maria Vegni and Panagiotis Dimantoulakis (t1s5 -> t1s4)

Task Offloading for Post-disaster Rescue in Vehicular Fog Computing-assisted UAV Networks
Geng Sun, Long He, Zemin Sun, Jiayun Zhang and Jiahui Li

Anomaly Detection for Reoccurring Concept Drift in Smart Environments
Vincenzo Agate, Salvatore Drago, Pierluca Ferraro and Giuseppe Lo Re

A Novel Data Aggregation Scheme for Wireless Sensor Networks Based on Robust Chinese Remainder Theorem (short paper)
Jinxin Zhang and Fuyou Miao

Thursday, 15 December 2022 | 8:00-9:30 (London Time)
Thursday, 15 December 2022 | 16:00-17:30 (Beijing Time)
Thursday, 15 December 2022 | 03:00-04:30 (New York Time)

Track 2 Session 4: IoT (Room-3, 16:00-17:30)
Session Chair: (TBD)

T2C: A Multi-User System for Deploying DNNs in a Thing-to-Cloud Continuum (invited paper)
Chia-Ying Hsieh, Praveen Venkateswaran, Nalini Venkatasubramanian and Cheng-Hsin Hsu

Dynamic Vehicle Aware Task Offloading Based on Reinforcement Learning in a Vehicular Edge Computing Network
Lingling Wang, Xiumin Zhu, Nianxin Li, Yumei Li, Shuyue Ma, Feng Yang and Linbo Zhai (t2s2-t2s4)

VSLink: A Fast and Pervasive Approach to Physical Cyber Space Interaction via Visual SLAM
Han Zhou, Jiaming Huang, Hongchang Fan, Geng Ren, Yi Gao and Wei Dong

BACO: A Bi-Ant-Colony-Based Strategy for UAV Trajectory Planning Considering Obstacle
Zhiyang Liu, Ximin Yang, Wan Tang, Xiao Zhang and Zhen Yang

Thursday, 15 December 2022 | 8:00-9:30 (London Time)
Thursday, 15 December 2022 | 16:00-17:30 (Beijing Time)
Thursday, 15 December 2022 | 03:00-04:30 (New York Time)

Track 3 Session 4: Analysis and Detection (Room-4, 16:00-17:30)
Session Chair: (TBD)

Recognition of Abnormal Proxy Voice Traffic in 5G Environment Based on Deep Learning
Hongce Zhao, Shunliang Zhang, Xianjin Huang, Zhuang Qiao, Xiaohui Zhang and Guanglei Wu

Web Attack Payload Identification and Interpretability Analysis Based on Graph Convolutional Network
Yijia Xu, Yong Fang and Zhonglin Liu

A Mitmproxy-based Dynamic Vulnerability Detection System For Android Applications
Xinghang Lv, Tao Peng, Junwei Tang, Ruhan He, Xinrong Hu, Minghua Jiang, Zaihui Deng and Wenli Cao

Detection of DoH Tunnels with Dual-tier Classifier (short paper)
Yuqi Qiu, Baiyang Li, Liang Jiao, Yujia Zhu and Qingyun Liu

QP-LDP for better global model performance in federated learning (short paper)
Qian Chen, Zheng Chai, Zilong Wang, Jiawei Chen, Haonan Yan and Xiaodong Lin

Main Conference Day 3 (Beijing Time, UTC+8)

Friday, 16 December 2022

Friday, 16 December 2022 | 01:00-02:30 (London Time)
Friday, 16 December 2022 | 09:00-10:30 (Beijing Time)
Thursday, 15 December 2022 | 20:00-21:30 (New York Time)

Track 1 Session 5: Networking and Management (Room-2, 09:00-10:30)
Session Chair: (TBD)

User-Perceived QoE Adaptation for Accelerated Playback in Mobile Video Streaming (invited paper)
Xiongfeng Hu, Yibo Jin, Kefeng Wu, Zhuzhong Qian and Sanglu Lu (t1s4-t1s5)

K-Means Based Grouping of Stations with Dynamic AID Assignment in IEEE 802.11ah Networks (invited paper)
Eduardo Oliveira, Stephanie Soares and Marcelo Carvalho (t1s3-t1s5)

RLRBM: A Reinforcement Learning-based RAN Buffer Management Scheme
Huihui Ma and Du Xu

MilliFit: A Millimeter-Wave Wireless Sensing Based At-Home Exercise Classification (short paper)
Edward Sitar and Sanjib Sur

Friday, 16 December 2022 | 01:00-02:30 (London Time)
Friday, 16 December 2022 | 09:00-10:30 (Beijing Time)
Thursday, 15 December 2022 | 20:00-21:30 (New York Time)

Track 4 Session 1: Algorithm Based on Big Data (Room-3, 09:00-10:30)
Session Chair: (TBD)

Truthful Auction Mechanism for Data Trading with Share-Averse Data Consumers (invited paper)
Zhenni Feng, Qiyuan Wang and Yanmin Zhu

Efficient Semantic Segmentation Backbone Evaluation for Unmanned Surface Vehicles based on Likelihood Distribution Estimation
Zhang Yulong, Jingtao Sun, Mingkang Chen and Qiang Wang

Scene Classification through Knowledge Distillation Enabled Parameter-free Attention Model for Remote Sensing Images
Yubing Han, Zongyin Liu, Jiguo Yu, Anming Dong and Huihui Zhang

A Lightweight Deep Learning framework for Human Activity Recognition using Multivariate Time Series (short paper)
Rui Xi

Adapitch: Adaption Multi-Speaker Text-to-Speech Conditioned on Pitch Disentangling with Untranscribed Data (short paper)
Xulong Zhang, Jianzong Wang, Ning Cheng and Jing Xiao

Friday, 16 December 2022 | 01:00-02:30 (London Time)
Friday, 16 December 2022 | 09:00-10:30 (Beijing Time)
Thursday, 15 December 2022 | 20:00-21:30 (New York Time)

Track 6 Session 1: Smart City (Room-4, 09:00-10:30)
Session Chair: (TBD)

Surface Recognition from Wheelchair-induced Noisy Vibration Data: A Tale of Many Cities (invited paper)
Rochishnu Banerjee, Md Fourkanul Islam, Shaswati Saha, Md Osman Gani and Vaskar Raychoudhury

Face Recognition based Beauty Algorithm in Smart City Applications
Ming Tao and Kaiyan Lin

Traffic Event Augmentation via Vehicular Edge Computing: A Vehicle ReID based Solution
Hao Jiang, Penglin Dai, Kai Liu, Feiyu Jin, Hualing Ren and Songtao Guo

Real-time Simulation and Testing of a Neural Network-based Autonomous Vehicle Trajectory Prediction Model
Cheng Wei, Fei Hui, Xiangmo Zhao and Shan Fang

Transfer Learning based City Similarity Measurement Methods (short paper)
Chenxin Qu, Xiaoping Che and Ganghua Zhang

Friday, 16 December 2022 | 03:00-04:30 (London Time)
Friday, 16 December 2022 | 11:00-12:30 (Beijing Time)
Thursday, 15 December 2022 | 22:00-23:30 (New York Time)

Track 5 Session 1: Systems (Room-2, 11:00-12:30)
Session Chair: (TBD)

Speed Up IPv4 Connections via IPv6 Infrastructure
Ruiyu Fang, Guoliang Han, Xin Wang, Congxiao Bao, Xing Li and Yang Chen

Lattice-Based Fine-grained Data Access Control and Sharing Scheme in Fog and Cloud Computing Environments for the 6G Systems
Bei Pei, Xianbin Zhou and Rui Jiang

Towards Adaptive Quality-aware Complex Event Processing in the Internet of Things (short paper)
Majid Lotfian Delouee, Boris Koldehofe and Viktoriya Degeler

DDF-GAN: A Generative Adversarial Network with Dual-Discriminator for Multi-Focus Image Fusion (short paper)
Shiyu Chen, Jin Xin, Qian Jiang, Jie Yang, Ting Chao, Xiuliang Xi and Yunyun Dong

Personalized news headline generation system with fine-grained user modeling (short paper)
Jiaohong Yao

Friday, 16 December 2022 | 03:00-04:30 (London Time)
Friday, 16 December 2022 | 11:00-12:30 (Beijing Time)
Thursday, 15 December 2022 | 22:00-23:30 (New York Time)

Track 4 Session 2: Prediction, Detection and Classification (Room-3, 11:00-12:30)
Session Chair: (TBD)

MSJAD: Multi-Source Joint Anomaly Detection of Web Application Access
Xinxin Chen, Jing Wang, Xingyu Wang, Chengseng Wang, Guosong Lv, Jiankun Li, Dewei Chen, Bo Wu, Lianyuan Li and Wei Yu (t4s4-t4s2)

ResNect: An Accurate and Efficient Backbone Network for Text Detection Model
Bowei Zhang, Weifeng Sun, Minghui Ji and Kelong Meng

Multi-timescale History Modeling for Temporal Knowledge Graph Completion
Chenchen Peng, Xiaochuan Shi, Rongwei Yu, Chao Ma, Libing Wu and Dian Zhang

Improving Speech Representation Learning via Speech-level and Phoneme-level Masking Approach
Xulong Zhang, Jianzong Wang, Ning Cheng, Kexin Zhu and Jing Xiao (short paper)

Attention Based End-to-End Network for Short Video Classification (short paper)
Hui Zhu, Chao Zou, Zhenyu Wang, Kai Xu and Zihao Huang

Friday, 16 December 2022 | 03:00-04:30 (London Time)
Friday, 16 December 2022 | 11:00-12:30 (Beijing Time)
Thursday, 15 December 2022 | 22:00-23:30 (New York Time)

Track 6 Session 2: Smart Home and Healthcare (Room-4, 11:00-12:30)
Session Chair: (TBD)

Alz-Sense+: An Auto Time-synchronized Multi-class Algorithm for Dementia Detection (invited paper)
S. M. Shovan and Sajal K. Das.

Towards Socially Acceptable Food Type Recognition (invited paper)
Junjie Wang, Jiexiong Guan, Y.Alicia Hong, Hong Xue, Shuangquan Wang, Zhenming Liu, Bin Ren and Gang Zhou (t6s3-t6s2)

Accurately Identify and Localize Commodity Devices from Encrypted Smart Home Traffic
Xing Guo, Jie Quan, Hao Zhou, Xin He, Tao He and Jiahui Hou

Multiuser Collaborative Localization based on Inter-user Distance Estimation using Wi-Fi RSS Fingerprints
Tinghao Qi, Chanxin Zhou, Guang Ouyang and Bang Wang

Analytic Correlation Penalty with Variable Window in Multi-task Learning Disease Progression Model (short paper)
Xiangchao Chang, Menghui Zhou, Fengtao Nan, Yun Yang and Po Yang

Friday, 16 December 2022 | 06:00-07:30 (London Time)
Friday, 16 December 2022 | 14:00-15:30 (Beijing Time)
Friday, 16 December 2022 | 01:00-02:30 (New York Time)

Track 5 Session 2: Testbed and Simulation (Room-2, 14:00-15:30)
Session Chair: (TBD)

DiNS: Nature Disaster in Network Simulations
Nisal Hemadasa, Wanli Yu, Yanqiu Huang, Leonardo Sarmiento, Amila Wickramasinghe and Alberto Garcia-Ortiz

UAV Swarm Trajectory and Cooperative Beamforming Design in Double-IRS Assisted Wireless Communications

Yangzhe Liao, Shuang Xia and Xiaojun Zhai

Towards Energy-efficient Container Data Center: An Online Migratability-aware Orchestrator
Shengjie Wei, Jiayi Li, Tuo Cao, Sheng Zhang and Zhuzhong Qian

InstaVarjoLive: An Edge-Assisted 360 Degree Video Live Streaming for Virtual Reality Testbed (short paper)
Pengyu Li, Feifei Chen, Rui Wang, Thuong Hoang and Lei Pan

Mobile6TiSCH: a Simulator for 6TiSCH-based Industrial IoT Networks with Mobile Nodes (short paper)
Marco Pettorali, Francesca Righetti and Carlo Vallati

Friday, 16 December 2022 | 06:00-07:30 (London Time)
Friday, 16 December 2022 | 14:00-15:30 (Beijing Time)
Friday, 16 December 2022 | 01:00-02:30 (New York Time)

Track 4 Session 3: Federated Learning (Room-3, 14:00-15:30)
Session Chair: (TBD)

Anomaly Detection through Unsupervised Federated Learning (invited paper)
Mirko Nardi, Lorenzo Valerio and Andrea Passarella

PPFM: An Adaptive and Hierarchical Peer-to-Peer Federated Meta-Learning Framework
Zhengxin Yu, Yang Lu, Plamen Angelov and Neeraj Suri

DPFed: Toward Fair Personalized Federated Learning with Fast Convergence
Jiang Wu, Xuezheng Liu, Jiahao Liu, Miao Hu and Di Wu

Dynamic Unknown Worker Recruitment for Heterogeneous Contextual Labeling Tasks Using Adversarial Multi-Armed Bandit
Wucheng Xiao, Mingjun Xiao and Yin Xu

Friday, 16 December 2022 | 06:00-07:30 (London Time)
Friday, 16 December 2022 | 14:00-15:30 (Beijing Time)
Friday, 16 December 2022 | 01:00-02:30 (New York Time)

Track 6 Session 3: RFID and Optimization (Room-4, 14:00-15:30)
Session Chair: (TBD)

IMRG: Impedance Matching Oriented Receiver Grouping for MIMO WPT System
Lulu Tang, Hao Zhou, Weiming Guo, Wangqiu Zhou, Xing Guo and Xiaoyan Wang (t6s2-t6s3)

Compact Unknown Tag Identification for Large-Scale RFID Systems
Kai Lin, Honglong Chen, Na Yan, Zhichen Ni and Zhe Li

Analytic Hierarchy Process Based Compatibility Measurement for RFID Protocols (short paper)
Weiping Zhu, Changyu Huang and Chao Ma

Trajectory Optimization Model of Connected and Autonomous Vehicle at Unsignalized Intersections (short paper)
Yu Kong, Chen Mu and Xinyu Chen

Node Selection Strategy Design Based on Reputation Mechanism for Hierarchical Federated Learning (short paper)
Xin Shen, Zhuo Li and Xin Chen

AttachSFC: Optimizing SFC Initialization Process through Request Properties (short paper)
Kaiwen Ning, Hao Wang, Zhiheng Zhang, Zhou Xu and Xiaowei Shu

Friday, 16 December 2022 | 08:00-09:30 (London Time)
Friday, 16 December 2022 | 16:00-17:30 (Beijing Time)
Friday, 16 December 2022 | 03:00-04:30 (New York Time)

Track 6 Session 5: Other Areas (Room-2, 16:00-17:30)
Session Chair: (TBD)

Joint Convolutional and Self-Attention Network for Occluded Person Re-Identification
Chuxia Yang, Wanshu Fan, Dongsheng Zhou and Qiang Zhang

A DMA-based Swap Mechanism of Hybrid Memory System
Weijie Zhang, Lidang Xu, Dingding Li and Haoyu Luo

CUE: compound uniform encoding for writer retrieval
Jiakai Luo, Hongwei Lu, Xin Nie, Shenghao Liu, Xianjun Deng and Chenlu Zhu

A Temperature Prediction-Assisted Approach for Evaluating Propagation Delay and Channel Loss of Underwater Acoustic Networks (short paper)
Rui Gao, Jun Liu, Shanshan Song, En Wang, Yu Gou, Tong Zhang and Junhong Cui

A Hybrid Link Connectivity Model for Opportunistic Routing in IoV Networks under Viaduct Scenarios (short paper)
Xing Tang, Yongbiao Tao, Wei Liu, Bing Shi and Jing Wang

Friday, 16 December 2022 | 08:00-09:30 (London Time)
Friday, 16 December 2022 | 16:00-17:30 (Beijing Time)
Friday, 16 December 2022 | 03:00-04:30 (New York Time)

Track 4 Session 4: Reinforcement Learning (Room-3, 16:00-17:30)
Session Chair: (TBD)

An Opponent-Aware Reinforcement Learning Method for Team-to-Team Multi-Vehicle Pursuit via Maximizing Mutual Information Indicator
Qinwen Wang, Xinhang Li, Zheng Yuan, Yiying Yang, Chen Xu and Lin Zhang

Graded-Q Reinforcement Learning with Information-Enhanced State Encoder for Hierarchical Collaborative Multi-Vehicle Pursuit
Yiying Yang, Xinhang Li, Zheng Yuan, Qinwen Wang, Chen Xu and Lin Zhang

Learning-based Dwell Time Prediction for Vehicular Micro Clouds (invited paper)
Max Schettler, Gurjashan Singh Pannu, Seyhan Ucar, Takamasa Higuchi, Onur Altintas and Falko Dressler (t4s2-t4s4)

A Motion Propagation Prediction based Sim2Real Strategy Migration for Clutter Removal (short paper)
Jiaxin Zhang and Ping Zhang

Friday, 16 December 2022 | 08:00-09:30 (London Time)
Friday, 16 December 2022 | 16:00-17:30 (Beijing Time)
Friday, 16 December 2022 | 03:00-04:30 (New York Time)

Track 6 Session 4: Multimedia Application (Room-4, 16:00-17:30)
Session Chair: (TBD)

Throughput Prediction-Enhanced RL for Low-Delay Video Application
Yong Liu, Chaokun Zhang, Jingshun Du and Tie Qiu

Towards Reliable AI Applications via Algorithm-Based Fault Tolerance on NVDLA
Mustafa Tarik Sanic, Cong Guo, Jingwen Leng, Minyi Guo and Weiyin Ma

Adaptive Progressive Image Enhancement for Edge-Assisted Mobile Vision
Daipeng Feng, Liekang Zeng, Lingjun Pu and Xu Chen

PeTrack: Smartphone-based Pedestrian Tracking in Underground Parking Lot (short paper)
Xiaotong Ren, Shuli Zhu, Chuize Meng, Shan Jiang, Xuan Xiao, Dan Tao and Ruipeng Gao

Friday, 16 December 2022 | 09:30-10:00 (London Time)
Friday, 16 December 2022 | 17:30-18:00 (Beijing Time)
Friday, 16 December 2022 | 04:30-05:00 (New York Time)

Closing