

WORKSHOP

The International Workshop on Blockchain for Secure Software Defined Networking in Smart Communities (BlockSecSDN 2020) Monday, 6 July, 2020 • 09:00 – 18:30

The emergence of Software-defined Networking (SDN) helps to isolate the control plane from the data plane and solves the issues through network programmability. Although SDN technology performs resilient and reliable connections in heterogeneous environment based on secure communication protocols designed by the network programmers but still chances of security threats may occur as single controller is handling the complete network infrastructure. Moreover, the higher costs, overhead and complexity of traditional cryptographic primitives make it necessary to design novel security solutions for SDN in smart communities. Blockchain, a distributed ledger technology, can be closely associated with security and thereon can transverse across all the industries and smart communities. Under this umbrella, one possibility is blockchain for Secure SDN, and large scale network enterprises are already investing and exploring this opportunity.

The International Workshop on Blockchain for Secure Software Defined Networking in Smart Communities is the evolution of the previous 5 editions of workshop, starting in IEEE Globecom 2018. Addressing the need for a flexible network architecture that adapts to the diverse requirement of end users in smart communities, this workshop aims to serve as a platform for researchers from academia and industries, to promote the design and development of new ideas, tools and technologies related to Secure and Dependable SDN in Smart communities.

General Co-charis:

Gagangeet Singh Aujla (Newcastle University, UK)
Neeraj Kumar (Thapar Institute of Engineering and Technology, India)
Minho Jo (Korea University, South Korea)
Min Chen (Huazhong University of Science and Technology, China)

TPC Co-Chairs:

Anish Jindal (Lancaster University, UK)

Publicity Co-Chairs:

Haotong Cao (Nanjing University of Posts and Telecommunications, China)
Sahil Vashist (CGC College of Engineering, India)



9:00 – 9:05: Opening Session - Message from Chairs

9:05 – 9:45: Keynote Session 1

Danda B. Rawat (Howard University, Washington, D.C., USA)
Blockchain: Emerging Applications and Use Cases for Smart Communities

9:45-11:00: Session 1: Software-Defined Networks

BIND: Blockchain-Based Flow-Table Partitioning in Distributed Multi-Tenant Software-Defined Networks

Ayan Mondal and Sudip Misra (Indian Institute of Technology, Kharagpur, India);

DecOp: Decentralized Network Operations in Software Defined Networking using Blockchain

Ephraim Moges and Tao Han (University of North Carolina at Charlotte, USA)

Proof-of-Balance: Game-Theoretic Consensus for Controller Load Balancing of SDN

Siyi Liao, Jun Wu and Jianhua Li (Shanghai Jiao Tong University, China)
Ali Kashif Bashir (Manchester Metropolitan University, United Kingdom (Great Britain))

On the Design of Blockchain-Based Access Control Scheme for Software Defined Networks

Durbadal Chattaraj (Indian Institute of Technology Kharagpur, India)
Sourav Saha, Basudeb Bera and Ashok Kumar Das (International Institute of Information Technology, Hyderabad, India)

11:30-13:00: Session 2: Internet of Things

Blockchain-Enabled SDN for Securing Fog-Based Resource-Constrained IoT

Sudip Misra, Pallav Kumar Deb, Nidhi Pathak and Anandarup Mukherjee (Indian Institute of Technology-Kharagpur, India)

BS-IoT: Blockchain Based Software Defined Network Framework for Internet of Things

Lei Liu, Wei Feng, Chen Chen and Yuru Zhang (Xidian University, China)
Dapeng Lan (University of Oslo, Norway)
Xiaoming Yuan (Northeastern University, China)
Sahil Vashisht (Thapar Institute of Engineering and Technology, India)

Non-Cooperative Game to Balance Energy and Security in Resource Constrained IoT Networks

Syed Bilal Hussain Shah and Lei Wang (Dalian University of Technology P R China, China)
Prakasha Reddy (Wollega University, Ethiopia)
Anil Carie (Nanjing Agriculture University, China)

Blockchain Technology and Neural Networks for the Internet of Medical Things

Dawid Polap (Silesian University of Technology, Poland)
Gautam Srivastava (Brandon University & China Medical University, Canada)
Alireza Jolfaei (Macquarie University, Australia)
Reza M. Parizi (Kennesaw State University, USA)

Blockchain based secure IoT data sharing framework for SDN-enabled smart communities

Yijian Chen, Ying Gao and Hongliang Lin (South China University of Technology, China)
Joel J. P. C. Rodrigues (Federal University of Piauí (UFPI), Brazil & Instituto de Telecomunicações, Portugal)

14:30 – 15:00: Keynote Session 2

Anish Jindal (University of Essex, United Kingdom)
Role of Artificial Intelligence in Security and Privacy

15:00-16:00: Session 3: Vehicular Networks

Tri Blockchain Based Intelligent Vehicular Communication Networks

Madhusudan Singh (Yonsei Institute of Convergence Technology & Yonsei University, South Korea)

AI-Powered Blockchain - A Decentralized Secure Multiparty Computation Protocol for IoT

Gunasekaran Raja, Yelisetty Manaswini, Gaayathri Devi Vivekanandan and Harish Sampath (Anna University, India)
Kapal Dev (Trinity College Dublin & IEEE, Ireland)
Ali Kashif Bashir (Manchester Metropolitan University, United Kingdom (Great Britain))

Lightweight Authentication Protocol for Inter Base Station Communication in Heterogeneous Networks

Gaurang Bansal (Birla Institute of Technology and Science, Pilani, India); Vinay Chamola (BITS-Pilani, India)

16:30-18:30: Session 4: Smart Grid and Heterogeneous Networks

ET-Deal: A P2P Smart Contract-based Secure Energy Trading Scheme for Smart Grid Systems

Aparna Kumari, Arpit Shukla, Rajesh Gupta and Sudeep Tanwar (Institute of Technology, Nirma University, India)
Sudhanshu Tyagi (Thapar Institute of Engineering & Technology, Deemed University, Patiala, India)
Neeraj Kumar (Thapar University Patiala, India)

A Blockchain-Based Virtual Network Embedding Algorithm for Secure Software Defined Networking

Haotong Cao (Nanjing University of Posts and Telecommunications, China)
Yue Hu (China Mobile Communications Group Jiangsu Co., Ltd., China)
Qin Wang, Shengchen Wu and Longxiang Yang (Nanjing University of Posts and Telecommunications, China)

Blockchain-Based Controller Recovery in SDN

Sudip Misra, Kounteya Sarkar and Nurzaman Ahmed (Indian Institute of Technology-Kharagpur, India)

Reinforcement Learning for Scalable and Reliable Power Allocation in SDN-based Backscatter Heterogeneous Network

Furqan Jameel (Aalto University, Finland)
Wali Ullah Khan (School of Information Science and Engineering, Shandong University, Qingdao, China)
Muhammad Ali Jamshed (University of Surrey, United Kingdom (Great Britain))
Haris Bin Pervaiz (Lancaster University, United Kingdom (Great Britain))
Qammer H Abbasi (University of Glasgow, United Kingdom (Great Britain))
Riku Jäntti (Aalto University, Finland)

Min-Max Worst-Case Design for Computation Offloading in Multi-user MEC System

Zhang Liping, Rong Chai, Tiantian Yang and Qianbin Chen (Chongqing University of Posts and Telecommunications, China)

Information Classification Strategy for Blockchain-based Secure SDN in IoT Scenario

Peiyang Zhang and Fanglin Liu (China University of Petroleum (East China), China)
Neeraj Kumar (Thapar University Patiala, India)
Gagangeet Singh Aujla (Newcastle University, United Kingdom (Great Britain))

WORKSHOP

The Eighth International Workshop on Security and Privacy in Big Data (BigSecurity 2020) Monday, July 6, 2020 • 9:30 – 18:00

Security and privacy issue is a critical problem in this big data age. Many works have been carried out focusing on business, application and information processing level of big data, such as data mining and data analysis. We have seen many activities in these fields. However, security and privacy issues in big data from communications and networking perspective are not extensively explored yet to date. Due to its extraordinary scale, security and privacy in big data faces many challenges, such as generative adversary networks, efficient encryption and decryption algorithms, encrypted information retrieval, attribute based encryption, attacks on availability, reliability and integrity, privacy aware machine learning, privacy protection in big data information publication.

The purpose of this workshop is to offer a timely venue for researchers and industry partners in communications and networking domains to present and discuss their latest results in security and privacy related work of big data.

General Co-charis:

Professor Nirwan Ansari, New Jersey Institute of Technology, USA.
Dr Chonggang Wang, InterDigital Communications, USA

Technical Program Co-charis:

Professor Shui Yu, University of Technology Sydney, Australia
Professor Ke Liu, National Natural Science Foundation of China, China



9:30 – 11:00: Session 1: Big Data Security 1

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

Cooperative Game Model of Delegation Computing: Verifier Separated from Calculators

Duo Zhang, Youliang Tian and Linjie Wang (Guizhou University, China)
Sheng Gao (Central University of Finance and Economics, China)
Jianfeng Ma (Xidian University, China)

U-ASG: A Universal Method to Perform Adversarial Attack on Autoencoder based Network Anomaly Detection Systems

Chenming Yang (University of Electronic Science and Technology of China, China)
Liang Zhou (UESTC, China)
Hui Wen and Yue Wu (University of Electronic Science and Technology of China, China)

Identification of Encrypted Video Streaming Based on Differential Fingerprints

Hua Wu, Zhenhua Yu, Guang Cheng and Shuyi Guo (Southeast University, China)

RNBG: A Ranking Nodes Based IP Geolocation Method

Chong Liu (PLA Strategic Support Force Information Engineering University, China)
Xiangyang Luo (PLA Strategic Support Force Information Engineering University & Zhengzhou Science and Technology Institute, China)
Fuxiang Yuan (PLA Strategic Support Force Information Engineering University, China)
Fenlin Liu (Zhengzhou Information Science and Technology Institute, China)

11:00-11:30: Coffee Break

11:30-13:00: Session 2: Big Security 2

Adaptive Adversarial Attack on Scene Text Recognition

Xiaoyong Yuan and Pan He (University of Florida, USA)
Xiaolin Li (Tongdun Technology, USA)
Dapeng Oliver Wu (University of Florida, USA)

Image Translation with Attention Mechanism based on Generative Adversarial Networks

Yu Lu, Ju Liu, Xueyin Zhao and Xiaoxi Liu (Shandong University, China)
Weiqiang Chen (Hisense Group, China)
Xuesong Gao (Tianjin University, China)

Sparsen: Secure Nearest Neighbor Search with Space-filling Curves

Siqin Fang (Xidian University, China)
Sean Kennedy, Chenggang Wang and Boyang Wang (University of Cincinnati, USA)
Qingqi Pei and Xuefeng Liu (Xidian University, China)

HIDEchain: A User Centric Secure Edge Computing Architecture for Healthcare IoT Devices

Rabeya Bosri, Abdur Razzak Uzzal and Abdullah Al Omar (University of Asia Pacific, Bangladesh)
Md Zakirul Alam Bhuiyan (Fordham University, USA)
Mohammad Shahriar Rahman (University of Liberal Arts Bangladesh, Bangladesh)

13:00-14:30: Lunch

14:30-16:00: Session 3: Big Security 3

Chair: Professor Donghui Hu, Hefei University of Technology, China

Efficient Vulnerability Detection based on Abstract Syntax Tree and Deep Learning

Hantao Feng (School of Cyber Engineering, Xidian University & National Computer Network Intrusion Protection Center, China)
Xiaotong Fu (School of Cyber Engineering, Xidian University, China)
Hongyu Sun (School of Cyber Engineering, Xidian University & National Computer Network Intrusion Protection Center, China)
He Wang (School of Cyber Engineering, Xidian University, China)
Zhang Yuqing (National Computer Network Intrusion Protection Center, University of Chinese Academy of Sciences, China)

Fidelity Leakages: Applying Membership Inference Attacks to Preference Data

Pierre Danhier (Belgium)
Clément Massart and François-Xavier Standaert (Université Catholique de Louvain, Belgium)

Detecting Anomalies in Encrypted Traffic via Deep Dictionary Learning

Junchi Xing (Zhejiang University, China)
Chunming Wu (College of Computer Science, Zhejiang University, China)

Multi-scale Learning based Malware Variant Detection using Spatial Pyramid Pooling Network

Sriram S (Amrita Vishwa Vidyapeetham, India)
Vinayakumar R (Cincinnati Children's Hospital Medical Center, USA)
V Sowmya (Amrita Vishwavidyapeetham, India)
Mamoun Alazab (CDU, Australia)
Soman K P (Amrita Vishwa Vidyapeetham, India)

16:00-16:30: Coffee Break

16:30-18:00: Session 4: Big Privacy 1

Chair: Professor Marilia Curado, University of Coimbra, Portugal

Using NLP and Machine Learning to Detect Data Privacy Violations

Paulo Silva, Carolina Gonçalves and Carolina Godinho (University of Coimbra, Portugal)
Nuno Antunes (University of Coimbra & CISUC, Portugal)
Marilia Curado (University of Coimbra, Portugal)

Privacy-preserving Data Aggregation for Big Data in Financial Institutions

Hongning Li, Jiexiong Chen and Qingqi Pei (Xidian University, China)
Hao Yue (San Francisco State University, USA)

An IoT data sharing privacy preserving scheme

Yan Sun, Lihua Yin, Zhe Sun and Zhihong Tian (Guangzhou University, China)
Xiaojiang Du (Temple University, USA)

A Blockchain-Based Trading Platform for Big Data

Shuli Zheng, Lixuan Pan, Donghui Hu, Meng Li and Yuqi Fan (Hefei University of Technology, China)

WORKSHOP

The Fourth IEEE International Workshop on the Security, Privacy, and Digital Forensics of Mobile Systems and Networks (MobiSec 2020)
Monday, 6 July, 2020 • 9:00 – 18:30

To many people, smartphones have been an indispensable part of daily life and work. With personal financial and medical information and job-related data being processed on smartphones and related mobile systems and networks, it is critically important that the development and advancement of secure mobile operating systems, secure mobile applications, secure smartphone devices and cellular networks keep up with the ever-growing smartphone usage. For this reason, this research area has been a very important sector in the network and telecommunication industry and a focus of funded research projects in many research institutes. The scope of MobiSec 2020 encompasses the security, privacy, and digital forensics of mobile systems and networks, including but not limited to Android, iOS and Windows Mobile operating systems, smartphones and applications for these platforms and devices, as well as cellular networks.

Honorary General Chair:
Wenjing Lou (Virginia Tech, USA)

Workshop Organizers and Technical Program Chairs:
Lei Chen (Georgia Southern University, USA)
Wenjia Li (New York Institute of Technology, USA)
Danda Rawat (Howard University, USA)
Yun Lin (Harbin Engineering University, China)

Technical Program Vice Chairs:
Yiming Ji (Georgia Southern University, USA)
Mauro Conti (The University of Padua, Italy)
Feng Zeng (Central South University, China)
Peter Mueller (IBM Zurich Research Laboratory, Switzerland)
Yupeng Hu (Hunan University, China)

Publication Chairs:
Narasimha Shashidhar (Sam Houston State University, USA)
Umit Karabiyik (Purdue University, USA)
Yuansheng Luo (Changsha University of Science & Technology, China)

Publicity Chairs:
Weitian Tong (Eastern Michigan University, USA)
Nhien-An Le-Khac (University College Dublin, Ireland)
Yejun He (Shenzhen University, China)
Yehua Wei (Hunan Normal University, China)

Web Chair:
Weinan Gao (Georgia Southern University, USA)



09:00 – 10:30: Session 1: Mobile Security (Chairs: Lei Chen, Danda Rawat)
A View-Invariant Feature Learning Model for Cross-View Security Authentication in Mobile Smart Devices

Ao Li (Harbin University of Science and Technology, China)
Xin Liu (Harbin University of Science and Technology, China)
Qiang Guan (Kent State University, USA)
Deyun Chen (Harbin University of Science and Technology, China)
Guanglu Sun (Harbin University of Science and Technology, China)

Enterprise Mobile Device Management Requirements and Features
Hina Batool (Air University, Pakistan)
Ammar Masood (Air University, Pakistan)

A Convolutional Neural Network-Based RF Fingerprinting Identification Scheme for Mobile Phones
Sheng Wang (Southeast University, China)
Linling Peng (Southeast University, China)
Hua Fu (Southeast University, China)
Aiqun Hu (Southeast University, China)
Xinyu Zhou (Southeast University, China)

Comprehensive Detection of Vulnerable Personal Information Leaks in Android Applications
Nattanon Wongwiwatchai (Chulalongkorn University, Thailand)
Phannawat Pongkham (Chulalongkorn University, Thailand)
Kunwadee Sripanidkulchai (Chulalongkorn University, Thailand)

10:30 – 11:00: Keynote Session (Chairs: Lei Chen, Danda Rawat)
Consensus Protocols and Security of Blockchain
Wenjing Lou (Virginia Tech, USA)

11:00 – 11:30: Coffee Break

11:30 – 13:00: Session 2: Network & Communication Security (Chairs: Danda Rawat, Lei Chen)
D-S based Fusion Method for Against Malicious Nodes in Wireless Sensor Networks
Qiao Tian (Harbin Engineering University, China)
Pengwan Qin (PLA, China)
Meiyu Wang (Harbin Engineering University, China)
Yang Liu (Beijing Institute of Astronautical Systems Engineering, China)

Location-Aided Secure Transmission for Uplink Massive MIMO System Against Full-Duplex Jammer
Zhexiong Shen (Army Engineering University of PLA, China)
Kui Xu (Army Engineering University of PLA, China)

Security Analysis of LTE-V2X and A Platooning Case Study
Pengfei Zhu (Beijing University of Posts and Telecommunications, China)
Konglin Zhu (Beijing University of Posts and Telecommunications, China)
Lin Zhang (Beijing University of Posts and Telecommunications, China)

Fountain-Coding-Aided Secure Delivery via Cross-locking Between Payload Data and Control Information
Hanxun Ren (Xi'an Jiaotong University, China)
Qinghe Du (Xi'an Jiaotong University, China)
Yijie Ou (Xi'an Jiaotong University, China)
Pinyi Ren (Xi'an Jiaotong University, China)

13:00 – 14:30: Lunch Break
14:30 – 16:00: Session 3: Privacy, Trust & Threats (Chairs: Wenjia Li, Yun Lin)
QuickWalk: Quick Trust Assessment for Vehicular Social Networks
Ziyi Shen (University of North Texas, USA)

Shuyu He (University of North Texas, USA)
Qing Yang (University of North Texas, USA)

Protecting Privacy from Aerial Photography: State of the Art, Opportunities, and Challenges
Bin Jiang (Tianjin University, China)
Jiachen Yang (Tianjin University, China)
Houbing Song (Embry-Riddle Aeronautical University, USA)

Quantitative Analysis on Source-Location Privacy for Wireless Sensor Networks
Di Tang (The Third Research Institute of the Ministry of Public Security, China)
Jian Gu (The Third Research Institute of the Ministry of Public Security, China) Weijia Han (Shaan Xi Normal University, China)
Xiao Ma (Shaan Xi Normal University, China)

An Improved Shapley Value Benefit Distribution Mechanism in Cooperative Game of Cyber Threat Intelligence Sharing
Weiqiang Xie (Xidian University, China)
Xiao Yu (Xidian University, China)
Zhang Yuqing (University of Chinese Academy of Sciences, China)
He Wang (Xidian University, China)

16:00 – 16:30: Coffee Break

16:30 – 18:30: Session 4: General Topics (Chairs: Yun Lin, Wenjia Li)
Self Energy Recycling for Full-Duplex Enabled D2D with SWIPT and Uplink NOMA
Ishan Budhiraja (Thapar Institute of Engineering & Technology, India)
Neeraj Kumar (Thapar Institute of Engineering & Technology, India)
Sudhanshu Tyagi (Thapar Institute of Engineering & Technology, India)
Quoc-Viet Pham (Inje University, South Korea)
Mohsen Guizani (Qatar University, Qatar)

SDN-enabled Traffic Alert System for IoV in Smart Cities
Gunasekaran Raja (Anna University, India)
Priyanka Dhanasekaran (Anna University, India)
Sudha Anbalagan (SRM Institute of Science and Technology, India)
Aishwarya Ganapathisubramanian (Anna University, India)
Ali Kashif Bashir (Manchester Metropolitan University, UK)

Features Fusion based Automatic Modulation Classification using Convolutional Neural Network
Chunsheng Lin (Beijing University of Posts and Telecommunications, China)
Juanjuan Huang (Beijing University of Posts and Telecommunications, China)
Sai Huang (Beijing University of Posts and Telecommunications, China)
Yuanyuan Yao (Beijing Information Science and Technology University, China)
Xin Guo (Zhengzhou University, China)

Signal Recognition based on Federated Learning
Jibo Shi (Harbin Engineering University, China)
Haojun Zhao (Harbin Engineering University, China)
Meiyu Wang (Harbin Engineering University, China)
Qiao Tian (Harbin Engineering University, China)

Instagram User Behavior Identification Based on Multidimensional Features
Hua Wu (Southeast University, China)
Qiuyan Wu (Southeast University, China)
Guang Cheng (Southeast University, China)
Shuyi Guo (Southeast University, China)

Optimal Power Splitting for Simultaneous Wireless Information and Power Transfer in Millimeter-wave Networks
Yihan Liang (Shenzhen University, China)
Yejun He (Shenzhen University, China)
Jian Qiao (Shenzhen University, China)



WORKSHOP

The Second International Workshop on Intelligent Cloud Computing and Networking (ICCN 2020)
Monday, 06 July, 2020 | 9:00 – 19:20

Cloud computing, as well as Cloud-inspired business models, enables on-demand access to a shared pool of resources, namely computing, storage, networks, services, and applications. With the advent of Cloud-based systems, cloud operators have been aiming at reliable, secured, privacy-preserving and cost-efficient cloud design and management. As the Cloud infrastructure aims at offering various IT resources as services, requirements of Cloud applications vary based on the resources which are requested as services. Thus, the resources may refer to heavy computation resources, massive storage resources, and high-capacity network resources and so on. The heterogeneity of cloud applications leads to the challenge of holistic design of a robust Cloud system which can oversee and handle the diverse needs of numerous types of applications. On the other hand, the new computation technologies, such as big data analytics, machine learning, and blockchain, have great influence on the cloud and network. These challenges enforce cooperation of various players in the Cloud system, each of which focuses on a different segment such as computing, network, applications, and systems.

The Second International Workshop on Intelligent Cloud Computing and Networking (ICCN-2020) is the evolution of the previous 7 editions CCSNA (Cloud Computing Systems, Networks, and Applications) and further 1 edition ICCN workshop, starting in IEEE Globecom 2013. It aims at the crossroads between scientists, researchers, practitioners and students from diverse domains in Cloud computing research. The Workshop aims at attracting contributions of system and network design that can support existing and future applications and services.

General Chairs:

Jie Li, Shanghai Jiao Tong University, China
Alfredo Grieco, Politecnico di Bari, Italy
Ruidong Li, National Institute of Information and Communications Technology (NICT), Japan

Technical Program Committee Chairs:

Deze Zeng, China University of Geosciences, China
Rami Langar, University Paris Est, France
Ruiting Zhou, Wuhan University, China

Keynote and Panel Chair:

Zhi Zhou, Sun Yat-sen University, China

Publicity Chairs

Moayad Aloqaity, Gnowit Inc. Ottawa, Canada
William Liu, Auckland University of Technology, New Zealand
Ka-Cheong Leung, Harbin Institute of Technology, Shenzhen, China

9:00 – 9:10 Opening Session Message from Chairs

9:10 – 9:50 Session 1: Cloud Applications 1

Bottleneck-Aware Coflow Scheduling Without Prior Knowledge

Libin Liu and Hong Xu (City University of Hong Kong, Hong Kong); Chengxi Gao (Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, China); Peng Wang (Huawei Theory Lab, China)

Revenue-Sharing based Computation-Resource Allocation for Mobile Blockchain

Yuan Wu (University of Macau, Macao); Xu Xu and Liping Qian (Zhejiang University of Technology, China); Bo Ji (Temple University, USA); Zhiguo Shi (Zhejiang University, China); Weijia Jia (University of Macau, Macao)

10:00-11:00 Keynote Session 1

Song Guo (The Hong Kong Polytechnic University, Hong Kong)

Distributed Edge Learning for Big Data Analytics: Challenges and Trends

11:00-11:30 Coffee Break

11:30-12:30 Session 2: Cloud Network

Edge Emergency Demand Response Control via Scheduling in Cloudlet Cluster

Zhaoyan Song, Ruiting Zhou, Shihan Zhao and Shixin Qin (Wuhan University, China); John Chi Shing Lui (Chinese University of Hong Kong, Hong Kong); Zongpeng Li (Wuhan University & University of Calgary, China)

MEM: A Multi-Stage Eviction Mechanism of Flowtable for Software-Defined Datacenters

Wei Feng, Wan Tang and XiMin Yang (South-Central University for Nationalities, China); Lu Liu (University of Leicester, United Kingdom (Great Britain))

Resource Allocation in MEC-enabled Vehicular Networks: A Deep Reinforcement Learning Approach

Guoping Tan, Huipeng Zhang and Siyuan Zhou (Hohai University, China)

12:30-13:30 Session 3: Cloud System

Terminator: An Efficient and Light-weight Fault Localization Framework

Yuxing Li (Tsinghua University, China); Hu Zheng, Chengqiang Huang, Ke Pei and Jinghui Li (Huawei, China); Longbo Huang (Tsinghua University, China)

Dynamic deployment model for large-scale compute-intensive clusters

Yunpeng Cao and Haifeng Wang (Linyi University, China); Shuqing He (Beijing University of Posts & Telecommunications, China)

Consistent User-Traffic Allocation and Load Balancing in Mobile Edge Caching

Lemei Huang, Sheng Cheng, Yu Guan, Xinggong Zhang and Zongming Guo (Peking University, China)

13:30-14:30 Lunch

14:30-15:30 Session 4: Cloud Security

A Unified Federated Learning Framework for Wireless Communications: towards Privacy, Efficiency and Security

Hui Wen, Yue Wu, Chenming Yang and Hancong Duan (University of Electronic Science and Technology of China, China); Shui Yu (University of Technology Sydney, Australia)

Xiaohua Xu, Kennesaw State University, USA
Oznur Ozkasap, Koç University, Turkey

Steering Committee:

Jiannong Cao, The Hong Kong Polytechnic Univ, Hong Kong
Hitoshi Asaeda, NICT, Japan
Jie Wu, Temple University, USA
Niklas Carlsson, Linköping University, Sweden
Xiaoming Fu, University of Gottingen, Germany
Chuan Heng Foh, University of Surrey, UK
Volker Hilt, Nokia Bell Labs, Germany
Jinsong Wu, Universidad de Chile, Chile
Yaser Jararweh, Duquesne University, USA
Zongpeng Li, Wuhan University, China & University of Calgary, Canada

Detecting and Mitigating ARP Attacks in SDN-Based Cloud Environment

Sixian Sun, Xiao Fu and Bin Luo (Nanjing University, China); Xiaojiang Du (Temple University, USA)

A Location-Based Path Privacy Protection Scheme in Internet of Vehicles

Haili Yu and Guangshun Li (Qufu Normal University, China); Wu Junhua (Harbin Engineering University, China); Xinrong Ren and Jiabin Cao (Qufu Normal University, China)

15:30-16:30 Keynote Session 2

Masayuki Murata (Osaka University, Japan)

Towards Bio- and Brain-Inspired Computing and Networking- Fluctuation-induced Yuragi Control and Learning Methods

16:30-17:00 Coffee Break

17:00-18:00 Session 5: Cloud Applications 2

An NFV MANO Architecture with a Resource Allocation Mechanism Based on Game Theory

David H. S. Lima (University of Coimbra & Federal Institute of Alagoas, Brazil); Andre Aquino (Federal University of Alagoas, Brazil); Marilia Curado (University of Coimbra, Portugal)

Transcoding for Live Streaming-based on Vehicular Fog Computing: An Actor-Critic DRL Approach

Fang Fu and Yunpeng Kang (Shanxi University, China); Zhicai Zhang and F. Richard Yu (Carleton University, Canada)

Detection of Temporal Communities in Mobile Social Networks

Mengni Ruan and Huan Zhou (China Three Gorges University, China); Dawei Li (Montclair State University, USA); Xuxun Liu (South China University of Technology, China); Qingyong Deng (XiangTan University, China)

18:00-19:20 Session 6: Edge Cloud

Follow Me, If You Can: A Framework for Seamless Migration in Mobile Edge Cloud

Tung Doan (Technische Universität Dresden & Deutsche Telekom Chair of Communication Networks, Germany); Zhongyi Fan (Cloud Product Research & Development, Alibaba Cloud, China); Giang T. Nguyen (Technische Universität Dresden, Germany); Hani Salah (TU Dresden, Germany); Dongho You (Technische Universität Dresden & The Deutsche Telekom Chair of Communication Networks, Germany); Frank H.P. Fitzek (Technische Universität Dresden & ComNets - Communication Networks Group, Germany)

Joint Network Selection and Traffic Allocation in Multi-Access Edge Computing-Based Vehicular Crowdsensing

Luning Liu (BUPT, China); Luhan Wang (Beijing University of Posts and Telecommunications, China); Xiang Ming Wen (Beijing University of posts and telecommunications, China)

A Scheduling Strategy for Reduced Power Consumption in Mobile Edge Computing

Juan Fang, Yong Chen and Shuaibing Lu (Beijing University of Technology, China)

Incentive Mechanism Design for Edge-Cloud Collaboration in Mobile Crowd Sensing

Lihan Zhang and Zhuo Li (Beijing Information Science and Technology University, China); Xin Chen (Beijing Information Science & Technology University, China)

WORKSHOP

The First International Workshop on Drone-Assisted Smart Backhaul Solutions for 5G and Beyond (DroneCom 2020)

Monday, 06 July, 2020 | 9:00 – 18:30

Mobile communication technology is leading towards the deployment of Fifth generation (5G) networks, wherein Internet of Things (IoT) is likely to play a central role. It is expected that 5G deployments will be characterized by increased network density, enhanced capacity, near ubiquitous connectivity, and ultra-reliable and low latency communications, in order to deliver flawless quality of service (QoS) that is essential for IoT to be successful. To deal with these trends and support the growing appetite of data services, mobile backhaul becomes an indispensable solution towards realizing a 5G network. Moreover, the emergence of dense heterogeneous networks (HetNets), which are constantly promoted as a prime candidate for 5G evolution, has further provisioned the need of mobile backhaul solutions while making it a critical component of RAN. However, wireless backhauling relies on Small Cell Base Stations (SBSs); wherein the installation of extra-terrestrial infrastructures for SBSs may not be an acceptable solution due to the high cost of deployment. Thus, a huge paradigm shift in backhaul network design is highly desirable for 5G networks in order to dynamically manage the increasing traffic demands of SBSs and cater new applications with ease. In this direction, the integration of both terrestrial and aerial network components can be considered a promising solution. Therefore, drone-mounted infrastructure is envisioned to supplement the terrestrial infrastructure while improving flexibility and reliability of backhaul operations. However, in order to reap the full potential of drones in 5G backhaul, it must cope with the inherent challenges like lack of fixed backhaul links, multi-drone coordination, collision and crash avoidance, sparsely and intermittently connected network topologies, and moreover limited communication, computation, and endurance capabilities.

Therefore, the First International Workshop on Drone-Assisted Smart Backhaul Solutions for 5G and Beyond (DroneCom-2020) aims to bring together researchers and practitioners to share their ideas, latest findings, and state-of-the-art results on fostering the promising benefits of drones in 5G backhaul networks.

General Co-Chairs

Sahil Garg (École de technologie supérieure, Montreal, Canada)
Mohsen Guizani (Qatar University, Qatar)
Hsiao-Hwa Chen (National Cheng Kung University, Taiwan)
Song Guo (The Hong Kong Polytechnic University, Hong Kong)

Christos Verikoukis (Telecommunications Technological Center of Catalonia)
Jong Hyuk Park (Seoul National University of Science and Technology, Seoul)
Danda B. Rawat (Howard University, USA)
Xianbin Wang (Western University, Ontario, Canada)
Alagan Anpalagan (Ryerson University, Toronto, Canada)

Technical Program Co-Chairs

Kuljeet Kaur (École de technologie supérieure, Montreal/Canada)
Georges Kaddoum (École de technologie supérieure, Montreal, Canada)

Technical Program Committee

Ranga Rao Venkatesha Prasad (TU Delft, Netherlands)
Syed Hassan Ahmed (JMA Wireless, USA)
Biplab Sikdar (National University of Singapore, Singapore)
Md Zakirul Alam Bhuiyan (Fordham University, New York, USA)
Abbas Bradai (XLIM Institute, University of Poitiers, France)
Shahid Mumtaz (Instituto de Telecomunicações, Portugal)
Ali Kashif Bashir (Manchester Metropolitan University, UK)
Bong Jun Choi (Soongsil University, Seoul, South Korea)
Francesco Piccialli (University of Naples Federico II, Italy)
Mithun Mukherjee (Guangdong University of Petrochemical Technology, China)
Roch H. Glitho (Concordia University, Montreal, Canada)
Mohammad Shojafar (University of Surrey, UK)
Xuan Liu (Southeast University, China)
Anubhav Bhatia (SAP Labs LLC, Palo Alto, California)

Publicity Co-Chairs

Dushantha Nalin K. Jayakody (Tomsk Polytechnic University, Russia)
Zhihan Lv (Qingdao University, China)
Alireza Jolfaei (Macquarie University, Sydney, Australia)
Jia Hu (University of Exeter, UK)

Steering Committee

Athanasios V. Vasilakos (UTS, Australia and LTU, Sweden)
Min Chen (Huazhong University of Science and Technology, Wuhan, China)
Victor C.M. Leung (Shenzhen University, China and UBC, Canada)
Fabrizio Granelli (University of Trento, Italy)
Hongwei Li (University of Electronic Science and Technology of China)



09:00 – 09:05: Opening Session - Message from Chairs

09:05 – 10:00: Keynote Session 1

Mohamed-Slim Alouini (King Abdullah University of Science and Technology (KAUST), Saudi Arabia)

Tethered UAVs: Challenges, Potential, and Applications

10:00 – 11:00: Technical Session I: Industrial Internet of Things

(Session Chair: Prof. Neeraj Kumar)

User Association in Hybrid UAV-cellular Networks for Massive Real-time IoT Applications

Parisa Froughi (Telecom ParisTech, France); Hamzeh Beyranvand (Amirkabir University of Technology, Iran); Maurice Gagnaire (Telecom ParisTech - LTCI, France); Sawsan Al Zahr (Telecom ParisTech, France)

ODOB: One Drone One Block-based Lightweight Blockchain Architecture for Internet of Drones

Maninderpal Singh (Chandigarh University, Mohali, India); Gagangeet Singh Aujla (Newcastle University, United Kingdom (Great Britain)); Rasmeet S Bali (Chandigarh University, Mohali, India)

VAHAK: A Blockchain-based Outdoor Delivery Scheme using UAV for Healthcare 4.0 Services

Rajesh Gupta (Institute of Technology, Nirma University, India); Arpit Shukla (Institute of Technology, Nirma University, India); Parimal Mehta (Institute of Technology, Nirma University, India); Pronaya Bhattacharya (Institute of Technology, Nirma University, India); Sudeep Tanwar (Institute of Technology Nirma University Ahmedabad Gujarat, India); Sudhanshu Tyagi (Thapar Institute of Engineering & Technology, Deemed University, Patiala, India); Neeraj Kumar (Thapar Institute of Engineering and Technology Patiala, India)

A Blockchain-based Framework for Drone-Mounted Base Stations in Tactile Internet Environment

Vinay Chamola (BITS-Pilani, India); Vikas Hassija (Jaypee Institute of Information Technology Noida, India); Vikas Saxena (Jaypee Institute of Information Technology, India & SMIEEE, USA)

11:00 – 11:30: Virtual Coffee Break

11:30 – 12:00: Industrial Talk 1

Hatem Abou-zeid (Ericsson, Canada)

Navigating the Road to Autonomous Networks

12:00 – 12:30: Industrial Talk 2

Prasad Garigipati (Global Artificial Intelligence Accelerator, Ericsson, Montreal)

Use-cases for 5G: AI/ML Perspective

12:30 – 13:30: Technical Session II: Heterogeneous Networks

(Session Chair: Prof. Dushantha Nalin K. Jayakody)

Performance Analysis of UAV-assisted Backhaul Solutions in THz enabled Hybrid Heterogeneous Network

Adil Ali Raja (National University of Sciences & Technology (NUST), Pakistan); Muhammad Ali Jamsheed (University of Surrey, United Kingdom (Great Britain)); Haris Bin Pervaiz (Lancaster University, United Kingdom (Great Britain)); Syed Ali Hassan (National University of Sciences and Technology, Pakistan)

Autonomous UAV-aided Mesh Wireless Networks

Omid Esrafilian (EURECOM, France); Rajeev Gangula (EURECOM, France); David Gesbert (Eurecom Institute, France)

Multi-UAV Assisted Communication Networks: Towards Max-Min Secrecy Rate

Yuan Liu (Beijing Jiaotong University, China); Ke Xiong (Beijing Jiaotong University, China); Bo Gao (Beijing Jiaotong University, China); Yu Zhang (State Grid Energy Research Institute, China); Pingyi Fan (Tsinghua University, China); Khaled B. Letaief (The Hong Kong University of Science and Technology)

UAV-assisted Data Collection in Wireless Powered Sensor Networks over Multiple Fading Channels

Tharindu Ponnimbaduge Perera (National Research Tomsk Polytechnic University, Russia); Stefan Panić (Tomsk Polytechnic University & University of Priština, Serbia); Dushantha Nalin K. Jayakody (National Research Tomsk Polytechnic University & Sri Lanka Technological Campus, Russia); Muthu Palanivel Chidambara Nathan (National Institute of Technology, India)

13:30 – 14:30: Virtual Lunch Break

14:30 – 15:00: Keynote Session 2

Halim Yanikomeroglu (Carleton University, Ottawa, Canada)

Wireless Access Architecture 2020-2040: The Sky's The Limit

15:00 – 16:00: Technical Session III: Security and Energy Efficiency

(Session Chair: Prof. Zhihan Lv)

Energy Efficient Mode Selection Scheme for Wireless Powered D2D Communications with NOMA Underlying UAV

Ishan Budhiraja (TIET Patiala, India); Neeraj Kumar (Thapar University Patiala, India); Sudhanshu Tyagi (Thapar Institute of Engineering & Technology, Deemed University, Patiala, India); Pham Quoc-Viet (Pusan National University, South Korea); Sudeep Tanwar (Institute of Technology Nirma University Ahmedabad Gujarat, India)

Smart Antenna-based Multi-hop Highly-Energy-Efficient DSA Approach to Drone-assisted Backhaul Networks for 5G

Dingde Jiang (University of Electronic Science and Technology of China); Zhihao Wang (University of Electronic Science and Technology of China, China); Zhihan Lv (Qingdao University, China); Wenpan Li (Northeastern University, China)

On the Design of Secure Communication Framework for Blockchain-Based Internet of Intelligent Battlefield Things Environment

Mohammad Wazid (Graphic Era Deemed to be University, India); Ashok Kumar Das (International Institute of Information Technology, Hyderabad, India); Sachin Shetty (Old Dominion University, USA); Joel J.P.C. Rodrigues (Federal University of Piauí (UFPI), Brazil & Instituto de Telecomunicações, Portugal)

Secure UAV Communication Networks via Friendly Jamming and Bandwidth Allocation

Huilian Zhang (Wuhan University, China); Xiaofan He (Wuhan University, China); Huaiyu Dai (NC State University, USA)

16:00 – 16:30: Virtual Coffee Break

16:30 – 17:00: Industrial Talk 3

Syed Hassan Ahmed (JMA Wireless, USA)

Integrating Named Data Networking in Connected Vehicles

17:00 – 18:30: Technical Session IV: Other Drone Applications

(Session Chair: Dr. Jia Hu)

A Novel Simulated Annealing based Routing Algorithm in F-SDNs

Liang Zhao (Shenyang Aerospace University, China); Areeb Saldin (Shenyang Aerospace University, China); Jia Hu (University of Exeter, United Kingdom (Great Britain)); Luwei Fu (Shenyang Aerospace University, China); Junling Shi (Shenyang Aerospace University, China); Yunchong Guan (Shenyang Aerospace University, China)

Distributed Deep Learning-Based Task Offloading for UAV-Enabled Mobile Edge Computing

Mithun Mukherjee (Guangdong University of Petrochemical Technology, China); Vikas Kumar (Indian Institute of Technology Patna & Bharat Sanchar Nagar Limited, India); Ankit Lat (International Institute of Information Technology, Hyderabad, India); Mian Guo (Guangdong University of Petrochemical Technology, China); Rakesh Matam (Indian Institute of Information Technology Guwahati, India); Yunrong Lv (Guangdong Provincial Key Lab of Petrochemical Equipment Fault Diagnosis, China)

UAV Network for Surveillance of Inaccessible Regions with Zero Blind Spots

Nikhil Kumar (Indian Institute of Technology, India); Monalisa Ghosh (IIT Kharagpur, India); Chetna Singhal (Indian Institute of Technology Kharagpur, India)

Bidirectional Multi-tier Cognitive Swarm Drone 5G Network

Sunil Jacob (SCMS School of Engineering and Technology, India); Varun G Menon (SCMS School of Engineering and Technology, India); Shynu P g (Vellore Institute of Technology, India); Fathima Shemim (University of Bolton, United Arab Emirates); Bandana Mahapatra (Symbiosis Skills and Open University, India); Saira Joseph (SCMS School of Engineering and Technology & APJ Kalam Technological University, India)

An UAV assisted Multi-Sensor based Smart Parking System

Pritom Gogoi (Assam Engineering College, India); Joy Dutta (Assam Engineering College, India); Rakesh Matam (Indian Institute of Information Technology Guwahati, India); Mithun Mukherjee (Guangdong University of Petrochemical Technology, China)

18:30: Concluding Remarks

WORKSHOP

The Second IEEE International Workshop on Data Driven Intelligence for Networks and Systems (DDINS)
Monday, 06 July, 2020 | 9:00 – 18:30

Network traffic is expected to grow exponentially in the next decade thanks to the advances in smart devices, Internet of Things (IoT) and cloud computing. Not only the volume of the traffic is increasing, the characteristics of the traffic are also becoming more diverse. While many advanced communication technologies have been proposed to push up the network capacity, increasing capacity alone is inadequate to deal with the traffic diversity. To properly manage traffic diversity, different but coherent strategies are needed at different protocol layers, and this often results in complex designs in the network which are difficult to deploy and manage. The recent advancement in artificial intelligence (AI) technology has provided a promising approach to deal with complex problems faced in the network design and operation.

The trend towards highly integrated networks with diverse underlying access technologies to support simultaneously multiple vertical industries has demanded complex operation in the network. This represents a great challenge in network design. This Workshop focuses on applying AI technologies to deal with the design complexity in wireless networks, particularly the machine learning techniques that are based on empirical or simulated data.

The first DDINS was successfully held in IEEE International Conference on Communications (ICC) 2019, Shanghai, China.
<https://icc2019.ieee-icc.org/workshop/w15-first-international-workshop-data-driven-intelligence-networks-and-systems-ddins>

General Chairs:

Periklis Chatzimisios, International Hellenic University, Greece
Chuan Heng Foh, University of Surrey, UK
Muhammad Imran, University of Glasgow, UK

Technical Program Chairs:

Jinsong Wu, Universidad de Chile, Chile
Celimuge Wu, University of Electro- Communications, Japan

Keynote and Panel Chairs:

Hasan Farooq, Ericsson, Silicon Valley, USA

Publicity Chairs:

William Liu, Auckland University of Technology, New Zealand
Chunguo Li, Southeast University, China



9:00 – 9:10 Opening Session Message from Chairs

9:10 – 9:50 Session 1: Data driven smart cities

Network Flow based IoT Botnet Attack Detection using Deep Learning

Sriram S (Amrita Vishwa Vidyapeetham, India); Vinayakumar R (Cincinnati Children's Hospital Medical Center, USA); Mamoun Alazab (CDU, Australia); Soman K P (Amrita Vishwa Vidyapeetham, India)

Blockchain-based E-waste Management in 5G Smart Communities

Amit Dua (Birla Institute of Technology and Science (BITS) Pilani, India); Akash Dutta and Nishat Zaman (BITS Pilani, India); Neeraj Kumar (Thapar University Patiala, India)

10:00-11:00 Keynote Session 1

Ali Imran, University of Oklahoma-Tulsa, USA

Leveraging AI for Zero-Touch Automation in 6G: How to Address the Training Data Sparsity/Scarcity Challenge?

11:00-11:30 Coffee Break

11:30-12:30 Session 2: Data driven intelligent computing and application

Big Data Analytics Based Short Term Load Forecasting Model for Residential Buildings in Smart Grids

Inam Khan (COMSATS University Islamabad, Lahore Campus, Pakistan); Nadeem Javaid (COMSATS Institute of Information Technology, Islamabad, Pakistan); C. Taylor (Lancaster University, United Kingdom (Great Britain)); Kelum Gamage (Glasgow University, United Kingdom (Great Britain)); Xiaodong Ma (University of Lancaster, United Kingdom (Great Britain))

Log Analytics in HPC: A Data-driven Reinforcement Learning Framework

Li Ding and Biao Han (National University of Defense Technology, China); Tung Nguyen (Intelligent Automation Inc., USA); Hui Zeng (Intelligent Automation, Inc., USA); Zhuo Lu (University of South Florida, USA)

Handling Device Heterogeneity in Wi-Fi based Indoor Positioning Systems

Yongyong Wei and Rong Zheng (McMaster University, Canada)

12:30-13:10 Session 3: Data driven distributed computing

A Multi-property Method to Evaluate Trust of Edge Computing Based on Data Driven Capsule Network

Chenghan Jia and Kai Lin (Dalian University of Technology, China); Jing Deng (UNC Greensboro, USA)

Distributed Intelligence Empowered Data Aggregation and Distribution for Multi-robot Cooperative Communication

Li Ding and Biao Han (National University of Defense Technology, China); Xiaoyan Wang (Ibaraki University, Japan); Peng Li (The University of Aizu, Japan); Baosheng Wang (National University of Defense Technology, China)

13:10-14:30 Lunch

14:30-15:20 Keynote Session 2

Dr Markus Gruber, Bell Labs Nokia

The Future of Network Automation

15:20-16:00 Session 4: Data driven brain computing

Learning Features of Brain Network for Anomaly Detection

Jiixin Liu, Wei Zhao, Ye Hong, Sheng Gao, Xi Huang and Yingjie Zhou (Sichuan University, China)

A Novel SSVEP-Based Brain-Computer Interface Using Joint Frequency and Space Modulation

Zhenyu Wang (ShanghaiTech University & Shanghai Advanced Research Institute, Chinese Academy of Sciences, China); Honglin Hu (Shanghai Advanced Research Institute, China); Xianfu Chen (VTT Technical Research Centre of Finland, Finland); Ting Zhou and Tianheng Xu (Shanghai Advanced Research Institute, Chinese Academy of Sciences, China)

16:00-16:30 Coffee Break

16:30-17:30 Session 5: Data driven networking 1

DeepAalo: Auto-adjusting Demotion Thresholds for Information-agnostic Coflow Scheduling

Su Wang and Shuo Wang (Beijing University of Posts and Telecommunications, China); Ru Huo (Beijing Advanced Innovation Center for Future Internet Technology, Beijing University of Technology, China); Tao Huang, Jiang Liu and Yunjie Liu (Beijing University of Posts and Telecommunications, China)

Improving Inter-domain Routing through Multi-agent Reinforcement Learning

Xiaoyang Zhao (The University of HongKong, Hong Kong); Chuan Wu (The University of Hong Kong, Hong Kong); Franck Le (IBM T. J. Watson, USA)

Online Traffic Classification Model Using Granules

Ping-ping Tang and Yu-ning Dong (Nanjing University of Posts and Telecommunications, China); Shiwen Mao (Auburn University, USA)

17:30-18:30 Session 6: Data driven networking 2

Deep Reinforcement Learning based Wireless Network Optimization: A Comparative Study

Kun Yang (Texas A&M University, USA); Cong Shen (University of Virginia, USA); Tie Liu (Texas A&M University, USA)

Deep Reinforcement Learning for Controller Placement in Software Defined Network

Yiwen Wu (University of Electronic Science and Technology of China, Chengdu, China); Sipei Zhou, Yunkai Wei and Supeng Leng (University of Electronic Science and Technology of China, China)

Modified-PBIL-Based User Selection for Multi-user Massive MIMO Systems with Massive Connectivity

Jing Jiang (Xi'an University of Posts and Telecommunications, China); Junyu Chen (Xi'an University of Posts and Telecommunication, China); Yongbin Xie (Xi'an University of Posts & Telecommunications, China); Hongjiang Lei (Chongqing University of Posts and Telecommunications, China); Ling Zheng (Xi'an University of Posts and Telecommunication, China)



WORKSHOP

IEEE International Symposium on Edge Computing Security and Blockchain (EdgeBlock 2020)

Monday, 6 July, 2020 • 9:00 – 17:30 • Room: EdgeBlock

The inaugural IEEE International Symposium on Edge Computing Security and Blockchain (EdgeBlock 2020) is held in conjunction with IEEE INFOCOM 2020. IEEE INFOCOM 2020 was originally planned to be held in Beijing, China. Due to the unfortunate Coronavirus Disease 2019 (COVID-19) outbreak, the conference is moved to Toronto, Canada and will be held between July 6 and 9, 2020.

EdgeBlock 2020 is an international forum for researchers to present their latest research and perspectives on the intersection of blockchain and edge computing. This is an interdisciplinary area that is of increasingly importance. For example, in our new networked society where there are a broad range of IoT devices and cyber physical systems around us, and data from these devices and systems generated at the edge of the network are been sent to some edge devices or the cloud servers for processing and storage. The utility of blockchain in a number of applications, including to secure data-in-transit and data-at-rest in IoT and cyber physical systems, has also been explored in the research community as evidenced by the increasing number of publications in the literature. This is not surprising due to the inherent features of blockchain, such as decentralization and immutability. Therefore, in EdgeBlock 2020 we are interested in determining how can we leverage blockchain characteristics to establish trusted environments for IoT, social networking, cyber security and other commercial applications.

Of the 22 submissions, a total of 13 submissions were accepted for inclusion in EdgeBlock 2020. All submissions were subjected to an extensive review process by internationally-recognized experts in Blockchain, edge computing and the related areas (e.g. cyber security).

EdgeBlock 2020 is made possible by the joint effort of a large number of individuals and organizations worldwide. There is a long list of people who volunteered their time and energy to put together the event and deserved special thanks. First and foremost, we would like to offer our gratitude to the entire Organizing Committee for guiding the entire process of the event. We are also deeply grateful to all the Technical Program Committee (TPC) members for their time and efforts in reading, commenting, debating and finally selecting the papers. We also thank all the external reviewers for assisting the TPC in their particular areas of expertise as well as all the authors, participants, and session chairs for their valuable contributions.

We hope you will find the discussions and interactions at EdgeBlock 2020 intellectually stimulating, as well as enjoying what Toronto, Canada has to offer. Enjoy your stay in Toronto!

Program Chairs:

Keke Gai (Beijing Institute of Technology, China)
Kim-Kwang Raymond Choo (University of Texas at San Antonio, USA)

Technical Program Committee:

Yonghao Wang (Birmingham City University, UK)
Sheng Wen (Swinburne University of Technology, Australia)
Tianwei Zhang (Amazon, USA)
John Grant (Nine Tiles Cambridge, UK)
Ralph Deters (University of Saskatchewan, Canada)
Cheng Zhang (Waseda University, Japan)
Mak Sharma (Birmingham City University, UK)
Zengpeng Li (Lancaster University, UK)
Jiamou Liu (University of Auckland, New Zealand)
Zijian Zhang (Beijing Institute of Technology, China)
Debiao He (Wuhan University, China)
Haipeng Yao (Beijing University of Posts & Telecommunications, China)
Shaoping Fu (National University of Defense Technology, China)
Daojing He (East China Normal University, China)

Technical Program Committee: (cont.)

Sheng Gao (Central University of Finance and Economics, China)
Jian Shen (Nanjing University of Information Science and Technology, China)
Hao Wang (Shandong Normal University, China)
Junwei Zhang (Xidian University, China)
Xinghua Li (Xidian University, China)
Vitor Jesus (Birmingham City University, UK)
Shuo Wang (Birmingham City University, UK)
Xiong Li (Hunan University of Science and Technology, China)
Shishank Shishank (Birmingham City University, UK)
Yunxia Liu (Zhengzhou Normal University, China)
Qi Jiang (Xidian University, China)
Wenbo Shi (Northeastern University, China)
Ning Lu (Northeastern University, China)
Han Qiu (Telecom-Paris, France)
Hua Yin (Duke University, USA)
Ruoyu Chen (Beijing Information Science and Technology University, China)
Wei Cai (The Chinese University of Hong Kong, Shenzhen, China)
Zhitao Guan (North China Electric Power University, China)
Jianyi Zhang (Beijing Electronic Science and Technology Institute, China)



9:00 – 9:05 Opening Session – Message From Program Chairs

9:05 – 10:00 Section 1: Blockchain and Fog/Edge

Mutual authentication and authorized data access between fog and user based on blockchain technology

M Arun (Kalasalingam Academy of Research and Education Krishnankoil, India)
S Balamurali (Kalasalingam Academy of Research and Education, India)
Bharat S Rawal (Gannon University, USA)
Qiang Duan (The Pennsylvania State University, USA)
R Lakshmana Kumar (Coimbatore, India)
Balamurugan Balusamy (Galgotias University, India)

Cerberus: Privacy-Preserving Computation in Edge Computing

Dilu Zhang (Shanghai JiaoTong University, China)
Lei Fan (Shanghai Jiaotong University, China)

10:05 – 11:00 Section 2: Blockchain Application 1

A Concurrent Weighted Communication Scheme for Blockchain Transaction

Jiao Li (Xi'an Shiyou University, China)
Li Chen (University of Louisiana at Lafayette, USA)

Towards Blockchain-Based Reputation-Aware Federated Learning

Muhammad Habib Ur Rehman and Khaled Salah (Khalifa University of Science and Technology, United Arab Emirates)
Ernesto Damiani (Khalida University - EBTIC, United Arab Emirates);
Davor Svetinovic (Khalifa University of Science and Technology, United Arab Emirates)

11:30 – 12:30 Section 3: Smart Contract

A Solution for State Conflicts of Smart Contract in Interaction with Non-blockchain

Hong Su and Bing Guo (Sichuan University, China);
Yan Shen (Chengdu University of Information Technology, China);
Tao Li, Chaoxia Qin and Zhen Zhang (Sichuan University, China)

ChainIDE 2.0: Facilitating Smart Contract Development for Consortium Blockchain

Xiao Wu (White Matrix Inc., China)
Han Qiu (Telecom-Paristech, France)
Shuyi Zhang (White Matrix Inc., China)
Gerard Memmi (Telcom ParisTech, France)
Keke Gai (Beijing Institute of Technology, China)

Wei Cai (The Chinese University of Hong Kong, Shenzhen, China)

12:30 – 13:30 Section 4: Blockchain and RNG

No-Dealer: Byzantine Fault-Tolerant Random Number Generator

Yury Yanovich (Skolkovo Institute of Science and Technology, Russia)

Sperax: An Approach To Defeat Long Range Attacks In Blockchains

Yongge Wang (University of North Carolina at Charlotte, USA)
Yunchuan Wei (Beijing Institute of Technology, China)
Zhou Yu (University of California at Los Angeles, USA)

14:30 – 16:00 Section 5: Decentralization

Building an Authentic and Ethical Keyword Search by applying Decentralised (Blockchain) Verification

Poongodi M (Qatar Foundation & HBKU, Qatar)
Mounir Hamdi (Hamad Bin Khalifa University, Qatar)
Vijayakumar Varadarajan (VIT University, India)
Bharat S Rawal (Gannon University, USA)
Maode Ma (Nanyang Technological University, Singapore)

TEE-Based Mutual Proofs of Transmission Services in Decentralized Systems

Lifeng Liu and Jian Li (FutureWei Technologies Inc., USA)
Tingqiu Yuan (HUAWAI Technologies Co., Ltd, China)

Gemini-Chain: A Regulatable Digital Currency Model based on Blockchain

Jianyi Zhang (Beijing Electronic Science and Technology Institute & University of Louisiana at Lafayette, USA)
Pengju Li (Beijing Electronic Science and Technology Institute, China)
Zhili Xu (Institute of Network Technology of China Unicom, China)
Anqi Wang, Jin Liu and Zhiqiang Wang (Beijing Electronic Science and Technology Institute, China)

16:30 – 17:30 Section 6: Blockchain Application 2

Security of Medical Cyber-physical Systems: An Empirical Study on Imaging Devices

Zhiqiang Wang and Pingchuan Ma (Beijing Electronic Science and Technology Institute, China), Xiaoxiang Zou (National Computer Network Emergency Response Technical Team/Coordination Center of China, China), Jianyi Zhang (Beijing Electronic Science and Technology Institute & University of Louisiana at Lafayette, USA), Tao Yang (Key Lab of the Third Research Institute of the Ministry of Public Security, China)

Secure Smart Home System: A Blockchain Perspective
Liuqing Yang and Xiao-Yang Liu (Columbia University, USA)
Wenbo Gong (University of Science and Technology Beijing, China)

***** IEEE INFOCOM 2020 *****

WORKSHOP

The Second Workshop on "Pervasive Systems in the IoT era" (PERSIST- IoT) Monday, 6 Jul, 2020 • 9:00 – 16:10

By leveraging the global interconnection of billions of tiny smart objects, the Internet of Things (IoT) paradigm is fostering the idea of pervasive Smart Environments (SEs) and Smart Urban Ecosystems, where all the data gathered by the "Things" can be elaborated and used to improve the livability, the safety and the security of the environment, and to make inhabitants lives easier.

To meet the requirements of SEs, telecommunication system should deliver significantly high data rates, traffic capacity, connection density, energy efficiency, as well as small latency. Being massively distributed into the environment, smart objects may generate, collect, exchange and process big data, provide distributed services, offer computational resources, and cooperate to perform some tasks locally, as well as to delegate their execution to more powerful nodes in the cloud or at the network edge. In addition to the traditional pull-based data delivery, push-based and publish/subscribe traffic patterns must be supported. To accommodate the new services and newly emerging more demanding services the network infrastructure should be agile, cost effective and possibly softwarized. The satisfaction of security and privacy requirements will play a fundamental role in the SEs; indeed, without effective mechanisms, attacks and malfunctions in the IoT will outweigh any of their benefits.

The PERSIST-IoT workshop aims to solicit a collection of innovative papers reporting the most recent advancements in the fields of smart architectures, protocols and practical implementations enabling IoT for smart environments. Topics of interests include, but are not limited to the following:

General Chairs:

Valeria Loscri (Inria Lille-Nord Europe / FUN, France)
Giuseppe Ruggeri (University "Mediterranea", Italy)
Syed Hassan Ahmed (JMA Wireless, USA)
Ivan W. H. Ho (The Hong Kong Polytechnic University, Hong Kong)

Publicity Chair:

Marica Amadeo (University "Mediterranea", Italy)

9:00 – 9:15: Opening Session - Message from Chairs
9:15 – 10:30: Session 1: Physical Layer

NLC: Natural Light Communication using Switchable Glass

Changshuo Hu (University of New South Wales, Australia)
Dong Ma (University of New South Wales, Australia)
Mahbub Hassan (University of New South Wales, Australia)
Wen Hu (University of New South Wales (UNSW) & CSIRO, Australia)

Smart User Pairing for Massive MIMO Enabled Industrial IoT Communications

Jingjie Zong (Zhengzhou University, China)
Shuangzhi Li (Zhengzhou University, China)
Di Zhang (Zhengzhou University, China)
Gangtao Han (Zhengzhou University, China)
Xiaomin Mu (Zhengzhou University, China)
Ali Kashif Bashir (Manchester Metropolitan University, United Kingdom, Great Britain)
Joel J. P. C. Rodrigues (Federal University of Piauí (UFPI), Brazil & Instituto de Telecomunicações, Portugal)

Secure Backscatter Communications in Multi-Cell NOMA Networks: Enabling Link Security for Massive IoT Networks

Wali Ullah Khan (School of Information Science and Engineering, Shandong University, Qingdao, China)
Ju Liu (Shandong University, China)
Furqan Jameel (Aalto University, Finland)
Muhammad Toaha Raza Khan (Kyungpook National University, Korea (South))
Syed Hassan Ahmed (Department of Computer Science, Georgia Southern University, Statesboro, USA)
Riku Jäntti (Aalto University, Finland)

10:30 – 11:00: Keynote Speech

Enabling enhanced pervasive IoT services via Cubesats Virtualization

Antonio Iera (University of Calabria, Italy)

11:30 – 11:55: Session 2: NOMA

The Feasibility of NOMA in C-V2X

Zhenhui Situ (The Hong Kong Polytechnic University, Hong Kong)
Ivan Wang-Hei Ho (The Hong Kong Polytechnic University, Hong Kong)
Yun Hou (Technological and Higher Education Institute of Hong Kong (THEi), Hong Kong)
Peiya Li (College of Cyber Security, Jinan University, China)

11:55 – 13:10: Session 3: Automated Connected Vehicles

Active Learning-based Classification in Automated Connected Vehicles

Alaa Awad Abdellatif (Politecnico di Torino, Italy)
Carla Fabiana Chiasserini (Politecnico di Torino, Italy)
Francesco Malandrino (CNR-IEIT, Italy)

Energy-aware Allocation of Graph Jobs in Vehicular Cloud Computing-enabled Software-defined IoV

Minghui LiWang (University of Western Ontario, Canada)
Zhibin Gao (Xiamen University Xiamen, China)
Seyyedali Hosseinalipour (North Carolina State University, USA)
Huaiyu Dai (NC State University, USA)
Xianbin Wang (Western University, Canada)

Caching Popular and Fresh IoT Contents at the Edge via Named Data Networking

Marica Amadeo (University "Mediterranea", Italy)
Giuseppe Ruggeri (University "Mediterranea", Italy)
Claudia Campolo (University "Mediterranea", Italy)
Antonella Molinaro (University "Mediterranea", Italy)
Giuseppe Mangiullo (University "Mediterranea", Italy)

14:30 – 15:55: Session 4: Edge Computing & IoT

Mitigating DoS attacks in IoT EDGE Layer to preserve QoS topics and nodes' energy

Floriano De Rango (University of Calabria, Italy)
Mauro Tropea (University of Calabria, Italy)
Peppino Fazio (University of Calabria, Italy)

E-ALPHA: Edge-based Assisted Living Platform for Home cAre

Claudio Savaglio (University of Calabria, Italy)
Giancarlo Fortino (University of Calabria, Italy)
Gianluca Aloï (University of Calabria, Italy)
Pasquale Pace (University of Calabria, Italy)
Raffaele Gravina (University of Calabria, Italy)

IoT Event Classification Based on Network Traffic

Batyr Charyyev (Stevens Institute of Technology, USA)
Mehmet Hadi Gunes (Stevens Institute of Technology & University of Nevada, Reno, USA)

WORKSHOP

The 13th International Workshop on Wireless Sensor, Robot and UAV Networks (IEEE WISARN 2020)
Monday, 6 July, 2020 • 9:00 – 14:30

Wireless Sensor, Robot and UAV networks are characterized by the coordination and mobility of nodes that are able to accomplish distributed sensing and actuation tasks. Leveraged by the control and mobility of actors, the networking process and applications embrace a whole new set of possibilities. Specialized networked systems, made of intelligent devices (such as robots and UAVs), may deploy, repair and relocate sensors to improve coverage, build routes and fix network partition to ensure data communication, change network topology to shape routing patterns and balance energy consumption, and to respond to reported events in a timely and effective manner. Also, they might be able to integrate within existing and upcoming mobile infrastructures (e.g. the 5G), by enabling the sensing operations on complex and dynamic scenarios, and to process the data on the edge or to offload them toward existing cloud services. The benefits are limited only by imagination. As an emerging field, ground and aerial robotic systems are in need of new networking techniques as well as of novel cloud/edge architectures for data gathering and processing that might unlock the potentials of such systems.

To this purpose, WiSARN aims at bringing together state-of-the-art contributions on the design, specification and implementation of architectures, algorithms and protocols for current and future applications of sensor robotic and aerial networks. IEEE WISARN 2020 serves as incubator for scientific communities that share a particular research agenda in the area of the workshops topic. Moreover, it provides its participants with opportunities to understand the major technical and application challenges of UAV/Robot networking as well as exchange and discuss scientific and engineering ideas related to their architecture, protocol, algorithm, and application design.

General Chairs:

Enrico Natalizio (University of Lorraine, France)
Yannis Paschalidis (Boston University, USA)

Technical Program Chairs:

Kaushik R. Chowdhury (Northeastern University, USA)
Marco Di Felice (University of Bologna, Italy)
Jianping He (Shanghai Jiao Tong University, China)

Web and Publicity Chairs:

Angelo Trotta (University of Bologna, Italy)



9:00 – 9:05: Opening Session - Message From Chairs

9:05 – 10:05: Keynote Session

Boosting the cellular systems with UAVs: how to learn from a quality and energy perspective

Francesca Cuomo (Sapienza University of Rome), Stefania Colonnese (SAPIENZA Università di Roma)

10:30-11:30: Session 1: Communication technologies for UAV tracking and networking

Combining LoRaWAN and a New 3D Motion Model for Remote UAV Tracking

Federico Mason (University of Padova, Italy)
Federico Chiariotti (Aalborg University, Italy)
Martina Capuzzo, Davide Magrin, Andrea Zanella and Michele Zorzi (University of Padova, Italy)

Resilient Hybrid SatCom and Terrestrial Networking for Unmanned Aerial Vehicles

Pareesh Saxena (BITS Pilani, India)
Thomas Dreibholz (Simula Metropolitan Centre for Digital Engineering, Norway)
Harald Skinnemoen (AnsuR Technologies, Norway)
Ozgu Alay (University of Oslo & Simula Metropolitan, Norway)
Angeles Vazquez-Castro (Universidad Autónoma de Barcelona, Spain)
Simone Ferlin (Ericsson AB, Sweden)
Guray Acar (European Space Agency - ESTEC, The Netherlands)

Security Performance Analysis of Physical Layer for UAV Swarm Networks

RunZe Dong (Air force Engineering University, China)
Buhong Wang and Tianhao Cheng (Air Force Engineering University, China)

11:30-12:30: Session 2: Integrating 5G and UAV networks

Connecting flying backhauls of drones to enhance vehicular networks with fixed 5G NR infrastructure

Philippe Jacquet (INRIA, France)
Dalia Georgiana Popescu (Nokia Bell Labs, France)
Bernard Mans (Macquarie University, Australia)

Energy Minimization for MEC-enabled Cellular-Connected UAV: Trajectory Optimization and Resource Scheduling

Zhaohua Lv, JianJun Hao and Yijun Guo (Beijing University of Posts and Telecommunications, China)

Paging Group Size Distribution for Multicast Services in 5G Networks

Olga Vikhrova, Sara Pizzi, Antonella Molinaro and Giuseppe Araniti (University Mediterranea of Reggio Calabria, Italy)

13:30-14:30: Session 3: Frameworks for UAV-based networking and computation

Drone-assisted Edge Computing: a game-theoretical approach

Fabio Busacca (CNIT, Italy); Laura Galluccio and Sergio Palazzo (University of Catania, Italy);

A Real-time Framework for Trust Monitoring in a Network of Unmanned Aerial Vehicles

Mahsa Keshavarz, Alireza Shamsoshoara and Fatemeh Afghah (Northern Arizona University, USA)
Jonathan Ashdown (United States Air Force, USA)

Trajectory Optimization of Flying Energy Sources using Q-Learning to Recharge Hotspot UAVs

Sayed Amir Hoseini (University of New South Wales, Australia)
Jahan Hassan and Ayub Bokani (Central Queensland University, Australia)
Salil S Kanhere (UNSW Sydney, Australia)

WORKSHOP

The 3rd Age of Information Workshop Monday, 6 July, 2020 • 9:00-18:30

The Age of Information (AoI) is a new concept that serves as a performance metric for characterizing the freshness of information, which has been shown effective and powerful in numerous applications, in particular in cyber-physical systems and/or Internet-of-Things. Recent research advances on AoI have shown that many well-known design principles (e.g., for providing high throughput and low latency) that lead to the success of traditional data networks may need to be re-examined for enhancing information freshness in emerging real-time applications.

Following the big success of the first two workshops, the 3rd Age of Information Workshop (AoI Workshop) will provide a forum where researchers and technical experts can share the latest research insights, and present key and emerging results on the Age of Information, and identify new challenges and opportunities.

Steering Committee:

Roy D. Yates (Rutgers University, USA)
Eytan Modiano (MIT, USA)
Anthony Ephremides (University of Maryland, USA)
Ness B. Shroff (The Ohio State University, USA)
Yin Sun (Auburn University, USA)

General Chairs:

Ness B. Shroff (The Ohio State University, USA)
Zhisheng Niu (Tsinghua University, China)

Technical Program Co-Chairs:

Sennur Ulukus (University of Maryland, USA)
Sheng Zhou (Tsinghua University, China)



09:00–09:10: Opening Session - Message From Chairs

09:10–11:00: Session 1: Information Updates for Estimation, Computing and Control

Age of Incorrect Information for Remote Estimation of a Binary Markov Source

Clement Kam and Sastry Kompella (Naval Research Laboratory, USA); Anthony Ephremides (University of Maryland, USA)

Detecting State Transitions of a Markov Source: Sampling Frequency and Age Trade-off

Jaya Prakash Varma Champati, Mikael Skoglund and James Gross (KTH Royal Institute of Technology, Sweden)

Balancing Data Freshness and Distortion in Real-time Status Updating with Lossy Compression

Shaoling Hu and Wei Chen (Tsinghua University, China)

Transmission Scheduling for Multi-loop Wireless Networked Control Based on LQ Cost Offset

He Ma, Shidong Zhou, Xiujun Zhang and Limin Xiao (Tsinghua University, China)

Age of Information for Actuation Update in Real-Time Wireless Control Systems

Bo Chang (University of Electronic Science and Technology of China (UESTC), China); Liying Li (University of Electronic Science and Technology of China, China); Guodong Zhao, Zhen Meng and Muhammad Ali Imran (University of Glasgow, United Kingdom (Great Britain)); Zhi Chen (University of Electronic Science and Technology of China, China)

Maintaining Information Freshness in Power-Efficient Status Update Systems

Parisa Rafiee, Peng Zou, Omur Ozel and Suresh Subramaniam (George Washington University, USA)

11:00–11:30: Coffee Break

11:30–13:30: Session 2: Age of Information and Energy Efficiency The Probability Distribution of the AoI in Queues with Infinitely Many Servers

Yoshiaki Inoue (Osaka University, Japan)

Average Age of Information in a Multi-Source M/M/1 Queueing Model with LCFS Prioritized Packet Management

Mohammad Moltafet and Markus Leinonen (University of Oulu, Finland); Marian Codreanu (LiU, Sweden)

Anti-Aging Scheduling in Single-Server Queues: A Systematic and Comparative Study

Zhongdong Liu (Temple University, USA); Liang Huang (Zhejiang University of Technology, China); Bin Li (University of Rhode Island, USA); Bo Ji (Temple University, USA)

Age-Optimal Scheduling for Heterogeneous Traffic with Timely-Throughput Constraint

Jingzhou Sun (Tsinghua University, China); Zhiyuan Jiang (Shanghai University, China); Sheng Zhou and Zhisheng Niu (Tsinghua University, China)

Age-Energy Tradeoff in Fading Channels with Packet-Based Transmissions

Haitao Huang and Deli Qiao (East China Normal University, China); M. Cenk Gursoy (Syracuse University, USA)

Is the Packetized Transmission Efficient? An Age-Energy Perspective

Mangang Xie, Jie Gong and Xiao Ma (Sun Yat-sen University, China)

Age-Energy Region in Wireless Powered Communication Networks

Haina Zheng and Ke Xiong (Beijing Jiaotong University, China); Pingyi Fan (Tsinghua University, China); Zhangdui Zhong (Beijing Jiaotong University, China); Khaled B. Letaief (The Hong Kong University of Science and Technology, Hong Kong)

13:30–14:30: Lunch Break

14:30–16:00: Session 3: Age of Information and Emerging Applications MAC Trade-offs Between Age and Reachability of Information in Vehicular Safety Applications

Xu Wang and Randall A Berry (Northwestern University, USA)

Who Should Google Scholar Update More Often?

Melih Bastopcu and Sennur Ulukus (University of Maryland, USA)

Can We Improve Information Freshness with Predictions in Mobile Crowd-Learning?

Zhengxiang Yuan (Iowa State University, USA); Bin Li (University of Rhode Island, USA); Jia Liu (Iowa State University, USA)

AoI and Energy Consumption Oriented Dynamic Status Updating in Caching Enabled IoT Networks

Chao Xu (Northwest A&F University, China); Xijun Wang (Sun Yat-sen University, China); Howard Yang (SUTD, Singapore); Hongguang Sun (Northwest A&F University, China); Tony Q. S. Quek (Singapore University of Technology and Design, Singapore)

Deep Reinforcement Learning for Fresh Data Collection in UAV-assisted IoT Networks

Mengjie Yi (Xidian University, China); Xijun Wang (Sun Yat-sen University, China); Juan Liu (Ningbo University, China); Yan Zhang (Xidian University, China); Bo Bai (Huawei Technologies Co., Ltd., Hong Kong)

16:00–16:30: Coffee Break

16:30–18:30: Session 4: Age of Information in Wireless Networks Improving Age of Information in Random Access Channels

Doga Can Atabay (Aselsan Inc., Turkey); Elif Uysal (METU, Turkey); Onur Kaya (Isik University, Turkey)

Optimal Sampling Cost in Wireless Networks with Age of Information Constraints

Emmanouil Fountoulakis and Nikolaos Pappas (Linköping University, Sweden); Marian Codreanu (LiU, Sweden); Anthony Ephremides (University of Maryland, USA)

A Non-Cooperative Multiple Access Game for Timely Updates

Sneihil Gopal, Sanjit K Kaul and Rakesh Chaturvedi (IIT Delhi, India); Sumit Roy (University of Washington, USA)

Age-of-Information Dependent Random Access for Massive IoT Networks

He Chen (The Chinese University of Hong Kong, Hong Kong); Yifan Gu (The University of Sydney, Australia); Soung Chang Liew (The Chinese University of Hong Kong, Hong Kong)

Minimizing the Age of Synchronization in Power-Constrained Wireless Networks with Unreliable Time-Varying Channels

Qining Zhang, Haoyue Tang and Jintao Wang (Tsinghua University, China)

Game of Ages

Kumar Saurav (Tata Institute of Fundamental Research, India); Rahul Vaze (TIFR Mumbai, India)

Age of Information Minimization in Fading Multiple Access Channels

Rajshankar Vishweshwar Bhat (Indian Institute of Technology, India); Rahul Vaze (TIFR Mumbai, India); Mehul Motani (National University of Singapore, Singapore)

WORKSHOP

The 6th International Workshop on Computer and Networking Experimental Research using Testbeds (CNERT)
Monday, July 6th, 2020 • 9:00 – 18:00

Experimentation has played an important role in advancing research in computing and networking. Although simulation is an important tool for studying and analyzing the behavior of new protocols and algorithms, it is essential that new research ideas be validated on real systems and testbeds. This workshop brings together researchers and technical experts to share experiences and advance the state of the art in experimental research in areas such as networking, distributed systems, and cloud computing. It aims to inspire researchers to use testbeds in novel and interesting ways as a means to validate research ideas. Of particular interest are experiments on publicly available testbeds such as GENI, the Fed4FIRE testbeds, Emulab, CloudLab, Chameleon, DeterLab, ORBIT, OneLab, FIT, PlanetLab, CENI, among many others.

New this Year:

To foster reproducibility in the area of computing and networking research, CNERT 2020 introduces the option for authors to provide additional information that will allow third parties to execute their experiments. Submissions that have been accepted for publication and have provided reproducibility information, and for which presented results could be successfully reproduced by a member of the TPC will be considered for the inaugural reproducibility award!

Technical Program Committee Co-Chairs:

Michael Zink (University of Massachusetts Amherst, USA)
Yanyong Zhang (University of Science and Technology of China, P.R. China)

Steering Committee:

Piet Demeester (Ghent University – imec, Belgium)
Ibrahim Matta (Boston University, USA)
Violet Syrotiuk (Arizona State University, USA) (Chair)
Kaiqi Xiong (University of South Florida, USA)



09:00-09:15 Opening Session

Welcome from the TCP Co-Chairs

Michael Zink (University of Massachusetts Amherst, USA), Yanyong Zhang (University of Science and Technology of China, P.R. China)

09:15-10:15 Keynote

FABRIC: Enabling Your Impossible Networking Experiments

Paul Ruth, Renaissance Computing Institute (RENCI)

10:30-12:00 Session I: Wireless Networks

10:30-11:00 Wi-Fi over VLC using COTS Devices

Piotr Gawlowicz (Technische Universität Berlin, Germany); Elnaz Alizadeh Jarchlo (TU Berlin & OSRAM, Germany); Anatolij Zubow (Technische Universität Berlin, Germany)

11:00-11:30 Adaptive CNN-based Private LTE Solution for Fair Coexistence with Wi-Fi in Unlicensed Spectrum

Merkebu Girmay (Ghent University - imec, Belgium); Vasilis Maglogiannis (Ghent University - imec, Belgium); Dries Naudts (Ghent University - imec, Belgium); Jaron Fontaine (Ghent University - imec, Belgium); Adnan Shahid (Ghent University - imec, Belgium); Eli De Poorter (Ghent University - imec, Belgium); Ingrid Moerman (Ghent University - imec, Belgium)

11:30-12:00 An Experimental Evaluation of Low Latency Congestion Control for mmWave Links

Ashutosh Srivastava (New York University, USA); Fraida Fund (New York University and Tandon School of Engineering, USA); Shivendra Panwar (New York University and Tandon School of Engineering, USA)

12:00-13:00 Panel on Reproducibility

Panelists TBA

13:00-14:30 Lunch

14:30-16:30: Session II: Wired Networks

14:30-15:00 Improving BGP Convergence with Fed4FIRE+ Experiments

Mattia Milani and Marco Nesler (University of Trento, Italy); Michele Segata (University of Bolzano, Italy); Luca Baldesi (University of Trento, Italy); Leonardo Maccari (University of Venice, Italy); Renato Lo Cigno (University of Brescia, Italy)

15:00-15:30 Logical Peering for Interdomain Networking on Testbeds

Yuanjun Yao and Qiang Cao (Duke University, USA); Paul Ruth (RENCI, USA); Mert Cevik and Cong Wang (RENCI - UNC Chapel Hill, USA); Jeff Chase (Duke University, USA)

15:30-16:00 Implementing SFA Support on an Established HPC-Flavored Testbed: Lessons Learned

Luke Bertot (INRIA - Nancy, France); Lucas Nussbaum (Université de Lorraine, France); David Margery (INRIA, France)

16:00-16:30 An Experimental Study on Microservices based Edge Computing Platforms

Qian Qu, Ronghua Xu, Seyed Nikouei and Yu Chen (Binghamton University, USA)

16:30-17:45 Demo Session

16:30-16:45 Benchmarking Live Migration Performance of Two Trendy Virtualization Technologies

Roberto Torre and Robert-Steve Schmolli (Technische Universität Dresden, Germany); Florian Kemser (Tu Dresden, Germany); Hani Salah (TU Dresden, Germany); Ievgenii Anatolijovuch Tsokalo (Technische Universität Dresden, Germany); Frank H.P. Fitzek (Technische Universität Dresden, Germany)

16:45-17:00 Real Time Adaptive Networking using Programmable 100Gbps NIC on Data Transfer Nodes

Gauravdeep Shami (Ciena Corporation, Canada); Marc Lyonnais (Network Architecture/ External Research, Canada); Rodney Wilson (Research Networks, Canada)

17:00-17:15 Wi-Fi over VLC using COTS Devices

Piotr Gawlowicz (Technische Universität Berlin, Germany); Elnaz Alizadeh Jarchlo (Technische Universität Berlin, Germany); Anatolij Zubow (Technische Universität Berlin, Germany)

17:15-17:30 Implementing SFA Support on an Established HPC-Tainted Testbed: Lessons Learned

Luke Bertot (INRIA - Nancy, France); Lucas Nussbaum (Université de Lorraine, France); David Margery (INRIA, France)

17:30-17:45 GENIX: A GENI-based IXP Emulation

Shahzeb Mustafa, Prasun K Dey and Murat Yuksel (University of Central Florida, USA)

17:45-18:00 Reproducibility Award and Closing

WORKSHOP

The First International Workshop on Networking Algorithms (WNA 2020)
6 July 2020, Toronto, Canada • 9:00 – 12:00 EST

Network traffic becomes extremely fast in recent years. How to efficiently forward and measure network traffic is a challenging issue. Networking algorithms are exciting research fields, and have recently drawn much attention from computer networks, and can be easily applied to many other fields, such as data mining, stream databases, as well as social sciences and other disciplines. Networking algorithms also attract increasing attention from researchers to study rich data-related and data-driven problems. Thus, WNA 2020 aims to provide a forum for both industry and academia to exchange ideas about algorithm design, layout and applications in the context of heavy network traffic.

Today's networking algorithms still need to overcome many challenges in the face of variable network traffic. Improvement of performance, throughput, scalability and response time demand more exploration in algorithms, in terms of sketching, flow scheduling, load balancing, caching and so on, which WNA 2020 encompasses.

Steering Committee:

Jennifer Rexford (Princeton University, USA)
Minlan Yu (Harvard University, USA)
Shigang Chen (University of Florida, USA)
John Byers (Boston University, USA)
Tilman Wolf (University of Massachusetts Amherst, USA)
Yan Chen (Northwestern University, USA)

Technical Program Committee Chair:

Tong Yang (Peking University, China)

General Chair:

Qun Huang (Institute of Computing Technology, CAS, China)
Gaogang Xie (Institute of Computing Technology, CAS, China)

Publicity Chair:

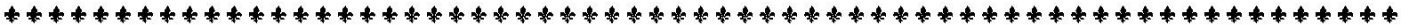
Yi Wang (Southern University of Science and Technology, China)

Publication Chair:

Haipeng Dai (Nanjing University, China)

PC member:

Arvind Krishnamurthy (University of Washington, USA),
Ran Ben Basat (Harvard University, USA)
Ori Rottenstreich (Technion, Israel)
Steve Uhlig (UK & Queen Mary, University of London, UK)
Rui Miao (Alibaba Group, USA)
Zaoxing Liu (Carnegie Mellon University, USA)
Vladimir Braverman
(Johns Hopkins University, USA)
Xin Jin (Johns Hopkins University, USA)
Patrick P. C. Lee (The Chinese University of Hong Kong, China)
Yi Wang (Southern University of Science and Technology, China)
Haipeng Dai (Nanjing University, China)
Muhammad Shahzard (North Carolina State University, USA)
Qun Huang (Institute of Computing Technology, CAS, China)
Yi Wang (Southern University of Science and Technology, China)
Bin Liu (Tsinghua University, China)
Dan Li (Tsinghua University, China)
Alex X. Liu (Ant Financial Services Group, China)
Kun Huang (Southern University of Science and Technology, China)



9:00-9:05 EST: Opening Session

9:05-10:20 EST: Session 1: Traffic Optimization Algorithms

9:05-9:20 Dual Channel Per-packet Load Balancing for Datacenters

Cong Xu (HUAWEI Technologies Co., Ltd, China)
Tingqiu Yuan (HUAWEI Technologies Co., Ltd, China)
Haibo Zhang (HUAWEI Technologies Co., Ltd, China)
Tao Huang (HUAWEI Technologies Co., Ltd, China)
Feilong Tang (Shanghai Jiao Tong University, China)

9:20-9:40 Predicting Traffic Demand Matrix by Considering Inter-flow Correlation

Kaihui Gao (Tsinghua University, China); Dan Li (Tsinghua University, China)
Li Chen (Huawei, Hong Kong)
Jinkun Geng (Tsinghua University, China)
Fei Gui (University of XiangTan, China)
Yang Cheng (Tsinghua University, China)
Yue Gu (Tsinghua University, China)

9:40-10:00 MFBBR : An Optimized Fairness-aware TCP-BBR Algorithm in Wired-cum-wireless Network

Minghan Jia (Dalian University of Technology, China)
Weifeng Sun (Dalian University of Technology, China)
Zun Wang (Dalian University of Technology, China)
Yaohua Yan (Dalian University of Technology, China)
Hongyu Qin (Dalian University of Technology, China)
Kelong Meng (Dalian University of Technology, China)

10:20-10:40 EST: Coffee Break. Demo and Banner Show

10:40-12:00 EST: Session 2: Traffic Engineering and Machine Learning

10:40-11:00 App-Net: A Hybrid Neural Network for Encrypted Mobile Traffic Classification

Xin Wang (National University of Defense Technology, China)
Shuhui Chen (National University of Defense Technology, China)
Jinshu Su (National University of Defence Technology, China)

11:00-11:20 Automated Traffic Engineering in SDWAN: Beyond Reinforcement Learning

Libin Liu (Tencent and City University of Hong Kong)
Li Chen (Huawei, Hong Kong)
Hong Xu (City University of Hong Kong, Hong Kong)
Hua Shao (Tsinghua University, China)

11:20-11:40 FastScale: Fast Scaling Out of Network Functions

Xiang Chen (Peking University, and Fuzhou University, China)
Yuxin Chen (Fuzhou University, China)
Qun Huang (Peking University, China)
Haifeng Zhou (Zhejiang Lab, and Zhejiang University)
Dong Zhang (Fuzhou University, China)
Chunming Wu (Zhejiang Lab, and Zhejiang University)
Junchi Xing (Zhejiang University, China)

11:40-12:00 Prediction of Twitter Traffic Based on Machine Learning and Data Analytics

Fuyou Li (University of Sheffield, United Kingdom (Great Britain));
Zitian Zhang (East China University of Science and Technology, China);
Yunpeng Zhu (University of Sheffield, United Kingdom (Great Britain));
Jie Zhang (University of Sheffield, Dept. of Electronic and Electrical Engineering, United Kingdom (Great Britain))

WORKSHOP

The 4th International Workshop on Wireless Communications and Networking in Extreme Environments (WCNEE 2020)
Monday, 6 July, 2020 • 14:30 – 19:00

Wireless communications and networking in extreme environments such as underwater, underground, intra-body, in flight and in space has been attracting growing interest from both academia and industry. Novel wireless communication architectures and networking protocols for GPS-denied and communication-constrained environments enable a rich body of applications with unprecedented societal impact. The workshop will focus on communication, networking, and system-level developments related to extreme environments, as well as on contributions towards the characterization and modeling of the different mediums based on real-world data measurements.

The goal of the workshop is to unveil the latest wireless technology developments, from the physical layer all the way to the application layer in realizing underwater, underground, intra-body, airborne and space communication networks with a focus on bridging the gaps between theory, algorithms, and practical system implementations. The workshop will bring together wireless communication and networking researchers from academia and industry to identify and discuss technical challenges and recent results related to extreme environments.

Steering Committee:

Stella N. Batalama (Florida Atlantic University, USA)
Tommaso Melodia (Northeastern University, USA)
Dimitris A. Pados (Florida Atlantic University, USA)

Technical Program Committee Co-Chairs:

Zhangyu Guan (SUNY at Buffalo, USA)
Ming Li (Dalian University of Technology, China)

General Co-Chairs:

George Sklivanitis (Florida Atlantic University, USA)
Emrecan Demirors (Northeastern University, USA)
Panos P. Markopoulos (Rochester Institute of Technology, USA)
G. Enrico Santagati (Bose Corporation, USA)



14:30 – 14:35 Opening Session

Chairs: George Sklivanitis, Zhangyu Guan and Emrecan Demirors

14:35 – 15:35 Keynote Session

Optimizing the Network Edge for Flexible Service Provisioning
Leandros Tassioulas (Yale University)

15:35 – 16:00 Session 1: Secure and Reliable Communications in Smart Grid, Deep Space, Underwater and Wireless UAV Networks

Integrated Defense Mechanism Based on Attack Goals against Three Attack Strategies in Smart Grid

Wenjie Kang (National University of Defense Technology, China),
Peidong Zhu (Changsha University, China), Xucun Liu (Hunan Police Academy, China)

16:00 – 16:30 Coffee Break

16:30 – 17:45 Session 1: Secure and Reliable Communications in Smart Grid, Deep Space, Underwater and Wireless UAV Networks

Underwater Jamming Attacks as Incomplete Information Games

Federico Chiariotti, Alberto Signori, Filippo Campagnaro, Michele Zorzi (University of Padova, Italy)

LeTera: Stochastic Beam Control Through ESN Learning in Terahertz-Band Wireless UAV Networks

Sabarish Krishna Moorthy, Zhangyu Guan (SUNY at Buffalo, USA)

Raptor-like Rateless Spinal Codes using Outer Systematic Polar Codes for Reliable Deep Space Communications

Hao Liang, Aijun Liu, Xinhai Tong, Chao Gong (Army Engineering University of PLA, China)

17:45 – 19:00 Session 2: Wireless Communication and Localization Protocols for Underground Sensing, Autonomous Vehicles and In-Vivo NanoSensor Networks

RSSI or LQI: Insights from Real-Time Deployments for Underground Sensing and Applications

Alok Ranjan (Virginia Commonwealth University, USA), H. B. Sahu (National Institute of Technology Rourkela, India), Prasant Mitra (TATA Consultancy Services Ltd., India), Yanxiao Zhao (Virginia Commonwealth University, USA), Hui Sun (Civil Aviation University of China, China)

RFID-based Vehicle Localization Scheme in GPS-Less Environments

Rui Chen, Xiyuan Huang, Wei Liu, Yan Zhou (Xidian University, China)

A TDMA Protocol Based on Data Priority for In-Vivo Wireless NanoSensor Networks

Juan Xu, Yan Zhang, Yakun Zhao, Jiali Kan, Lin Lin (Tongji University, China)

19:00 Closing Session

WORKSHOP

The Third IEEE International Workshop on Intelligent Wireless Emergency Communications Networks: Theory and Applications (IWECON 2020)

Monday, 6 July, 2020 • 9:00 – 12:30

The emerging fifth-generation (5G) wireless networks aim at ensuring that various contemporary wireless applications can be timely and satisfactorily served in any time, any place, and any way. Nowadays, the 5G mobile wireless communications and networks are rapidly developing and are expected to be extensively deployed after 2020. However, even with well-developed infrastructure, there still has a long way for wireless networks to achieve the goal of communicating in any time and any place. For example, after some unforeseen disaster, such as earthquakes or floods, the traditional communication infrastructure may be unavailable or seriously disrupted and overloaded. Under such circumstances, rapidly deployable network solutions are needed to restore connectivity and provide assistance to users and first responders in accident/incident areas.

Having noticed the importance of communications at post-disaster or extremely dangerous scenarios, many countries have started their research plans/projects on emergency communications, which involve a number of specified wireless networks, such as satellite-based space information networks, post-earthquake networks, and unmanned aerial vehicle (UVA) assisted networks. Based on these corresponding projects, a number of academic and industrial researchers are making great efforts on developing efficient architectures/schemes as well as implementing them in various emergency communications scenarios. This workshop is expected to attract a number of high quality papers containing the latest going results. On the other hand, the latest projects results will attract many related researchers to attend the workshop for further discussion.

Workshop Chairs:

Wenchi Cheng (Xidian University, China)
Huiling Zhu (Kent University, UK)

Publicity Chair:

Yixin Zhang (Xidian University, China)



9:00 – 9:05: Opening Session - Message From Chairs

9:05 – 10:40: Session 1: Network Planning

A Dynamic Resource Allocation Scheme in Vehicular Communications

Akinsola S Akinsanya (University of Kent, UK)
Manish Nairn (University of Kent, UK)
Yijin Pan (Southeast University, China & University of Kent, UK)
Jiangzhou Wang (University of Kent, UK)

Resource Allocation in Drone-Assisted Emergency Communication System

Tianqi Chen (University of Kent, UK)
Jian He (Shanghai Aerospace Electronic Technology Institute & Key Laboratory of Intelligent Computing Technology (SAST), China)
Huiling Zhu (University of Kent, UK)
Lin Cai (Xidian University, China)
Peng Yuen (Xidian University, China)
Jiangzhou Wang (University of Kent, UK)

Intelligent UAV Based Flexible 5G Emergency Networks: Field Trial and System Level Results

Gao Yuan (Tsinghua University, China)
Jiang Cao (Academy of Military Science of PLA, China)
Ping Wang (Tsinghua University, China)
Junsong Yin (Academy of Military Science of PLA, China)
Ming He (CMCC, China)
Ming Zhao (Tsinghua University, China)
Mugen Peng (Beijing University of posts & Telecommunications, China)
Su Hu (University of Electronic Science and Technology of China, China)
Yunchuan Sun (Beijing Normal University, China)
Jing Wang (Academy of Military Science of PLA, China)
Shaochi Cheng (CDSTIC, China)
Yang Guo (CDSTIC, China)
Yanchang Du (CDSTIC, China)
Yanxi Cai (Academy of Military Science of PLA, China)
Jinhui Huang (Academy of Military Science of PLA, China)
Kai Qiu (Academy of Military Science of PLA, China)

An Integrated Platoon and UAV System for 3D Localization in Search and Rescue

Hongming Zhang (Beijing University of Posts and Telecommunications, China)
Li Wang (Beijing University of Posts and Telecommunications, China)
Aiguo Fei (Beijing University of Posts and Telecommunications, China)

Latency and Reliability Oriented Collaborative Optimization for Multi-UAV Aided Mobile Edge Computing System

Xiangwang Hou (Xidian University, China)
Zhiyuan Ren (Xidian University, China)
Jingjing Wang (Tsinghua University, China)
Shuya Zheng (Xidian University, China)
Hailin Zhang (Xidian University, China)

10:40 – 11:10: Coffee Break

11:10 – 12:30: Session 2: Network Reliability

Statistical QoS Provisioning Based Caching Placement for D2D Communications Based Emergency Networks

Jianyu Wang (Xidian University, China)
Wenchi Cheng (Xidian University, China)
Hailin Zhang (Xidian University, China)

Green Cognitive Internet of Things with Self Supply of Energy and Spectrum in Emergency Communications

Xin Liu (Dalian University of Technology, China)
Xueyan Zhang (Dalian University of Technology, China)

RAT-NHP: Radio Access Technology Selection Based on N-hop Prediction

Weifeng Sun (Dalian University of Technology, China)
Guanghao Zhang (Dalian University of Technology, China)
Yuankui Zhang (Dalian University of Technology, China)

Security Enhancement and Evaluation for Noise Aggregation over Wireless Fading Channels

Yu Liu (Xi'an Jiaotong University, China)
Qinghe Du (Xi'an Jiaotong University, China)

WORKSHOP

The 12th International Workshop on Hot Topics in Pervasive Mobile and Online Social Networking (HotPOST 2020)
Monday, 6 July 2020 • 14:30 – 18:00

Mobile social networking services and applications have become unprecedentedly pervasive, covering messaging, gaming, advertising, recommending, commercing, and content sharing. Recent technology advances such as edge computing, Internet of Things (IoT), augmented/virtual reality (AR/VR), and wearables are bringing new challenges and opportunities for mobile computing/communication, and also for provisioning online social networks and related services on mobile devices. For example, AR/VR has the potential to enrich online social network user experiences (e.g., Facebook Spaces), but enabling such enriched experiences anywhere and anytime requires computing and communication resources in closer proximity to mobile users, via emerging technologies such as edge computing. The goal of the Hot Topics in Pervasive mObile Social neTworking (HotPOST) workshop is to bring together researchers, engineers, and practitioners who work on mobile computing, online social networks, and the intersection of both, to identify new problems and discuss latest research ideas and results, especially those related to novel and emerging technologies.

HotPOST focuses on all aspects about mobile and online social networking, including architecture, service, design, implementation, measurement, modeling, algorithm, and analysis. The topics of HotPOST 2019 will include but are not be limited to the following: (1) mobile-centric and/or location-based social network services; (2) reputation, incentives, economics, and user behavior in mobile systems; (3) IoT, AR/VR, wearables, crowdsourcing, and/or their support for social networking services; (4) Mobile Edge Computing (MEC), Software-Defined Network (SDN), Network Function Virtualization (NFV), and/or their support for social networks; (5) security and privacy in mobile systems and social networks.

Steering committee members:

Lei Jiao (University of Oregon, USA)
Pan Hui (HKUST, Hong Kong)
Petteri Nurmi (University of Helsinki, Finland)
Max Mühlhäuser (TU Darmstadt, Germany)
Jörg Ott (TU Munich, Germany)
Alessandra Sala (Nokia Bell Labs, Ireland)

Publicity Co- chair:

Mohan Liyanage (University of Tartu, Estonia)

TPC Co-chairs:

Huber Flores (University of Tartu, Estonia)
Shaolei Ren (University of California, Riverside, USA)



14:30 – 14:35: Opening Session - Message From Chairs

14:35 – 15:35: Keynote Session 1

16:00-17:00: Session 1: Pervasive Applications

Exploring Approaches to the Management of Physical, Virtual, and Social Sensors

Ngombo Armando (University of Coimbra, Portugal & Escola Superior Politécnica do Uíge, Angola)
José Marcelo Silva Lopes Fernandes (University of Coimbra, Portugal)
André Rodrigues (Centre of Informatics and Systems of the University of Coimbra & Polytechnic Institute of Coimbra, ISCAC, Portugal)
Jorge Sá Silva (University of Coimbra, Portugal)
Fernando Boavida (University of Coimbra, Portugal)

Migrating to SDN for mobile core networks: A dynamic and global perspective

Xiaole Li (Beijing Jiaotong University, China)
Hongyun Zheng (Beijing Jiaotong University, China)
Yuchun Guo (Beijing Jiaotong University, China)

Point-of-Interest Recommendation based on Geographical Influence and Extended Pairwise Ranking

Chang Su (Chongqing University of Posts and Telecommunications, China)
Jin Wang (Chongqing University of Posts and Telecommunications, China)
Xie Xian-Zhong (Chongqing University of Posts and Telecommunications, China)

17:00-18:00: Session 2: Social Systems

Characterizing Social Marketing Behavior of E-commerce Celebrities and Predicting Their Value

Xiang Li (Beijing Jiaotong University, China)
Yuchun Guo (Beijing Jiaotong University, China)
Ye Sheng (Beijing Jiaotong University, China)
Yishuai Chen (Beijing Jiaotong University, China)

The German-Speaking Twitter Community Reference Data Set

Johannes Pflugmacher (TU Dresden, Germany)
Stephan Escher (TU Dresden, Germany)
Jan Ludwig Reubold (Karlsruhe Institute of Technology, Germany)
Thorsten Strufe (Karlsruhe Institute of Technology & Centre for Tactile Internet (CeTI)/TU Dresden, Germany)



WORKSHOP

The Workshop on New IP: The Next Step on IEEE INFOCOM 2020
6 July 2020, Toronto, Canada • 9:00 – 13:00

For the past 40 years, TCP/IP and related technologies have been developing at unprecedented pace and became core technologies in today's worldwide network systems. Their excellent scalability and universality make them widely deployed and this trend is most likely to continue for several decades to come. The success of IP networks has attracted significant attentions from all walks of life with various new industry verticals riding the big wave of ALL-IP; the IoT and industrial internet being good examples. Moreover, networkization of traditional industries, or say "Internet+", is already offering more benefits in diverse areas such as remote education and telemedicine. Network technologies have become, and no doubt will remain, part of the fundamental infrastructures of human society, but with a number of limitations and potential drawbacks for supporting future applications.

The future network is envisioned to be an intelligent "society" with ubiquitous connections for all entities, living and otherwise, physically and virtually, under the trend of cyber-physical fusion. It is expected to support numerous novel applications that cannot be fully realized with current technologies, such as naked-eye 3D experience via holographic type communications; immersive media with haptic sensation; extremely low-latency communication/response in critical situations; and high-precision communications demanded in emerging verticals. Moreover, the networking capabilities are foreseen to be converged, more deeply, so as to construct a global network, with integrated terrestrial, spatial and maritime connectivity, thus leading to a substantially more complex ecosystem.

This workshop presents state-of-the-art research in New IP innovation, addressing the challenges and opportunities outlined above. Both theoretical and system papers will be considered, to present novel contributions in the field of QoS, new routing and addressing, industry and IoT networking, new technologies-assisted network innovation and open issues related to the novel application of future network into communications and networking problems; the aim is to report, explore and share new ideas and techniques.

General Chairs:

Shen Yan (Huawei Technologies Co., Ltd, China)
Sherman Shen (Waterloo University, Canada)
Izzat Darwazeh (University College London, UK)

TPC Co-Chairs:

Xiaoming Fu (University of Gottingen)
Mohamed Faten Zhani (ETS)
Zongpeng Li (Wuhan University)

Technical Program Committee:

Gianni Antichi, Queen Mary University of London
Osamah Lutf Hamood Barakat, Siemens AG
Albert Cabellos-Aparicio, Universitat Politècnica de Catalunya
Lin Cai, University of Victoria
Zhe Chen, Huawei Technologies Co., Ltd
Stuart Clayman, University College London
Qiaobin Fu, Boston University
Yashar Ganjali, University of Toronto

Roch Glitho, Concordia University
Xiaolong Lan, Southwest Jiaotong University
Jorg Liebeherr, University of Toronto
Bingyang Liu, Huawei Technologies Co., Ltd
Yong Liu, New York University
John Chi Shing Lui, Chinese University of Hong Kong
Hanan Lutfiyya, The University of Western Ontario
Maode Ma, Nanyang Technological University
Daniel Merling, University of Tuebingen
Jianping Pan, University of Victoria
Miguel Rio, University College London
Maria Torres Vega, Ghent University
César Viho, IRISA / INRIA Rennes
Ning Wang, University of Surrey
Tim Wauters, Ghent University - imec
Yali Yuan, University of Goettingen
Kaiwen Zhang, École de Technologie Supérieure
Lei Zhao, University of Victoria
Ruiting Zhou, Wuhan University

9:00-9:10: Opening Session

9:10-9:50: Keynote Speech. FlexNGIA – Towards the fully-flexible Internet, Prof. Mohamed Faten.Zhani (École de technologie supérieure, Canada)

9:50-10:50: Session_1: The X-D-N for New Protocol

A Framework for Bandwidth and Latency Guaranteed Service in New IP Network

Lin Han (Futurewei Technologies Inc., USA); Yingzhen Qu (Futurewei, USA); Lijun Dong and Richard Li (Futurewei Technologies, USA)

P4NIS: a P4-based network immune system against eavesdropping attacks

Gang Liu and Wei Quan (Beijing Jiaotong University, China); Nan Cheng (University of Waterloo, Canada); Ning Lu (Queen's University, Canada); Hongke Zhang (Beijing Jiaotong University, China); Sherman Shen (University of Waterloo, Canada)

Adaptive Video Streaming Using Dynamic NDN Multicast in WLAN

Fan Wu, Wang Yang, Ju Ren, Feng Lyu, Xiaojie Ding and Yaoyue Zhang (Central South University, China)

11:00-12:30: Session_2: The New IP Capabilities and Protocol Design

A Flexible Hierarchical Network Architecture with Variable-Length IP Address

Jifan Tang and Wanli Zhang (Beijing University of Posts and Telecommunications, China); Gong Xiangyang (Beijing University of Posts and Telecommunications P.R. China, China); Guangpeng Li (Huawei Technologies Ltd., China); Delei Yu (Huawei Technologies, China); Ye Tian, Bowen Liu and Lei Zhao (Beijing University of Posts and Telecommunications, China)

A New Approach to a Service Oriented Internet Protocol

Sheng Jiang and Guangpeng Li (Huawei Technologies Ltd., China); Brian E Carpenter (The University of Auckland, New Zealand)

UCIP: User Controlled Internet Protocol

Morteza Kheirkhah Sabetghadam and Truong Khoa Phan (University College London, United Kingdom (Great Britain)); XinPeng Wei (Huawei Technologies, China); David Griffin and Miguel Rio (University College London, United Kingdom (Great Britain))

A Data Forwarding Mechanism based on Deep Reinforcement Learning for Deterministic Networks

Yuhong Li (Beijing University of Posts and Telecommunications, China); Peng Zhang, Yingchao Zhou and Di Jin (BUPT, China)

InBlock4: Blockchain-based Route Origin Validation

Stefano Angieri (Universidad Carlos III de Madrid, Spain); Marcelo Bagnulo (University Carlos III of Madrid, Spain); Alberto García-Martínez (Universidad Carlos III de Madrid, Spain); Bingyang Liu (Huawei, China); XinPeng Wei (Huawei Technologies, China)

WORKSHOP

The 3rd International Workshop on Network Intelligence (NI 2020): Learning and Optimizing Future Networks

Monday, 6 July, 2020 ● 14:30 - 18:45

Network Intelligence considers the embedding of Artificial Intelligence (AI) in future networks to fasten service delivery and operations, leverage Quality of Experience (QoE) and guarantee service availability, also allowing better agility, resiliency, faster customization and security. This concept inherits the solid background of autonomic networking, cognitive management, and artificial intelligence. It is envisioned as mandatory to manage, pilot and operate the forthcoming network built upon SDN, NFV and cloud.

The main goal of the Network Intelligence Workshop is to present state-of-the-art research results and experience reports in the area of network intelligence, addressing topics such as artificial intelligence techniques and models for network and service management; smart service orchestration and delivery, dynamic Service Function Chaining, Intent and policy based management, centralized vs distributed control of SDN/NFV based networks, analytics and big data approaches, knowledge creation and decision making. This workshop offers a timely venue for researchers and industry partners to present and discuss their latest results in Network Intelligence. The main topic of this NI 2020 edition is “Learning and Optimizing Future Networks” which puts the attention on the particular application of network intelligence and machine learning to optimization in future network scenarios.

This workshop is supported by the IEEE ComSoc Emerging Technical Initiative on Network Intelligence. Join us at the ETI NI as a member for cross-fertilization on Network Intelligence research activities. All information is available at <http://ni.committees.comsoc.org/>.

Workshop General Co-Chairs:

Laura Galluccio, University of Catania, Italy
Imen Grida Ben Yahia, Orange Labs, France
Zongqing Lu, Peking University, China
Giovanni Schembra, University of Catania, Italy

Marco Fiore, National Research Council of Italy, Italy
Jérôme François, INRIA Nancy Grand Est, France
Guillaume Fraysse, Sorbonne Université, France
István Gódor, Ericsson Research, Hungary
Javier Gonzalez, Universidad Miguel Hernandez de Elche, Spain
Marco Gramaglia, Universidad Carlos III de Madrid, Spain
Fabrice Guillemin, Orange Labs, France
Bo Han, AT&T Labs Research, USA
Akira Hirano, NTT, Japan
Pan Hui, Hong Kong University of Science and Technology, Hong Kong
Slawomir Kuklinski, Orange Polska, Poland
Ht Kung, Harvard University, USA
Minwoo Lee, UNC Charlotte, USA
Jeremie Leguay, Huawei Technologies, France Research Center, France
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Pascal Lorenz, University of Haute Alsace, France
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Lorenzo Maggi, Nokia Bell Labs, France
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Guido Maier, Politecnico di Milano, Italy
Pedro Martinez-Julia, National Institute of Information and Communications Technology, Japan
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Federica Paganelli, University of Pisa, Italy
Dimitri Papadimitriou, University of Antwerp – imec, Belgium
Pinyarash Pinyoanunpong, UNC Charlotte, USA
Roberto Riggio, Fondazione Bruno Kessler, Italy
Stephane Senecal, Orange/Orange Labs, France
Michael Seufert, University of Würzburg, Germany
Kohei Shiimoto, Tokyo City University, Japan
Kostas Tsagkaris, Incelligent, Greece
Pu Wang, University of North Carolina at Charlotte, USA
Lan Zhang, University of Science and Technology of China, China
Yuanqing Zheng, The Hong Kong Polytechnic University, Hong Kong

Steering Committee:

Imen Grida Ben Yahia, Orange Labs, France
Mohamed Faten Zhani, ÉTS Montreal, Canada
Noura Limam, University of Waterloo, Canada
Weverton Cordeiro, UFRGS, Brazil
Laurent Ciavaglia, Nokia Bell Labs, France
Giovanni Schembra, University of Catania, Italy
Laura Galluccio, University of Catania, Italy
Mérouane Debbah, CentraleSupélec, France

TPC Members:

Armen Aghasaryan, NOKIA Bell Labs, France
Adnan Aijaz, Toshiba Research Europe Ltd, UK
Hirochika Asai, Preferred Networks, Inc., Japan
Albert Banchs, Universidad Carlos III de Madrid, Spain
Kashinath Basu, Oxford Brookes University, UK
Dario Bega, IMDEA Networks, Spain
Sana Ben Jemaa, Orange Labs, France
Emmanuel Bertin, Orange Labs, France
Roberto Bifulco, NEC Laboratories Europe, Germany
Makram Bouzid, NOKIA Bell Labs, France
Carla Fabiana Chiasserini, Politecnico di Torino, Italy
Stuart Clayman, University College London (UCL), UK
Salvatore D'Oro, Northeastern University, USA
Panagiotis Demestichas, University of Piraeus, Greece
Vincenzo Eramo, University of Rome "La Sapienza", Italy
Flavio Esposito, Saint Louis University, USA
Christian Esteve Rothenberg, University of Campinas – UNICAMP, Brazil



14:30 – 14:45: Opening Session

14:45 – 16:00: Session 1: Networking Aspects

Towards In-Band Telemetry for Self Driving Wireless Networks
Prabhu Janakaraj; Pinyarash Pinyoanunpong; Pu Wang; Minwoo Lee (University of North Carolina, Charlotte, USA)

End-to-end Delay Prediction Based on Traffic Matrix Sampling
Filip Krasniqi (Politecnico di Milano, Italy); Jocelyne Elias (Paris Descartes University & Sorbonne Paris Cité, France); Jeremie Leguay (Huawei technologies, France); Alessandro E. C. Redondi (Politecnico di Milano, Italy)

A Novel Methodology for the Automated Detection and Classification of Networking Anomalies
Mohamed Moulay (IMDEA Networks, Spain); Rafael Garcia (IMDEA Networks, Spain); Pablo Rojo (Nokia, Spain); Javier Lazaro (Nokia, Spain); Vincenzo Mancuso (IMDEA Networks, Spain); Antonio Fernández Anta (IMDEA Networks, Spain)

WiNetSense: Sensing and Analysis Model for Large-scale Wireless Networks
Nikita Trivedi; Bighnaraj Panigrahi; Hemant Kumar Rath (Tata Consultancy Services, Pvt Ltd., India)

16:00 - 16:30: Coffee Break

16:30 - 17:30: Keynote: “Reinforcement Learning for Telecommunication Network: from Opportunistic Spectrum Access to IoTs”, Raphaël Féraud (Orange Labs)

17:30 – 18:30: Session 2: Resource management Aspects

Large-Scale and Rapid Flow Size Estimation for Improving Flow Scheduling
Su Wang; Shuo Wang; Dong Zhou; Yiran Yang; Wenjie Zhang; Tao Huang; Ru Huo; Yunjie Liu (Beijing University of Posts and Telecommunications, China)

Glide and Zap Q-Learning
Xiaofan He (Wuhan University, China); Richeng Jin (North Carolina State University, USA); Huaiyu Dai (North Carolina State University, USA)

When Less is More: Core-Restricted Container Provisioning for Serverless Computing
Gaetano Somma (Università di Napoli, Federico II, Italy); Constantine Ayimba (IMDEA Networks, Spain); Paolo Casari (University of Trento, Italy); Simon Pietro Romano (Università di Napoli, Federico II, Italy); Vincenzo Mancuso (IMDEA Networks, Spain)

Removing human players from the loop: AI-assisted assessment of Gaming QoE
German Sviridov (Politecnico di Torino, Italy); Cedric Beliard (Huawei Technologies, France); Andrea Bianco (Politecnico di Torino, Italy); Paolo Giaccone (Politecnico di Torino, Italy); Dario Rossi (Telecom ParisTech, France)

18:30 - 18:45 Closing Remarks

