

MSN 2017

13th INTERNATIONAL CONFERENCE ON

**MOBILE AD-HOC AND
SENSOR NETWORKS**

December 17-20, 2017

Beijing, P. R. China

Beijing Institute of Technology

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General Arrangements

<u>December 17, 2017</u>	Registration
<u>December 18, 2017</u>	8:40-9:00 Opening Ceremony
	9:00-9:50: Keynote 1: Energy Efficiency in Wireless Sensor Networks for Engineering Applications. Speaker: Prof. Jiannong Cao, Hong Kong Polytechnic University, China
	9:50-10:10 Official Group Photos and Coffee Break
	10:10-11:00: Keynote 2: Scalable Privacy-Preserving Participant Selection in Mobile Crowd Sensing over the Edge. Speaker: Prof. Yu Wang, University of North Carolina at Charlotte, USA
	11:00-11:50: Keynote 3: Mobile Edge Computing for Internet of Things. Speaker: Prof. Yan Zhang, University of Oslo, Norway
	11:50-14:00 Lunch time
	14:00-15:15 Session 1 Conference Room 1 Novel Applications and Architecture
	15:15-17:00 Session 2 Conference Room 1 Mobile Networks and Social Networks
	14:00-15:30 Session 3 Conference Room 2 Cyber Physical Systems and Internet of Things
	15:30-16:45 Session 4 Conference Room 2 New Technologies and Applications
<u>December 19, 2017</u>	17:00-19:30 Banquet
	9:00-10:45 Session 5 Conference Room 1 Vehicular Ad-hoc Networks (VANETs)
	9:00-11:00 Session 6 Conference Room 2 Security and Privacy
	11:00-14:00 Lunch time
	14:00-15:00 Session 7 Conference Room 1 Novel Models and Performance Analysis
15:00-16:00 Session 8 Conference Room 1 Multi-hop Wireless Networks and WMNs	

Welcome message from the General Chairs

We are delighted to welcome you to the 13th International Conference on Mobile Ad-hoc and Sensor Networks (MSN 2017) in Beijing, China from 17-20th December 2017. We are pleased to have this great opportunity of hosting MSN in Beijing this year. Thanks to the excellent reputation established by the past versions of conference, we received a large number of quality research submissions this year.

The recent proliferation of sensors and embedded computing devices into daily lives, has given rise to Sensor Networks. Accordingly, Mobile Ad-hoc and Sensor Networks have garnered significant attention in recent years. We hope the program of MSN 2017 will provide an opportunity for lively discussions on these topics among participating researchers.

The conference program proudly presents an impressive set of high quality technical papers. MSN 2017 also covers state of the art contributions from Keynote speakers Jiannong Cao, Yan Zhang, and Yu Wang, who have made significant contributions to wireless networking. We hope that you will find the presentations useful to your own research and lead to further innovations in this field.

The success of this conference required significant effort and dedication on the part of many people. We take this opportunity, to express sincere appreciations to the authors for their valuable works. We are indebted to the TPC Chairs Prof. Liehuang Zhu, Prof. Sheng Zhong, TPC members, and reviewers for maintaining the quality of the technical program. We would also like to thank the keynote speakers and panelists for contributing their time, knowledge, and wisdom.

Finally, but not the least, we hope that you will not only enjoy the technical program during this prestigious conference, but also discover unique cultural flavors of Beijing, China to make your stay unforgettable.

Wishing you a fruitful and enjoyable MSN 2017!

**PROF. Jiannong Cao****(Hong Kong Polytechnic University, China)****Bio:**

Dr. Cao is currently a Chair Professor of Department of Computing at The Hong Kong Polytechnic University, Hong Kong. He is also the director of the Internet and Mobile Computing Lab in the department and the director of University's Research Facility in Big Data Analytics. His research interests include parallel and distributed computing, wireless sensing and networks, pervasive and mobile computing, and big data and cloud computing. He has co-authored 5 books in Mobile Computing and Wireless Sensor Networks, co-edited 9 books, and published over 500 papers in major international journals and conference proceedings. He served the Chair of the Technical Committee on Distributed Computing of IEEE Computer Society 2012-2014, a member of IEEE Fellows Evaluation Committee of the Computer Society and the Reliability Society, a member of IEEE Computer Society Education Awards Selection Committee, a member of IEEE Communications Society Awards Committee, and a member of Steering Committee of IEEE Transactions on Mobile Computing. Dr. Cao has served as chairs and members of organizing and technical committees of many international conferences, and as associate editor and member of the editorial boards of many international journals. Dr. Cao is a fellow of IEEE and ACM distinguished member. In 2017, he received the CCF overseas outstanding contribution award.

Title:**Energy Efficiency in Wireless Sensor Networks for Engineering Applications****Abstract:**

Wireless sensor networks (WSNs) contain a large collection of autonomous devices that collaborate with each other to achieve the assigned tasks. As a new form of distributed embedded system, WSNs have been applied in various areas including engineering applications such as structural health monitoring, volcanic monitoring and smart grid. In such applications, energy efficiency is regarded as one of the most important bottlenecks. To realize an energy efficient WSN system entail the design considerations from various aspects including data sampling, in-network processing, and energy harvesting. In this talk, I will describe a framework of achieving energy efficiency in WSNs and describe our research on designing energy-efficient WSNs for engineering applications.

**PROF. Yu Wang**

(University of North Carolina at Charlotte, USA)

Bio:

Yu Wang is a Professor of Computer Science at the University of North Carolina at Charlotte (UNC Charlotte), IEEE Fellow. He holds a Ph.D. from Illinois Institute of Technology, an MEng and a BEng from Tsinghua University, all in Computer Science. His research interest includes wireless networks, mobile social networks, mobile smart sensing, and mobile computing. His research has been continuously supported by federal agencies including US National Science Foundation, US Department of Transportation, and National Natural Science Foundation of China (NSFC). He has published over 150 papers in peer reviewed journals and conferences, with four best paper awards. He is a recipient of Ralph E. Powe Junior Faculty Enhancement Awards from Oak Ridge Associated Universities (2006), Outstanding Faculty Research Award from College of Computing and Informatics at UNC Charlotte (2008), and Overseas Young Scholars Cooperation Research Fund from NSFC (2014). He is a fellow of IEEE and a senior member of ACM.

Title:**Scalable Privacy-Preserving Participant Selection in Mobile Crowd Sensing over the Edge****Abstract:**

With the rapid increasing of smart phones and their embedded sensing technologies, mobile crowd sensing (MCS) becomes an emerging sensing paradigm for performing large-scale sensing tasks. Auction based participant selection has been widely used by MCS system to achieve user incentive and task assignment optimization. However, auction-based approaches may lead to participants' privacy concerns because participants' bids may contain their private information (such as location visiting patterns). In this talk, I will present our recent study on how to protect such bid privacy in a temporally and spatially dynamic MCS system. Following the classical VCG auction, we carefully design a scalable grouping based privacy-preserving participant selection scheme, which leverages Lagrange polynomial interpolation to perturb participants' bids within groups. The proposed solution can protect the bid privacy of participants while do not affect the operation of current MCS platform. In addition, we also propose a set of novel privacy-preserving grouping methods, which place participants into small groups over the hierarchical edge clouds and perform secure bidding only within each group. By doing so, the overall privacy-preserving participant selection can be more scalable. Both theoretical analysis and real-life tracing data simulations verify the efficiency and security of the proposed solution.

**PROF. Yan Zhang****(University of Oslo, Norway)****Bio:**

Prof. Yan Zhang is Full Professor at the Department of Informatics, University of Oslo, Norway. He received a PhD degree in School of Electrical & Electronics Engineering, Nanyang Technological University, Singapore.

He serves as an Associate Technical Editor of IEEE Communications Magazine, an Editor of IEEE Network Magazine, an Editor of IEEE Transactions on Green Communications and Networking, an Editor of IEEE Communications Surveys & Tutorials, an Editor of IEEE Internet of Things Journal, an Editor of Vehicular Technology Magazine, and an Associate Editor of IEEE Access. He serves as chair positions in a number of conferences, including IEEE GLOBECOM 2017, IEEE PIMRC 2016, and IEEE SmartGridComm 2015. He is IEEE VTS (Vehicular Technology Society) Distinguished Lecturer. He serves as IEEE TCGCC Vice Chair. He has 10 ESI “Highly Cited Papers”. His current research interests include: next-generation wireless networks leading to 5G, reliable and secure cyber-physical systems (e.g., smart grid, transport, and healthcare).

Title:**Mobile Edge Computing for Internet of Things****Abstract:**

In this talk, we will first present the key concepts and architectures related to mobile edge computing in the era of Internet of Things. Then, we mainly focus on edge computing for 5G, Internet of Vehicles and IoT in general. In such contexts, we will present our recent studies and results related to different computation offloading solutions and resource management schemes.

Organizing Committee Members

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Heyan Huang

Beijing Institute of Technology

Pengjun Wan

Illinois Institute of Technology

Kui Ren

Zhejiang University

TPC Co-Chairs

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Nanjing University

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Local Arrangements Chairs

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Technical Program Committee Members

Name	Affiliation
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Chao Li	Institute of Computing Technology, Chinese Academy of Sciences
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Xin Li	Beijing Institute of Technology
Yingshu Li	Georgia State University
Yongbin Zhou	Institute of Information Engineering, Chinese Academy of Sciences
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Technical Program Committee Members

Name	Affiliation
Yu Wang	University of North Carolina at Charlotte
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Zhitao Guan	North China Electric Power University
Zhulin An	Institute of Computing Technology, Chinese Academy of Sciences
Zijian Zhang	Beijing Institute of Technology

DAY 1 - December 17, 2017, Sunday

Registration

DAY 2 - December 18, 2017, Monday

8:40-9:00 Opening Ceremony

9:00-11:50 Keynotes

9:00-9:50 Keynote 1:

Title: Energy Efficiency in Wireless Sensor Networks for Engineering Applications.

Speaker: Prof. Jiannong Cao, Hong Kong Polytechnic University

9:50-10:10 Official Group Photos and Coffee Break

10:10-11:00 Keynote 2:

Title: Scalable Privacy-Preserving Participant Selection in Mobile Crowd Sensing over the Edge.

Speaker: Prof. Yu Wang, UNC Charlotte

11:00-11:50 Keynote 3:

Title: Mobile Edge Computing for Internet of Things.

Speaker: Prof. Yan Zhang, University of Oslo, Norway

Lunch Time: 11:50-14:00

14:00-17:00 Session 1-2

14:00-15:15 Session 1 Conference Room 1

Novel Applications and Architecture

1	Juan Fang, Zeeshan Shaukat, Saqib Ali and Abdul Ahad Zulfiqar. Cloud Computing: Virtual Web Hosting on Infrastructure as a Service (IaaS)
2	Boyu Li, Ning Ai, Yan Guan, Zhipeng Zhao and Bin Wu. Sparse Sensing Matrix Construction for Compressed Sensing
3	Juan Fang and Huanhuan Chen. Understanding Data Partition for Applications on CPU-GPU Integrated Processors
4	Wenjuan Song, Bing Zhou and Shijie Ni. Intelligent Environment Monitoring and Control System for Plant Growth
5	Zohaib Latif, Kashif Sharif, Fan Li and Maria Khalid. Simulation Standardization: Current State and Cross-platform System for Network Simulators

DAY 2 - December 18, 2017, Monday

15:15-17:00 Session 2 Conference Room 1

Mobile Networks and Social Networks

1	Cheng Wang, Jing Luo and Bo Yang. On Complementary Effect of Blended Behavioral Analysis for Identity Theft Detection in Mobile Social Networks
2	Rixing Xu, Zijian Zhang, Jiamou Liu, Nathan Situ and Jun Ho Jin. Facility Location Selection Using Community-Based Single Swap: A Case Study
3	Linqing Hou, Ying Cai, Yanfang Fan and Ruoyu Chen. Message Transmission Scheme Based on the Detection of Interest Community in Mobile Social Networks
4	Shurong Ping and Liangmin Wang. Secure Keyword Search Method Supporting Fast Decryption and Fine-grained Access Control in Mobile Cloud Computing
5	Zezhong Wang, Ye Yuan, Guoren Wang, Hongchao Qin and Yuliang Ma. An Effective Method for Community Search in Large Directed Attributed Graphs
6	Xing Liu, Songtao Guo and Yuanyuan Yang. Task Offloading With Execution Cost Minimization in Heterogeneous Mobile Cloud Computing
7	Juan Fang, Mengxuan Wang and Hao Sun. Research of Task Scheduling Mechanism Based on Prediction of Memory Utilization

14:00-16:45 Session 3-4

14:00-15:30 Session 3 Conference Room 2

Cyber Physical Systems and Internet of Things

1	Xiaoli Zeng, Min Hu, Nuo Yu and Xiaohua Jia. An Efficient and Secure Range Query Scheme for Encrypted Data in Smart Grid
2	Geng Shaofeng, Guo Xiaoxi and Li Renfa. A Prediction Method Based on Complex Event Processing for CPS
3	Xuan Wang, Xin Kou, Zifan Wang, Lanqing Wang, Baoying Liu and Feng Chen. Gesture recognition system based on RFID
4	Shijie Dai, Minghui Liwang, Yang Liu, Zhibin Gao, Lianfen Huang and Xiaojiang Du. Hybrid Quantum-Behaved Particle Swarm Optimization for Mobile-Edge Computation Offloading in Internet of Things
5	Wenwen He, Yalan Ye, Yunxia Li, Haijin Xu, Li Lu and Wenxia Huang. Variational Mode Decomposition-Based Heart Rate Estimation Using Wrist-Type Photoplethysmography During Physical Exercise
6	Dongshu Wang, Jialing He, Zijian Zhang and Liehuang Zhu. An Efficient Sparse Coding-based Data-mining Scheme in Smart Grid

DAY 2 - December 18, 2017, Monday

15:30-16:45 Session 4 Conference Room 2

New Technologies and Applications

1	Jiangping Han, Kaiping Xue, Hao Yue, Peilin Hong, Nenghai Yu and Fenghua Li. Receive Buffer Pre-division Based Flow Control For MPTCP
2	Qi Wang, Mingwei Liu, Kaiqu Chen, Yu Zhang and Jing Zheng. A Hierarchical Framework for Evaluation of Cloud Service Qualities
3	Ying Liu, Junting Liu and Fuxiang Gao. Adaptive Conflict Detection Algorithm Based on RSTM
4	Bo Wang, Fan Wu and Guihai Chen. Placement Fraud Detection on Smart Phones: A Joint Crowdsourcing and Data Analyzing Based Approach
5	Rui Zhang, Nuofei Li, Siyuan Huang, Peng Xie and Hongbo Jiang. Automatic Prediction of Traffic Flow based on Deep Residual Networks

DAY 3 - December 19, 2017, Tuesday

9:00-11:00 Session 5

9:00-10:45 Session 5 Conference Room 1

Vehicular Ad-Hoc Networks (VANETs)

1	Sohail Muhammad and Liangmin Wang. Opinion-walk: An Efficient Solution to Massive Trust Assessment in Vehicular Ad Hoc Networks with Secure Routing Protocol
2	Mengjie Duan, Shunrong Jiang and Liangmin Wang. An Efficient and Secure Authentication Scheme for in-Vehicle Networks in Connected Vehicle
3	Zhenqiang Xu and Weidong Yang. Vehicle-generated Announcements Trustworthiness Evaluation in Vehicular Ad-hoc Networks
4	Fei Wang, Yifan Du, Yongjun Xu, Tan Cheng and Xiaoli Pan. EPAF: An Efficient Pseudonymous-based Inter-Vehicle Authentication Framework for VANET
5	Rui Zhang, Wenjie Ma, Luo Zhong, Peng Xie and Hongbo Jiang. Understanding Trajectory Data based on Heterogeneous Information Network Using Visual Analytics
6	Xing Yin and Liangmin Wang. A High Performance Handover Scheme for SDN Based Vehicular Network
7	Pengfei Zhu, Lejian Liao and Xin Li. A Reinforcement Learning Approach of Data Forwarding in Vehicular Networks

9:00-11:00 Session 6

9:00-11:00 Session 6 Conference Room 2

Security and Privacy

1	Mengxuan Sun, Xiaoju Dong, Fan Wu and Guihai Chen. An Efficient Privacy-Preserving Fingerprint-Based Localization Scheme Employing Oblivious Transfer
2	Yang Du, Zhaoxia Yin and Xinpeng Zhang. An improved lossless data hiding scheme in JPEG bitstream by VLC mapping
3	Zijian Zhang, Chongxi Shen, Liehuang Zhu, Chen Xu and Chuyi Chen. Achieving Communication Effectiveness of Web Authentication Protocol with Key Update
4	Zhenkui Shi. Privacy-Assured Large-Scale Navigation from Encrypted Approximate Shortest Path Recommendation
5	Xindi Ma, Jianfeng Ma, Sheng Gao and Qingsong Yao. APDL: A Practical Privacy-Preserving Deep Learning Model for Smart Devices
6	Yue Zhang and Zhitao Guan. Privacy-Preserving and Traceable Data Aggregation in Energy Internet
7	Zheng Liu, Jiahao Cao, Qi Li and Mingwei Xu. TSA: A Two-phase Scheme against Amplification DDoS Attack in SDN
8	Yeqiu Xiao, Jia Liu, Jiao Quan, Yulong Shen and Xiaohong Jiang. On Secrecy Performance of Multibeam Satellite System with Multiple Eavesdropped Users

DAY 3 - December 19, 2017, Tuesday

14:00-16:00 Session 7-8

14:00-15:00 Session 7 Conference Room 1

Novel Model and Performance Analysis

1	Chuangui Yang, Zhu Wang, Botao Wang, Shizhuo Deng, Guangxin Liu, Yuru Kang and Huichao Men. CHAR-HMM: An Improved Continuous Human Activity Recognition Algorithm Based on Hidden Markov Model
2	Li Wei and Mingwei Xu. Enhancing Software Reliability against Software Error using Critical Data Model
3	Jiaoyan Chen, Bang Wang and Wenyu Liu. Barrier Coverage Lifetime Maximization in A Randomly Deployed Bistatic Radar Network
4	Shijie Ni, Zhuorui Yong and Ruipeng Gao. Modeling and Evaluation of the Incentive Scheme in “E-photo”

15:00-16:00 Session 8 Conference Room 1

Multi-Hop Wireless Networks and WMNs

1	Zhengchao Lei, Chengyi Min, Sanyuan Zhao and Fengxia Li. Co-saliency Detection Based on Siamese Network
2	Muhammad Sohail, Liangmin Wang and Bushra Yamin. Trust Mechanism based AODV routing protocol for Forward Node Authentication in Mobile Ad Hoc Network
3	Baojian Gao, Shaodi Wang, Yuhui Ren and Yujie Wang. Modulation protection: a constellation concealing algorithm based on wireless OFDM physical layer encryption
4	Xiangyi Chen and Liangmin Wang. Secret-Sharing Approach for Detecting Compromised Mobile Sink in Unattended Wireless Sensor Networks