

Xiang Sun

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Education

- Ph.D. Electrical Engineering, New Jersey Institute of Technology (NJIT), May, 2018.
Advisor: **Dr. Nirwan Ansari.**
- M.E. Computer Applications Technology, Hebei University of Engineering (HUE), June, 2011.
Advisors: **Dr. Jijun Zhao.**
- B.E. Electronic Information, Hebei University of Engineering (HUE), July, 2008.

Research Interests

- Mobile edge computing empowered Internet of Things (IoT), content/resource caching in IoT, semantic discovery/querying/mashup in IoT, application layer protocols design in IoT, access control in IoT, and bluetooth low energy communications
- Big data driven network design and optimization, network virtualization, software-defined networking, and mobile edge computing
- Drone-assisted mobile access networks
- Green computing and communications
- Resource allocation in data centers

Professional Experience

- **Department of Electrical and Computer Engineering, University of New Mexico, Albuquerque, NM**
Assistant Professor Aug. 2018 – present.
- **Advanced Networking Lab., NJIT, Newark, NJ**
Research Assistant Sept. 2012 – May 2018.
- **Mobile Edge Computing Lab. NJIT, Newark, NJ**
Research Assistant Feb. 2017 – May 2018.
- **Convida IoT Team, InterDigital Communications Inc., Conshohocken, PA**
Co-op intern May 2016 – Dec. 2016.
- **Optical Communication & IoT Research Lab, HUE, Hebei, China**
Research Assistant Sept. 2009 – Jun. 2011.

Honors and Awards

- 2018 InterDigital Innovation Award on IoT Semantic Mashup
- 2018 NJIT Hashimoto Prize
- IEEE Communications Letters Exemplary Reviewers 2017
- ICC 2016 Best Paper Award
- IEEE North Jersey Advanced Communications Symposium Second Place Poster Award 2015
- NJIT Ross Fellowship 2014-2015

- HUE Outstanding Graduate Student 2011
- HUE Outstanding Undergraduate Student 2008
- HUE First Class Scholarships 2004-2008
- Third Class in the National Electronic Design Contest Challenge Cup 2007
- First Class in the CPLD/FPGA Electronic Design Contest at HUE 2006

Publications

Journal Articles:

1. **Xiang Sun** and Nirwan Ansari, "Green Cloudlet Network: A Sustainable Platform for Mobile Cloud Computing," *IEEE Transactions on Cloud Computing*, doi: 10.1109/TCC.2017.2764463, 2017.
2. **Xiang Sun** and Nirwan Ansari, "Adaptive Avatar Handoff in the Cloudlet Network," *IEEE Transactions on Cloud Computing*, doi: 10.1109/TCC.2017.2701794, 2017.
3. **Xiang Sun** and Nirwan Ansari, "Dynamic Resource Caching in the IoT Application Layer for Smart Cities," *IEEE Internet of Things Journal*, vol. 5, no. 2, pp. 606-613, April 2018.
4. **Xiang Sun** and Nirwan Ansari, "Traffic Load Balancing among Brokers at the IoT Application Layer," *IEEE Transactions on Network and Service Management*, vol. 15, no. 1, pp. 489-502, March 2018.
5. Nirwan Ansari and **Xiang Sun**, "Mobile Edge Computing Empowers Internet of Things," *IEICE Transactions on Communications*, vol. E101.B, no. 3, pp. 604-619, 2018. (Invited paper)
6. **Xiang Sun** and Nirwan Ansari, "Latency Aware Workload Offloading in the Cloudlet Network," *IEEE Communications Letters*, vol. 21, no. 7, pp. 1481-1484, July 2017.
7. Qiang Fan, Nirwan Ansari, and **Xiang Sun**, "Energy Driven Avatar Migration in Green Cloudlet Networks," *IEEE Communications Letters*, vol. 21, no. 7, pp. 1601-1604, July 2017.
8. **Xiang Sun** and Nirwan Ansari, "Green Cloudlet Network: A Distributed Green Mobile Cloud Network," *IEEE Network*, vol. 31, no. 1, pp. 64-70, January/February 2017.
9. **Xiang Sun** and Nirwan Ansari, "EdgeIoT: Mobile Edge Computing for Internet of Things," *IEEE Communications Magazine*, vol. 54, no. 12, pp. 22-29, December 2016.
10. **Xiang Sun**, Nirwan Ansari, and Ruopeng Wang, "Optimizing Resource Utilization of a Data Center," *IEEE Communications Surveys & Tutorials*, vol. 18, no. 4, pp. 2822-2846, Fourth quarter 2016.
11. Xianshen Guo, Lei Chu, and **Xiang Sun**, "Accurate localization of multiple sources using semidefinite programming based on incomplete range matrix," *IEEE Sensors Journal*, vol. 16, no. 13, pp. 5319-5324, July, 2016.
12. Kun Guo, Yonghua Li, Yueming Lu, **Xiang Sun**, Siye Wang, and Ruohan Cao, "An Activity Recognition-assistance Algorithm based on Hybrid Semantic Model in Smart Home," *International Journal of Distributed Sensor Networks*, vol. 12, no. 8, August 2016.
13. Jijun Zhao, **Xiang Sun**, Zhongcheng Wei, and Zhihua Li, "A New MAC Protocol for Moving Target in Distributed Wireless Sensor Networks," *Wireless Sensor Network*, vol. 3, no. 2, pp.62-72, 2011.
14. Jijun Zhao, Zhongcheng Wei, Zhihua Li, and **Xiang Sun**, "An adaptive MAC protocol based on spatial and temporal correlation in wireless sensor networks," *Journal of Communications*, vol. 6, no. 3, pp.262-269, 2011.

Journal Articles Under Review or Revision:

15. **Xiang Sun** and Nirwan Ansari, "Optimizing the Energy Consumption of Green Cloudlet Network," under review.

Conference Proceedings:

1. Shuai Zhang, **Xiang Sun**, and Nirwan Ansari, "Placing Multiple Drone Base Stations in Hotspots," in *2018 IEEE 39th Sarnoff Symposium*, Newark, NJ, Sept. 2018, to be presented.
2. **Xiang Sun** and Nirwan Ansari, "Jointly Optimizing Drone-Mounted Base Station Placement and User Association in Heterogeneous Networks," in *2018 IEEE International Conference on Communications (ICC)*, Kansas City, MO, May 2018, 1-6.
3. **Xiang Sun** and Nirwan Ansari, "Latency Aware Drone Base Station Placement in Heterogeneous Networks," in *Proceedings of 2017 IEEE Global Communications Conference (GLOBECOM)*, Singapore, 2017, pp. 1-6.
4. **Xiang Sun** and Nirwan Ansari, "PRIMAL: PRofit Maximization Avatar pLacement for Mobile Edge Computing," in *2016 IEEE International Conference on Communications (ICC)*, Kuala Lumpur, Malaysia, 2016, pp. 1-6. (Best Paper Award)
5. **Xiang Sun**, Nirwan Ansari, and Qiang Fan, "Green Energy Aware Avatar Migration Strategy in Green Cloudlet Networks," in *2015 IEEE 7th International Conference on Cloud Computing Technology and Science (CloudCom)*, Vancouver, BC, 2015, pp. 139-146.
6. **Xiang Sun** and Nirwan Ansari, "Energy-optimized bandwidth allocation strategy for mobile cloud computing in LTE networks," in *2015 IEEE Wireless Communications and Networking Conference (WCNC)*, New Orleans, LA, 2015, pp. 2120-2125.
7. **Xiang Sun** and Nirwan Ansari, "Improving Bandwidth Efficiency and fairness ins cloud computing," in *2013 IEEE Global Communications Conference (GLOBECOM)*, Atlanta, GA, 2013, pp. 2313-2318.
8. Jijun Zhao, **Xiang Sun**, Zhihua Li, Hua Hou, and Pei Sun, "A novel date collision rate-aware energy model design with single-channel CSMA/CA MAC in Wireless Sensor Networks," in *2010 2nd International Conference on Computer Engineering and Technology (ICCET)*, Chengdu, China, 2010, pp. 483-486.
9. Jijun Zhao, Hua Li, and **Xiang Sun**, "Research on the Signal Random Attenuation Coefficient Based on RSSI in WSN Localization Technology," in *2009 5th International Conference on Wireless Communications, Networking and Mobile Computing*, Beijing, China, 2009, pp. 1-4.
10. Jijun Zhao and **Xiang Sun**, "MAC protocol based on T-MAC multi-hop reservation for low-latency wireless sensor network," in *2008 11th IEEE International Conference on Communication Technology (ICCT)*, Hangzhou, China, 2008, pp. 114-117.

Others:

1. **Xiang Sun** and Nirwan Ansari, "Cloudlet Networks: Empowering Mobile Networks with Computing Capabilities," *IEEE COMSOC MMTc Communications - Frontiers*, vol. 12, no. 4, pp. 6-12, July 2017.

Patent:

1. Nirwan Ansari and **Xiang Sun**, "Management of bandwidth efficiency and fairness in cloud computing," US Patent No. 9,742,675, issued on Aug. 22, 2017.

Patent Applications:

1. Xu Li, Chonggang Wang, Quang Ly, and **Xiang Sun**, "Semantic Query Processing with Information Asymmetry," US/PCT Non-Provisional Patent Application no. PCT/US18/16103, filed on Sept. 29, 2017. (Some contents of this patent application have been adopted into oneM2M Release 2 Specifications TR007 2.11.1 and oneM2M Draft Release 3 Technical Specifications TS-0034.)
2. **Xiang Sun**, Chonggang Wang, Quang Ly, and Xu Li, "Dynamic Protocol Switching," US/PCT Non-Provisional Patent Application no. PCT/US18/13299, filed on Jan. 11, 2018.

3. Quang Ly, Chonggang Wang, Xu Li, and **Xiang Sun**, “Mechanisms for Resource-Directory to Resource-Directory Communications,” US/PCT Non-Provisional Patent Application no. PCT/US17/65238, filed on Dec. 08, 2017.
4. **Xiang Sun**, Chonggang Wang, Xu Li, Quang Ly, Dale Seed, and Hongkun Li, “Enabling Semantic Mashup in Internet of Things,” US/PCT Non-Provisional Patent Application no. PCT/US17/54274, filed on Sep. 29, 2017. (Some contents of this patent application have been adopted into oneM2M Release 2 Specifications TR007 2.11.1 and oneM2M Draft Release 3 Technical Specifications TS-0034.)
5. Nirwan Ansari and **Xiang Sun**, “Virtual machine resource utilization in a data center,” US Non-Provisional Patent Application no. 15/280,713, filed on Sept. 29, 2016.
6. Nirwan Ansari and **Xiang Sun**, “Virtual machine placement in a heterogeneous data center,” US Non-Provisional Patent Application no. 15/280,761, filed on Sept. 29, 2016.

Professional Activities

- **Symposium co-chair** of Social Computing and Semantic Data Mining (SCSD) symposium in the IEEE International Conference on Computing, Networking and Communications (ICNC) 2019.
- **TPC member** for *IEEE CCNC* 2018 & 2019, and *MobiEdge* 2018.
- **Reviewer** for *IEEE Journal on Selected Areas in Communications*, *Transactions on Parallel and Distributed Systems*, *IEEE Transactions on Big Data*, *IEEE Transactions on Emerging Topics in Computing*, *IEEE Transactions on Network Science and Engineering*, *IEEE Transactions on Multimedia*, *IEEE Transactions on Mobile Computing*, *IEEE Internet of Things Journal*, *IEEE Communications Magazine*, *IEEE Wireless Communications*, *IEEE Network Magazine*, *IEEE Communications Letter*, *IEEE Access*, *Wireless Communications and Mobile Computing*, *Computer Communications*, *Journal of Computing and Information Technology*, *Digital Communications and Networks*, *Recent Advances in Electrical & Electronic Engineering*, and more than fifty conference paper reviews.
- Student Member, IEEE Communication Society, 2013–Present.