# Xiaolong Zheng

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**RESEARCH INTERESTS**

- **Wireless networking**: Cross-technology communication; Wireless coexistence
- **Pervasive computing**: Ubiquitous sensing systems; Human-centric mobile computing

**EDUCATION**

**The Hong Kong University of Science and Technology**, Clearwater Bay, Hong Kong

- *Doctor of Philosophy (Ph.D.)* Sep 2011 – Jun 2015
  - Department of Computer Science & Engineering
  - Thesis: Low-power, High-throughput Protocol Design for Wireless Sensor Networks under Heterogeneous Interference
  - Adviser: Professor Yunhao Liu and Professor Lionel M. Ni

**Dalian University of Technology**, Dalian, Liaoning, China

- *Bachelor of Engineering (B.E.)* Sep 2007 – Jul 2011

**WORK EXPERIENCE**

**Tsinghua University**, Beijing, China

- *Postdoctoral Research Associate* Sep 2015 – present
  - Department: School of Software
  - Supervisor: Professor Yunhao Liu

**FUNDS**

- Principal Investigator, National Natural Science Foundation of China (**NSFC**), No. 61672320, "Research on Exploiting Wireless Signatures for Coexistence of Wireless Sensor Networks", 2017.01-2020.12.
- Co-PI, National Natural Science Foundation of China (**NSFC**), No. 61672240, "Research on Key Technologies of Situation Computing based on Semantics Location for Mobile Crowd Sensing Environments", 2017.01-2020.12.
- Principal Investigator, China Postdoctoral Science Foundation, No. 2016M601034, "Interference-Resilient Duty Cycling for Low Power Wireless Sensor Networks", 2016-2018.

**PUBLICATIONS**

**CONFERENCE** ( # student mentored by me)

[1] **Xiaolong Zheng**, Yuan He, Xiuzhen Guo, "StripComm: Interference-Resilient Cross-Technology Communication in Coexisting Environments", in *IEEE International Conference on Computer Communications (**INFOCOM**)*, Honolulu, HI, USA, Apr 2018.

[2] Xiuzhen Guo#, Yuan He, **Xiaolong Zheng**, Liangcheng Yu, Omprakash Gnawali, "ZigFi: Harnessing Channel State Information for Cross-Technology Communication", in *IEEE International Conference on Computer Communications (**INFOCOM**)*, Honolulu, HI, USA, Apr 2018.

[3] Yilun Zheng, Yuan He, Meng Jin, **Xiaolong Zheng**, Yunhao Liu, "RED: RFID-based Eccentricity Detection for High-speed Rotating Machinery", in *IEEE International Conference on Computer Communications (**INFOCOM**)*, Honolulu, HI, USA, Apr 2018.

[4] Zihao Yu, Chengkun Jiang, Yuan He, **Xiaolong Zheng**, Xiuzhen Guo, "Crocs: Cross-Technology Clock Synchronization for WiFi and ZigBee", in *International Conference on Embedded Wireless Systems and Networks (**EWSN**)*, Madrid, Spain, Feb 2018.

[5] Junchen Guo#, Yuan He, **Xiaolong Zheng**, "PanGu: Towards A Software-Defined Architecture for Multi-function Wireless Sensor Networks", in *IEEE International Conference on Parallel and Distributed Systems (**ICPADS**)*, Shenzhen, China, Dec 2017. (**Best Student Paper Award**)

[6] Xiuzhen Guo#, **Xiaolong Zheng**, Yuan He, "WiZig: Cross-Technology Energy Communication over a Noisy Channel", in *IEEE International Conference on Computer Communications (**INFOCOM**)*, Atlanta, USA, May 2017.

[7] **Xiaolong Zheng**, Jiliang Wang, Longfei Shangguan, Zimu Zhou, Yunhao Liu, "Smokey: Ubiquitous Smoking Detection with Commercial WiFi Infrastructures", in *IEEE International Conference on Computer Communications (**INFOCOM**)*, San Francisco, USA, Apr 2016.

[8] Meng Jin, Yuan He, **Xiaolong Zheng**, Dingyi Fang, Dan Xu, Tianzhang Xing, Xiaojiang Chen, "Smoggy-Link: Fingerprinting Interference for Predictable Wireless Concurrency", in *International Conference on Network Protocols (**ICNP**)*, Singapore, Nov 2016.

[9] Zhichao Cao, Jiliang Wang, Daibo Liu, **Xiaolong Zheng**, "Chase: Taming Concurrent Broadcast for Flooding in Asynchronous Duty Cycle Networks", in *International Conference on Network Protocols (**ICNP**)*, Singapore, Nov 2016.

[10] Longfei Shangguan, Zimu Zhou, **Xiaolong Zheng**, Lei Yang, Yunhao Liu, Jinsong Han, "ShopMiner: Mining Customer Shopping Behavior in Physical Clothing Stores with Passive RFIDs", in *ACM Conference on Embedded Networked Sensor Systems (**SenSys**)*, Seoul, South Korea, Nov 2015.

[11] Daibo Liu, Mengshu Hou, Zhichao Cao, Yuan He, Xiaoyu Ji, **Xiaolong Zheng**, "COF: Exploiting Concurrency for Low Power Opportunistic Forwarding", in *IEEE International Conference on Network Protocols (**ICNP**)*, San Francisco, USA, Nov 2015.

[12] Jiliang Wang, **Xiaolong Zheng**, Xufei Mao, Zhichao Cao, Daibo Liu, Yunhao Liu, "Connecting the Dots: Reconstructing Network Behavior with Individual and Lossy Logs ", in *International Conference on Parallel Processing (**ICPP**)*, Beijing, China, Sep 2015.

[13] **Xiaolong Zheng**, Zhichao Cao, Jiliang Wang, Yuan He, Yunhao Liu, "ZiSense: Towards Interference Resilient Duty Cycling in Wireless Sensor Networks", in *ACM Conference on Embedded Networked Sensor Systems (**SenSys**)*, Memphis, USA, Nov 2014.

[14] Longfei Shangguan, Zheng Yang, Zimu Zhou, **Xiaolong Zheng**, Chenshu Wu, Yunhao Liu, "CrossNavi: Enabling Crossroad Navigation for the Blind with Commodity Phones", in *ACM International Joint Conference on Pervasive and Ubiquitous Computing (**UbiComp**)*, Seattle, USA, Sep 2014.

[15] **Xiaolong Zheng**, Jiliang Wang, Wei Dong, Yuan He, Yunhao Liu, "Survival of the Fittest: Data Dissemination with Selective Negotiation in Wireless Sensor Networks", in *IEEE International Conference on Mobile Ad-Hoc and Sensor Systems (**MASS**)*, Hangzhou, China, Oct 2013.

**JOURNAL** ($^*$ corresponding author)

[1] **Xiaolong Zheng**, Jiliang Wang, Longfei Shangguan, Zimu Zhou, Yunhao Liu, "Design and Implementation of a CSI-based Ubiquitous Smoking Detection System", submitted to *IEEE/ACM Transactions on Networking(**ToN**)*, vol. 25 no. 6, pp. 3781–3793. Dec 2017.

[2] Zhichao Cao, Daibo Liu, Jiliang Wang, **Xiaolong Zheng**, "Chase: Taming Concurrent Broadcast for Flooding in Asynchronous Duty Cycle Networks", submitted to *IEEE/ACM Transactions on Networking(**ToN**)*, vol. 25 no. 5, pp. 2872–2885. Oct 2017.

[3] **Xiaolong Zheng**, Zhichao Cao, Jiliang Wang, Yuan He, Yunhao Liu, "Interference Resilient Duty Cycling for Sensor Networks under Co-existing Environments", *IEEE Transactions on Communications(**TCOM**)*, vol. 65, no. 7, pp. 2971–2984,, Jul 2017.

[4] Zimu Zhou, Longfei Shangguan, **Xiaolong Zheng**$^*$, Lei Yang, Yunhao Liu, "Design and Implementation of an RFID-based Customer Shopping Behavior Mining System in Physical Clothing Stores", *IEEE/ACM Transactions on Networking(**ToN**)*, vol. 25, no. 4, pp. 2405–2418, Apr 2017.

[5] **Xiaolong Zheng**, Jiliang Wang, Wei Dong, Yuan He, Yunhao Liu, "Bulk Data Dissemination in Wireless Sensor Networks: Analysis, Implications and Improvement", *IEEE Transactions on Computers (**TC**)*, vol. 65, no. 5, pp. 1428–1439, May 2016.

[6] Jie Zhang, **Xiaolong Zheng**, Zhanyong Tang, Tianzhang Xing, Xiaojiang Chen, Dingyi Fang, Rong Li, Xiaoqing Gong, Feng Chen, "Privacy Leakage in Mobile Sensing: Your Unlock Passwords Can Be Leaked through Wireless Hotspot Functionality", *Mobile Information Systems*, Mar 2016.

[7] Yuan He, **Xiaolong Zheng** "Research on Wireless Network Co-Existence at 2.4 GHz", *Journal of Computer Research and Development*, vol. 51, no. 1, pp. 26–37, Jan 2016.

[8] **Xiaolong Zheng**, Meng Wan, "A Survey on Data Dissemination in Wireless Sensor Networks", *Journal of Computer Science and Technology (**JCST**)*, vol. 29, no. 3, pp. 470–486, May 2014.

**PROJECTS**

**GreenOrbs** Sep 2010- ongoing

- **Introduction**: GreenOrbs is an ongoing work on building a long-term wireless sensor network system to monitor the forest environment. On one hand, GreenOrbs realizes all-year ecological surveillance in the forest, collecting various sensory data including temperature, humidity, illumination, and carbon dioxide titer. On the other hand, GreenOrbs pioneers the effort in the sensor network community to build a practical system. Through the real-world experience in GreenOrbs, we expect to explore the potential design space and scientific solutions, especially addressing the research and engineering challenges for a wireless sensor network system that is deployed in the virgin forest, involves 1000+ sensor nodes, and needs to operate for over one year.
- ***My major tasks***: *Protocol design and system measurement*

**CitySee** Apr 2011- ongoing

- **Introduction**: In April 2011, we launched the CitySee system as the extention of GreenOrbs into urban CO2 monitoring area. The goal of CitySee is to deploy thousands of wireless sensor nodes in an urban area of Wuxi City, China, such that multi-dimensional data including CO2, temperature, humidity, light, location, and etc. could be collected in a real-time manner for further analysis.
- ***My major tasks***: *Protocol design, system implementation and measurement*

**PROFESSIONAL SERVICE**

**Submission Chair**: IEEE TrustCom 2014

**TPC Member**:

- DCOSS 2018
- IEEE ICC 2017, 2018
- IEEE ICPADS 2016, 2017
- IEEE ISCC 2017
- IEEE ISPA 2016, 2017
- EWSN 2017 Poster & Demo
- WCSP 2017
- ACCSE 2017
- ITC 28 in Würzburg
- CCSNA 2016
- IWSSS 2016, 2017

**Journal Reviewer**: Transactions on Networking (ToN), Transactions on Mobile Computing (TMC), PACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT), IEEE Communications Magazine, Ad Hoc & Sensor Wireless Networks, Journal of Computer Science and Technology (JCST), Tsinghua Science and Technology (TST).

**HONORS & AWARDS**

- Best Student Paper Award, IEEE ICPADS 2017 2017
- The International Postdoctoral Exchange Fellowship Program (Recruitment Project) 2016
- Excellent Undergraduates of Liaoning Province 2011
- National Scholarship (Undergraduates) 2011