

Chenshu Wu

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RESEARCH INTERESTS	Internet of Things, Mobile Systems, Ubiquitous Computing, Wireless Sensing etc.	
EDUCATION	Tsinghua University , Department of Computer Science & Technology Ph.D. in Computer Science Thesis: <i>Wireless Indoor Localization via Crowdsensing</i> (Supervisor: Prof. Yunhao Liu)	August 2010 - July 2015 with Excellent Thesis&Graduation Award
	Tsinghua University , School of Software B.S. in Computer Software	August 2006 - July 2010 with Excellent Thesis&Graduation Award
ACADEMIC EXPERIENCE	Department of Computer Science, Princeton University , Princeton, NJ, USA <i>Postdoc Research Associate (Advisor: Prof. Kyle Jamieson)</i>	April 2017 - present
	School of Software, Tsinghua University , Beijing, China <i>Postdoc Researcher (Advisor: Prof. Yunhao Liu)</i>	July 2015 - April 2017
	Department of EECS, University of Michigan , Ann Arbor, Michigan USA <i>Research Scholar (Advisor: Prof. Mingyan Liu)</i>	July 2014 - December 2014
	Department of Computing, HKPU , Hong Kong, China <i>Research Assistant (Advisor: Prof. Jiannong Cao)</i>	August 2013 - January 2014
HONORS & AWARDS	ACM CHI Best Paper Honorable Mention Award	2017
	2016 Best Paper Award of Tsinghua Science and Technology	2017
	China Computer Federation (CCF) Excellent Doctoral Dissertation Award	2016
	The Committee of 100's Leadership Scholarship Program Award	2015
	Excellent PhD Graduation of Beijing City	2015
	Excellent PhD Dissertation of Tsinghua University (rank 1st of 109 CS PhD)	2015
	Academic Rising Star of Tsinghua (10/20K+ graduate students, selected in Tsinghua Spotlights)	2015
	Tsinghua Top Grade Scholarship (10/20K+ graduate students)	2014
	Best Paper Candidate of IEEE ICPADS (4 out of 320+ papers)	2014
	National Graduate Scholarship	2012, 2013, 2014
	Best Poster Award of the 8th International Workshop on IoT and Cloud Computing	2014
	Boeing Scholarship	2014
	Tsinghua Lin Feng Counsellor Prize (highest honor to counsellors of undergraduates)	2013
	Best Presentation Award of the 344th PhD Forum, Tsinghua University, Section of CS	2013
	ACM&IEEE CPSWeek Outstanding Volunteer Award	2012
	Research in Motion (RIM) Scholarship	2011, 2012, 2013

SELECTED
PUBLICATIONS

Highlights: According to my *Google Scholar Profile*, currently my h-index score is 17 and collectively my work has been cited more than **1300** times.

Books

- [B1] Zheng Yang, **Chenshu Wu**, Yunhao Liu, “Location-based Computing: Localization and Localizability of Wireless Networks”, Tsinghua University Press, Jan. 2014 (in Chinese, received the **Excellent Academic Monograph (Second Class) of Chinese University Press Book Award**).

Conference Papers

(* indicates the students mentored by me)

- [C1] **Chenshu Wu**, Jingao Xu, Zheng Yang, Nicholas D. Lane, Zuwei Yin, “Gain Without Pain: Accurate WiFi-based Localization with Fingerprint Spatial Gradient”, PACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (**ACM UbiComp**), 2017, Maui, USA, Sep 11 - Sep 15, 2017.
- [C2] Kun Qian*, **Chenshu Wu**, Zheng Yang, Yunhao Liu, Kyle Jamieson, “Widar: Decimeter-Level Passive Tracking via Velocity Monitoring with Commodity Wi-Fi”, ACM International Symposium on Mobile Ad Hoc Networking and Computing (**ACM MobiHoc**), Chennai, India, July 10-14, 2017.
- [C3] Yue Zheng*, **Chenshu Wu**, Kun Qian, Zheng Yang, Yunhao Liu, “Detecting Radio Frequency Interference for CSI Measurements on COTS WiFi Devices”, IEEE International Conference on Communications (**IEEE ICC**), Paris, France, May 21-25, 2017.
- [C4] Kun Qian*, **Chenshu Wu**, Zimu Zhou, Yue Zheng, Zheng Yang, Yunhao Liu, “Inferring Motion Direction using Commodity Wi-Fi for Interactive Exergames”, ACM CHI Conference on Human Factors in Computing Systems (**ACM CHI**), Denver, USA, May 6-11, 2017. (**Best Paper Honorable Mention**)
- [C5] Qizhen Zhou*, **Chenshu Wu**, Jianchun Xing, Juelong Li, Zheng Yang, Qiliang Yang, “Wi-Dog: Monitoring School Violence with Commodity WiFi Devices”, the 12th International Conference on Wireless Algorithms, Systems, and Applications (**Springer WASA**), Guilin, China, June 19-21, 2017.
- [C6] Fugui He, Chenshu Wu, Xiancun Zhou and Yiyang Zhao, “Robust and Fast Similarity Search for Fingerprint Calibration-free Indoor Localization”, the 3rd International Conference on Big Data Computing and Communications (**BigCom**), August 10 - 11, Chengdu, Sichuan, 2017.
- [C7] Kun Qian*, **Chenshu Wu**, Zheng Yang, Chaofan Yang, Yunhao Liu, “Decimeter Level Passive Tracking with WiFi”, the 3rd ACM Workshop on Hot Topics in Wireless (**ACM HotWireless**), New York, USA, Oct 03, 2016.
- [C8] Zuwei Yin*, **Chenshu Wu**, Zheng Yang, Nicholas Lane, Yunhao Liu, “ppNav: Peer-to-Peer Indoor Navigation for Smartphones”, IEEE International Conference on Parallel and Distributed Systems (**IEEE ICPADS**), Wuhan, China, Dec 13 - Dec 16, 2016.
- [C9] Chaofan Yang*, **Chenshu Wu**, Zheng Yang, Tongtong Liu, Yunhao Liu, Xufei Mao, “Enhancing Industrial Video Surveillance over Wireless Mesh Networks”, IEEE International Conference on Computer Communication and Networks (**IEEE ICCCN**), Waikoloa, USA, Aug 01 - Aug 04, 2016.
- [C10] Zimu Zhou, Zheng Yang, Kun Qian, **Chenshu Wu**, Longfei Shangguan, Han Xu, Yunhao Liu, “Tracking Synchronous Gestures with WiFi”, IEEE International Conference on Computer Communication and Networks (**IEEE ICCCN**), Waikoloa, USA, Aug 01 - Aug 04, 2016.
- [C11] Kun Qian*, **Chenshu Wu**, Zheng Yang, Zimu Zhou, Xu Wang, Yunhao Liu, “Tuning by Turning: Enabling Phased Array Signal Processing for WiFi with Inertial Sensors”, IEEE International Conference on Computer Communications (**IEEE INFOCOM**), San Francisco, USA, Apr 10 - Apr 15, 2016.

- [C12] Zimu Zhou, Zheng Yang, **Chenshu Wu**, Yunhao Liu, Lionel M. Ni, "On Multipath Link Characterization and Adaptation for Device-free Human Detection", IEEE International Conference on Distributed Computing Systems (**IEEE ICDCS**), Columbus, USA, June 29 - July 2, 2015.
- [C13] **Chenshu Wu**, Zheng Yang, Chaowei Xiao, Chaofan Yang, Yunhao Liu, Mingyan Liu, "Static Power of Mobile Devices: Self-updating Radio Maps for Wireless Indoor Localization", IEEE International Conference on Computer Communications (**IEEE INFOCOM**), Hong Kong, April 26 - May 1, 2015.
- [C14] **Chenshu Wu**, Zheng Yang, Zimu Zhou, Kun Qian, Yunhao Liu, Mingyan Liu, "PhaseU: Real-time LOS Identification with WiFi", IEEE International Conference on Computer Communications (**IEEE INFOCOM**), Hong Kong, April 26 - May 1, 2015.
- [C15] Kun Qian*, **Chenshu Wu**, Zheng Yang, Yunhao Liu, Zimu Zhou, "PADS: Passive Detection of Moving Targets with Dynamic Speed using PHY Layer Information", IEEE International Conference on Parallel and Distributed Systems (**IEEE ICPADS**), Hsinchu, Taiwan, December 16 - 19, 2014. (**Best Paper Candidate, 4 out of 320+**)
- [C16] Longfei Shangguan, Zheng Yang, Zimu Zhou, Xiaolong Zheng, **Chenshu Wu**, Yunhao Liu, "CrossNavi: Enabling Real-time Crossroad Navigation for the Blind with Commodity Phones", ACM International Joint Conference on Pervasive and Ubiquitous Computing (**ACM UbiComp**), Seattle, USA, Sep 13 - Sep 17, 2014.
- [C17] Zimu Zhou, Zheng Yang, **Chenshu Wu**, Wei Sun, Yunhao Liu, "LiFi: Line-Of-Sight Identification with WiFi", IEEE International Conference on Computer Communications (**IEEE INFOCOM**), Toronto, Canada, April 27 - May 2, 2014.
- [C18] Wei Sun, Junliang Liu, **Chenshu Wu**, Zheng Yang, Xinglin Zhang, and Yunhao Liu, "MoLoc: on Distinguishing Fingerprint Twins", IEEE International Conference on Distributed Computing Systems (**IEEE ICDCS**), Philadelphia, USA, July 08-11, 2013.
- [C19] **Chenshu Wu**, Zheng Yang, Yiyang Zhao, Yunhao Liu, "Footprints Elicit the Truth: Improving Global Positioning Accuracy via Local Mobility", IEEE International Conference on Computer Communications (**IEEE INFOCOM**), Turin, Italy, April 14-19, 2013.
- [C20] Zimu Zhou, Zheng Yang, **Chenshu Wu**, Long-fei Shangguan, Yunhao Liu, "Towards Omnidirectional Passive Human Detection", IEEE International Conference on Computer Communications (**IEEE INFOCOM**), Turin, Italy, April 14-19, 2013.
- [C21] Zheng Yang, **Chenshu Wu**, Yunhao Liu, "Locating in Fingerprint Space: Wireless Indoor Localization with Little Human Intervention", ACM International Conference on Mobile Computing and Networking (**ACM MobiCom**), Istanbul, Turkey, August 22-26, 2012.
- [C22] **Chenshu Wu**, Zheng Yang, Yunhao Liu, Wei Xi, "WILL: Wireless Indoor Localization Without Site Survey", IEEE International Conference on Computer Communications (**IEEE INFOCOM**), Orlando, Florida, USA, March 25-30, 2012.
- [C23] **Chenshu Wu**, Zheng Yang, Tao Chen, et al, "Edge Verifiability: Characterizing Outlier Measurements for Wireless Sensor Network Localization", IEEE International Conference on Mobile Ad-hoc and Sensor Systems (**IEEE MASS**), Valencia, Spain, October 17-22, 2011.

Journal Papers

- [J1] **Chenshu Wu**, Zheng Yang, Chaowei Xiao, "Automatic Radio Map Adaptation for Indoor Localization using Smartphones", IEEE Transactions on Mobile Computing (**IEEE TMC**), to appear, 2017.
- [J2] Zuwei Yin*, **Chenshu Wu**, Zheng Yang, Yunhao Liu, "Peer-to-Peer Indoor Navigation using Smartphones", IEEE Journal on Selected Areas in Communications (**IEEE JSAC**), vol. 35, no. 5, pp. 1141-1153, May 2017.

- [J3] **Chenshu Wu**, Zheng Yang, Zimu Zhou, Yunhao Liu, Mingyan Liu, “Mitigating Large Errors in WiFi-based Indoor Localization for Smartphones”, *IEEE Transactions on Vehicular Technology (IEEE TVT)*, vol. 66, no. 7, pp. 6246-6257, July 2017.
- [J4] **Chenshu Wu**, Zheng Yang, Zimu Zhou, Xuefeng Liu, Yunhao Liu, Jianong Cao, “Non-invasive Detection of Moving and Stationary Human with WiFi”, *IEEE Journal on Selected Areas in Communications (IEEE JSAC)*, vol.33, no.11, pp.2329-2342, Nov. 2015.
- [J5] Zimu Zhou, Zheng Yang, **Chenshu Wu**, Longfei Shangguan, Haibin Cai, Yunhao Liu, Lionel M. Ni, “WiFi-based Indoor Line-Of-Sight Identification”, *IEEE Transactions on Wireless Communications (IEEE TWC)*, vol. 14, no. 11, pp. 6125-6136, Nov. 2015.
- [J6] Shengnan Li, Zheng Qin, **Chenshu Wu**, Zheng Yang, “TraIL: Pinpoint Trajectory for Indoor Localization”, *International Journal of Distributed Sensor Networks*, vol. 2015, no. 372425, 8 pages, 2015.
- [J7] Wenyuan Liu, Jing Yang, Lin Wang, **Chenshu Wu** and Rongji Zhang, “Movement Behavior Recognition Based on Statistical Mobility Sensing”, *Ad Hoc & Sensor Wireless Networks*, vol. 25, no. 3-4 pp. 323-340, Apr. 2015.
- [J8] Zheng Yang, **Chenshu Wu**, Zimu Zhou, Xinglin Zhang, Xu Wang, Yunhao Liu, “Mobility Increases Localizability: A Survey on Wireless Indoor Localization using Inertial Sensors”, *ACM Computing Surveys*, 2015, 47(3):54:154:34.
- [J9] Zimu Zhou, **Chenshu Wu**, Zheng Yang, and Yunhao Liu, “Sensorless Sensing with WiFi”, *Tsinghua Science and Technology*, vol. 20, no. 1, pp. 16, 2015. (**Cover Article & Best Paper Award 2016**)
- [J10] **Chenshu Wu**, Zheng Yang, Yunhao Liu, “Smartphones based Crowdsourcing for Indoor Localization”, *IEEE Transactions on Mobile Computing (IEEE TMC)*, vol.14, no.2, pp.444-457, Feb. 2015.
- [J11] **Chenshu Wu**, Zheng Yang, Yu Xu, Yiyang Zhao, Yunhao Liu, “Human Mobility Enhances Global Positioning Accuracy for Mobile Phone Localization”, *IEEE Transactions on Parallel and Distributed Systems (IEEE TPDS)*, vol.26, no.1, pp.131-141, Jan. 2015.
- [J12] Zheng Yang, Longfei Shangguan, Yunhao Liu, Weixi Gu, Zimu Zhou, **Chenshu Wu**, “Sherlock: Micro-environment Sensing for Smartphones”, *IEEE Transactions on Parallel and Distributed Systems (IEEE TPDS)*, vol.25, no.12, pp.3295-3305, Dec. 2014.
- [J13] Xinglin Zhang, Zheng Yang, **Chenshu Wu**, Wei Sun, and Yunhao Liu, “Robust Trajectory Estimation for Crowdsourcing-based Mobile Applications”, *IEEE Transactions on Parallel and Distributed Systems (IEEE TPDS)*, vol.25, no.7, pp.1876-1885, July 2014.
- [J14] Zimu Zhou, Zheng Yang, **Chenshu Wu**, Longfei Shangguan, and Yunhao Liu, “Omnidirectional Coverage for Device-free Passive Human Detection”, *IEEE Transactions on Parallel and Distributed Systems (IEEE TPDS)*, vol.25, no.7, pp.1819-1829, July 2014.
- [J15] **Chenshu Wu**, Zheng Yang, Yunhao Liu, and Wei Xi, “WILL: Wireless Indoor Localization without Site Survey”, *IEEE Transactions on Parallel and Distributed Systems (IEEE TPDS)*, vol.24, no.4, pp.839-848, April 2013.
- [J16] Zheng Yang, Lirong Jian, **Chenshu Wu**, and Yunhao Liu, “Beyond Triangle Inequality: Sifting Noisy and Outlier Distance Measurements for Localization”, *ACM Transactions on Sensor Networks (ACM TOSN)*, vol.9, no.2, pp.26:1-26:20, March 2013.
- [J17] Zheng Yang, **Chenshu Wu**, Tao Chen, Yiyang Zhao, and Yunhao Liu, “Detecting Outlier Measurements based on Graph Rigidity for Wireless Sensor Network Localization”, *IEEE Transactions on Vehicular Technology (IEEE TVT)*, vol.62, no.1, pp.374-383, Jan. 2013.

GRANTS &
PROPOSALS

Highlights: PI of 5 projects and participated in the proposal writing of 10 more NSF China granted funds.

- [G1] **PI**, Wireless Contactless Sensing for Industrial Internet, NSF China General Program (No. 61672319), CNY 780K (USD 117K), 2017
- [G2] **Co-PI**, Research on the Architecture and Key Technologies for Industrial Internet, NSF China Key Program (No. 61632008), CNY 2.85M (USD 427K), 2017
- [G3] **PI**, Decimeter-Level Tracking using WiFi Signals, China Postdoctoral Science Foundation Special Program (No. 2017T100082), CNY 150K (USD 23K), 2017
- [G4] **PI**, Research on Sensorless Sensing with Wireless Signals, China Postdoctoral Science Foundation General Program (No. 2016M601034), CNY 50K (USD 7.5K), 2016
- [G5] **PI**, Passive Human Detection using Wireless Channel State Information, Open Program of Jiangsu High Technology Research Key Laboratory for Wireless Sensor Networks (No. WSNLBKF201508), CNY 100K (USD 15K), 2015

PATENTS

Issued Chinese Patents (8 patents in pending)

- [P1] **Chenshu Wu**, Zheng Yang, Yunhao Liu, Jiaguang Sun, Xufei Mao, Jiliang Wang, A method of wireless fingerprint matching, ZL201310309069.8, issued.
- [P2] Zheng Yang, **Chenshu Wu**, Yunhao Liu, A method for wireless indoor localization, ZL201310060708.1, issued.
- [P3] **Chenshu Wu**, Zheng Yang, Yunhao Liu, A method of subway arrival reminder for mobile devices, ZL201310100397.7, issued.
- [P4] Yunhao Liu, **Chenshu Wu**, Zheng Yang, An approach for smartphone-based dead-reckoning, ZL201210434642.3, issued.
- [P5] Yunhao Liu, Zimu Zhou, Xin Miao, Zheng Yang, **Chenshu Wu**, Wei Sun, A line-of-sight identification method for WiFi systems based on physical layer information, ZL201310479219.X, issued.
- [P6] Yunhao Liu, Jiaguang Sun, **Chenshu Wu**, Zheng Yang, Yuan He, Kebin Liu, A communication-free self-deployment approach for wireless sensor networks, ZL201310253181.4, issued.
- [P7] **Chenshu Wu**, Zheng Yang, Yunhao Liu, A method for improving GPS accuracy using local localization information, ZL201210398744.4, issued.
- [P8] **Chenshu Wu**, Yiyang Zhao, Zheng Yang, Yunhao Liu, A method for wireless indoor localization without site survey, No. ZL201210181296.2, issued.

PROFESSIONAL
SERVICES

Program Committee Member for

- 36th IEEE International Conference on Computer Communications (INFOCOM), Atlanta, 2017
- 14th IEEE International Conference on Ubiquitous Intelligence and Computing (UIC), San Francisco, 2017
- 37th IEEE International Conference on Distributed Computing Systems (ICDCS), Atlanta, 2017
- 13th IEEE International Conference on Ubiquitous Intelligence and Computing (UIC), Toulouse France, 2016
- 7th International Doctoral Forum, Xi'an, China, 2014

Conference & Workshop Organizer for

- Panel Co-chair for the 11th ACM International Workshop on IoT and Cloud Computing
- PC Co-chair for the 10th ACM International Workshop on IoT and Cloud Computing
- Poster Co-chair for the 9th ACM International Workshop on IoT and Cloud Computing
- PC Co-chair the 8th International Workshop on IoT and Cloud Computing

Reivewer for

- ACM/IEEE Transactions on Networking
- IEEE Transactions on Mobile Computing
- IEEE Transactions on Parallel and Distributed Systems
- IEEE Journal on Selected Areas in Communications
- IEEE Transactions on Vehicular Technology
- IEEE Transactions on Signal Processing
- PACM on Interactive, Mobile, Wearable and Ubiquitous Technologies
- ACM Transactions on Sensor Networks
- IEEE Internet of Things Journal
- IEEE Transactions on Automation Science and Engineering
- Elsevier Computer Networks
- Elsevier Computer Communications
- Wireless Communications and Mobile Computing

Guest Lecturer / Teaching Assistant for

- Graduate Course: Selected Topics in Advanced Networks (Spring 2013 & 2015, School of Software)
- Undergraduate Course: Computer Networks (Fall 2011 & Fall 2012, School of Software)
- Undergraduate Course: Professional Making Training (Fall 2010, School of Software)

MENTORSHIP

I am fortunate to work with a great group of graduate and undergraduate students during my PhD and postdoc time at Tsinghua University:

Graduate Mentorship

- Kun Qian, PhD student at Tsinghua, since 2014 (co-supervised with Prof. Yunhao Liu)
- Zuwei Yin, PhD student at Tsinghua, since 2014 (co-supervised with Prof. Yunhao Liu)
- Yue Zheng, PhD student at Tsinghua, since 2015 (co-supervised with Prof. Yunhao Liu)
- Junjie Yin, PhD student at Tsinghua, since 2016 (co-supervised with Prof. Yunhao Liu)
- Chaofan Yang, master student at Tsinghua, since 2014 (co-supervised with Prof. Yunhao Liu)
- Tianmeng Hang, master student at Tsinghua, since 2015 (co-supervised with Prof. Yunhao Liu)

Undergraduate Mentorship

- 2016.07-2017.04, Jingao Xu (now PhD student at Tsinghua University)
- 2016.07-2017.04, Hengjie Chen (now master student at Tsinghua University)
- 2015.07-2016.07, Liang Dong, Yu Bao (now founders of Tanker Tech. to commercialize the products)
- 2014.07-2015.07: Mengying Wu, Beijing Jiaotong University (now master student at Tsinghua University)
- 2014.07-2015.07: Chaowei Xiao, Tsinghua University (now PhD student at University of Michigan)
- 2014.07-2015.07: **Vice Director of the Student Affairs Office in School of Software, Tsinghua University**
- 2010.08-2014.07: **Counsellor of over 60 undergraduates of class 2010 in School of Software, Tsinghua University (won over 10 Excellent Collective Awards and the Lin Feng Counsellor Award)**