Yaxiong Xie

Assistant Professor at SUNY Buffalo

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Professional Experience

2022–Present	**Assistant Professor**, *University at Buffalo, SUNY*, Buffalo, NY, USA.
2018–2022	**Postdoctoral Research Associate**, *Princeton University*, Princeton, NJ, USA. Supervisor: Prof. **Kyle Jamieson**, Prof. **Jenifer Rexford**
2017–2018	**Research Fellow**, *Nanyang Technological University (NTU)*, Singapore. Supervisor: Prof. **Mo Li**

Education

2012–2017	**PhD, Computer Science**, *Nanyang Technological University (NTU)*, Singapore, Thesis: Enhancing the performance of Wi-Fi system by exploiting physical layer information. Supervisor: Prof. **Mo Li**
2008–2012	**Bachelor Degree**, *University of Science and Technology of China (USTC)*, Anhui, China.

Selected Open-source Projects

Next-G Network Traffic Monitoring and Sensing

NG-Scope: a Fine-Grained Radio Access Network Telemetry Tool for Next-Generation Cellular Networks, Project Website, Code.

NG-Scope is able to work as a measurement tool to monitor cellular traffic by decoding the physical control channel messages. The telemetry data can be used to design transport protocols and network applications. NG-Scope also extracts the channel state information (CSI) of the cellular wireless link, enabling diverse cellular-based sensing applications. We have published one SIGCOMM, one SigMetrics, and two SenSys papers based on NG-Scope.

Highlight: Two **NSF grants**, one **Amateur Radio Digital Communications Gift**, and one **Princeton Internal Funding** have been awarded to support extending the functionality of NG-Scope and making it more accessible to the community. NG-Scope has been used by researchers from Duke, Illinois, John Hopkins University, Rutgers, UCSD, UMass, etc.

Mobile Sensing Platform

Atheros-CSI-Tool: a High-Resolution CSI Extraction Tool for Commodity Atheros Wi-Fi Interface Card, Project Website, Code.

Atheros CSI tool extracts CSI information from all ath9k-based COTS Atheros Wi-Fi NICs and thus becomes a fundamental building block for diverse CSI-based sensing systems. Systems built atop of Atheros CSI tool are published in top tier conferences and journals, including MobiCom, SIGCOMM, MobiSys, Oakland (S&P), UbiComp, AAAI, JIoT, and TMC.

Highlight: Atheros CSI tool has been cited **764** times and has been used in more than **100** systems.

Highlight: Cited by 804 times. Used in more than 100 systems

Publications

Conference Proceedings [Students from my group are underlined.]

2024	Yanbo Zhang, Yaxiong Xie, and Mo Li. Face Recognition In Harsh Conditions: An Acoustic Based Approach With Commercial Device. In *Proceedings of the ACM International Conference on Mobile Systems, Applications, and Services*, **MobiSys**, 2024.

2024 Liyao Li, Bozhao Shang, Yun Wu, Jie Xiong, Xiaojiang Chen, and Yaxiong Xie. Cyclops: A Nanomaterial-based, Battery-Free Intraocular Pressure (IOP) Monitoring System inside Contact Lens. In *Proceedings of the 16th USENIX Conference on Networked Systems Design and Implementation*, **NSDI**, 2024.

2023 Xuesheng Zhang, Duo Zhang, Yaxiong Xie, Dan Wu, Yang Li, and Daqing Zhang. Waffle: A Waterproof mmWave-based Human Sensing System inside Bathrooms with Running Water. In *Proceedings of the ACM International Joint Conference on Pervasive and Ubiquitous Computing*, **UbiComp**, 2023.

2023 Duo Zhang, Xusheng Zhang, Shengjie Li, Yaxiong Xie, Yang Li, Xuanzhi Wang, and Daqing Zhang. LT-Fall: The Design and Implementation of a Life-threatening Fall Detection and Alarming System . In *Proceedings of the ACM International Joint Conference on Pervasive and Ubiquitous Computing*, **UbiComp**, 2023.

2023 Duo Zhang, Xuesheng Zhang, Yaxiong Xie, Fusang Zhang, Xuanzhi Wang, Yang Li, and Daqing Zhang. LoCal: An Automatic Location Attribute Calibration Approach for Large-Scale Deployment of mmWave-based Sensing Systems. In *Proceedings of the ACM International Joint Conference on Pervasive and Ubiquitous Computing*, **UbiComp**, 2023.

2023 Zhuqi Li, Yaxiong Xie, Netravali Ravi, and Kyle Jamieson. Dashlet: Taming Swipe Uncertainty for Robust Short Video Streaming. In *Proceedings of the 16th USENIX Conference on Networked Systems Design and Implementation*, **NSDI**, 2023.

2023 Xinyi Li, Chao Feng, Xiaojing Wang, Yangfan Zhang, Yaxiong Xie, and Xiaojiang Chen. RF-Bouncer: A Programmable Dual-band Metasurface for Sub-6 Wireless Networks. In *Proceedings of the 16th USENIX Conference on Networked Systems Design and Implementation*, **NSDI**, 2023.

2023 Guorong He, Shaojie Chen, Dan Xu, Xiaojiang Chen, Yaxiong Xie, Xinhuai Wang, and Dingyi Fang. Fusang: Graph-inspired Robust and Accurate Object Recognition on Commodity mmWave Devices. In *Proceedings of The 21st ACM International Conference on Mobile Systems, Applications, and Services*, **MobiSys**, 2023.

2022 Fan Yi, Yaxiong Xie, and Kyle Jamieson. Cellular-Assisted, Deep Learning Based COVID-19 Contact Tracing. In *Proceedings of the ACM international joint conference on pervasive and ubiquitous computing*, **UbiComp**, 2022.

2022 Yaxiong Xie and Kyle Jamieson. NG-Scope: Fine-Grained Telemetry for NextG Cellular Networks. In *Proceedings of the Annual Conference of ACM Special Interest Group for the Computer Systems Performance Evaluation Community.*, **SigMetrics**, 2022.

2022 Li, Liyao, Yaxiong Xie, Jie Xiong, Ziyu Hou, Yingchun Zhang, Qing We, Fuwei Wang, Dingyi Fang, and Xiaojiang Chen. SmartLens: Sensing Eye Activities Using Zero-Power Contact Lens. In *Proceedings of the 28th Annual International Conference on Mobile Computing and Networking*, **MobiCom**, 2022.

2022 Yang Li, Dan Wu, Jie Zhang, Xuhai Xu, Yaxiong Xie, Tao Gu, and Daqing Zhang. DiverSense: Maximizing Wi-Fi Sensing Range Leveraging Signal Diversity. In *Proceedings of the ACM international joint conference on pervasive and ubiquitous computing*, **UbiComp**, 2022.

2022 Sijie Ji, Yaxiong Xie, and Mo Li. SiFall: Practical Online Fall Detection with RF Sensing. In *Proceedings of the 19th ACM Conference on Embedded Networked Sensor Systems*, **SenSys**, 2022.

2022 Ruiyang Gao, Wenwei Li, Yaxiong Xie, Enze Yi, Leye Wang, Dan Wu, and Daqing Zhang. Towards Robust Gesture Recognition by Characterizing the Sensing Quality of WiFi Signals. In *Proceedings of the ACM international joint conference on pervasive and ubiquitous computing*, **UbiComp**, 2022.

2022 Yuda Feng, Yaxiong Xie, Deepak Ganesan, and Jie Xiong. LTE-based Low-cost and Low-power Soil Moisture Sensing. In *Proceedings of the 19th ACM Conference on Embedded Networked Sensor Systems*, **SenSys**, 2022.

2021 Fan Yi, Yaxiong Xie, and Kyle Jamieson. The case for small-scale, mobile-enhanced covid-19 epidemiology. In *Proceedings of the 19th International Symposium on Modeling and Optimization in Mobile, Ad hoc, and Wireless Networks*, **WiOpt**, 2021.

2021 Yuda Feng, Yaxiong Xie, Deepak Ganesan, and Jie Xiong. LTE-Based Pervasive Sensing Across Indoor and Outdoor. In *Proceedings of the 19th ACM Conference on Embedded Networked Sensor Systems*, **SenSys**, 2021.

2020 Yaxiong Xie, Fan Yi, and Kyle Jamieson. PBE-CC: Congestion Control via Endpoint-Centric, Physical-Layer Bandwidth Measurements. In *Proceedings of the Annual Conference of the ACM Special Interest Group on Data Communication on the Applications, Technologies, Architectures, and Protocols for Computer Communication*, **SIGCOMM**, 2020.

2019 Yaxiong Xie, Jie Xiong, Mo Li, and Kyle Jamieson. MD-Track: Leveraging Multi-Dimensionality for Passive Indoor Wi-Fi Tracking. In *Proceedings of the 25th Annual International Conference on Mobile Computing and Networking*, **MobiCom**, 2019.

2019 Shuyu Shi, Yaxiong Xie, Mo Li, Alex X. Liu, and Jun Zhao. Synthesizing Wider WiFi Bandwidth for Respiration Rate Monitoring in Dynamic Environments. In *Proceedings of the 35th Annual IEEE International Conference on Computer Communications*, **INFOCOM**, 2019.

2019 Zhuqi Li, Yaxiong Xie, Longfei Shangguan, R. Ivan Zelaya, Jeremy Gummeson, Wenjun Hu, and Kyle Jamieson. Towards Programming the Radio Environment with Large Arrays of Inexpensive Antennas. In *Proceedings of the 16th USENIX Conference on Networked Systems Design and Implementation*, **NSDI**, 2019.

2018 Yaxiong Xie, Yanbo Zhang, Jansen Christian Liando, and Mo Li. SWAN: Stitched Wi-Fi ANtennas. In *Proceedings of the 24th Annual International Conference on Mobile Computing and Networking*, **MobiCom**, 2018.

2016 Yaxiong Xie, Zhenjiang Li, Mo Li, and Kyle Jamieson. Augmenting Wide-band 802.11 Transmissions via Unequal Packet Bit Protection. In *Proceedings of the 35th Annual IEEE International Conference on Computer Communications*, **INFOCOM**, 2016.

2015 Yaxiong Xie, Zhenjiang Li, and Mo Li. Precise Power Delay Profiling with Commodity Wi-Fi. In *Proceedings of the 21st Annual International Conference on Mobile Computing and Networking*, **MobiCom**, 2015.

2015 Zhenjiang Li, Yaxiong Xie, Mo Li, and Kyle Jamieson. Recitation: Rehearsing Wireless Packet Reception in Software. In *Proceedings of the 21st Annual International Conference on Mobile Computing and Networking*, **MobiCom**, 2015.

Journal and Workshop Papers

2021 Fan Yi, Yaxiong Xie, and Kyle Jamieson. Cellular-Assisted COVID-19 Contact Tracing. In *Proceedings of the 2nd Workshop on Deep Learning for Wellbeing Applications Leveraging Mobile Devices and Edge Computing*, **HealthDL**, 2021.

2020 Zhuqi Li, Yaxiong Xie, Longfei Shangguan, R. Ivan Zelaya, Jeremy Gummeson, Wenjun Hu, and Kyle Jamieson. Programmable Radio Environments with Large Arrays of Inexpensive Antennas. ***GetMobile***: *Mobile Comp. and Comm.*, volume 23, page 23–27, jan 2020.

2019 Yaxiong Xie, Zhenjiang Li, and Mo Li. Precise Power Delay Profiling with Commodity Wi-Fi. *IEEE Transactions on Mobile Computing (**TMC**)*, volume 18, pages 1342–1355, 2019.

2016 Yaxiong Xie, Jie Xiong, Mo Li, and Kyle Jamieson. xD-Track: Leveraging Multi-Dimensional Information for Passive Wi-Fi Tracking. In *Proceedings of the 3rd Workshop on Hot Topics in Wireless*, **HotWireless**, 2016.

Graduate Students Mentoring and Advising

Dissertations/Theses Progress

Jan, 2023 **Yuxin Liu**, *Ph.D.*, Started from Jan, 2023, degree expected Jan 2028.

Jan, 2023 **Liyao Li**, *Ph.D.*, Started from Sep, 2023, degree expected Jan 2028.

Jan, 2023 **Yuhao Wang**, *Ph.D.*, Started from Sep, 2023, degree expected Jan 2028.

PhD Prelim Examination Committee Member

July, 2023 **Xiaoyu Zhang**, *Ph.D.*, July, 2023.

Oct, 2023 **Andrew Mikalsen**, *Ph.D.*, Oct, 2023.

Teaching Experience

Instructor

Fall, 2023 **CSE610: Mobile Sensing and Mobile Networks**, University at Buffalo.

Spring, 2023 **CSE610: Mobile Sensing and Mobile Networks**, University at Buffalo.

Fall, 2022 **CSE710: Seminar on Wireless Networks**, University at Buffalo.

Spring, 2021 **COS563: Wireless Networks**, Princeton University.

Teaching Assistant

Spring, 2021 **ELE368: Introduction to Wireless Communication Systems**, Princeton University.

Spring, 2019 **COS463: Wireless Network**, Princeton University.

2014 - 2016 **CZ3006: Net-Centric Computing**, Nanyang Technological University.

Fall, 2013 **EE2006: Engineering Mathematics**, Nanyang Technological University.

Professional Services

TPC Member and Chairs

2024 **ACM MobiCom**.

2023 **ACM MobiCom**, *Artifact Evaluation Chair*.

2023 **IEEE ICDCS**.

2023 **IEEE IFIP**.

2022 **IEEE ICPADS**, *System and Applied Data Science Track Chair*.

2022 **ACM MobiCom Poster**.

2022 **CPD Workshop colocated with UbiComp**.

2022 **EAI MobiQuitous**.

2019 **IEEE ICDCS**.

2019 **IEEE MSN**.

2019 **ACM MobiSys RisingStars Forum**.

2019 **ACM CoWireless**.

2018 **ACM S3 student workshop)**.

2018 **IEEE (ICCCN)**.

2016 **ACM QTNA**.

External Reviewer

2019-2022 **NSDI**.

2019-2021 **SIGCOMM**.

2015-2022 **MobiCom**.

2017 **MobiSys**.

2013-2019 **INFOCOM**.

2014	**ICNP**.
Journal	**IEEE Transactions on Mobile Computing (TMC)**.
Journal	**IEEE Internet of Things Journal (IoT Journal)**.
Journal	**IEEE/ACM Transactions on Networking (ToN)**.
Journal	**IEEE Transactions on Human-Machine Systems (THMS)**.
Journal	**IEEE Transactions on Wireless Communications (TWC)**.
Journal	**IEEE Wireless Communications Magazines**.
Journal	**ACM Transactions on Sensor Networks (TOSN)**.

Departmental and University Service

2022-2023	**CSE Graduate Admission Committee**, University at Buffalo, SUNY.
2022-2023	**CSE Faculty Search Committee**, University at Buffalo, SUNY.

End of CV