Kun Qian

CONTACT INFORMATION	⊘ Olsson Hall, 151 Engineer's Way, Charlottesville, VA 22903 ✉ kunqian@virginia.edu 🔗 https://kunqian.info

RESEARCH INTERESTS

Wireless sensing and networking: Passive reflective metasurfaces; MmWave radar backscatter; Super-resolution radar sensing; Ubiquitous Wi-Fi sensing.

Ubiquitous and mobile Computing: Hidden screen-camera communication; Healthcare with Mobile devices; Indoor localization; Mobile data mining.

EDUCATION

Tsinghua University   09/2014 − 01/2019
     Ph.D. in Software Engineering.
     Advisor: Prof. Yunhao Liu

Tsinghua University   09/2010 − 07/2014
     B.Sc., Software Engineering. Rank: 1/60.

EMPLOYMENT

University of Virginia   02/2024 − Now
     Assistant Professor in the Department of Computer Science

University of California San Diego   04/2019 − 01/2024
     Postdoc in the Department of Electrical and Computer Engineering
     Advisor: Prof. Xinyu Zhang

SELECTED CONFERENCE PUBLICATIONS

1. Timothy Woodford, **Kun Qian**, Xinyu Zhang, "Metasight: High-Resolution NLoS Radar with Efficient Metasurface Encoding", ACM Conference on Embedded Networked Sensor Systems (**SenSys**), 2023

2. Kai Zheng, **Kun Qian**, Timothy Woodford, Xinyu Zhang, "NeuroRadar: A Neuromorphic Radar Sensor for Low-Power IoT Systems", ACM Conference on Embedded Networked Sensor Systems (**SenSys**), 2023 (**Best Paper Award**)

3. **Kun Qian**, Lulu Yao, Kai Zheng, Xinyu Zhang, Tse Nga Ng, "UniScatter: a Metamaterial Backscatter Tag for Wideband Joint Communication and Radar Sensing", ACM International Conference on Mobile Computing and Networking (**MobiCom**), 2023.

4. Zheng Yang, Yi Zhang, **Kun Qian**, Chenshu Wu. "SLNet: A Spectrogram Learning Neural Network for Deep Wireless Sensing", USENIX Symposium on Networked Systems Design and Implementation (**NSDI**), 2023.

5. **Kun Qian**, Lulu Yao, Xinyu Zhang, Tse Nga Ng, "MilliMirror: 3D Printed Reflecting Surface for Millimeter-Wave Coverage Expansion", ACM International Conference on Mobile Computing and Networking (**MobiCom**), 2022.

6. **Kun Qian**(co-primary author), John Nolan(co-primary author), Xinyu Zhang, "RoS: Passive Smart Surface for Roadside-to-Vehicle Communication", ACM Special Interest Group on Data Communication (**SIGCOMM**), 2021

7. **Kun Qian**, Shilin Zhu, Xinyu Zhang, Li Erran Li, "Robust Multimodal Vehicle Detection in Foggy Weather Using Complementary Lidar and Radar Signals", IEEE Computer Vision and Pattern Recognition Conference (**CVPR**), 2021.

8. **Kun Qian**, Yumeng Lu, Zheng Yang, Kai Zhang, Kehong Huang, Xinjun Cai, Chenshu Wu, Yunhao Liu, "Hidden Screen-Camera Communication on an Invisible and Inaudible Dual Channel", USENIX Symposium on Networked Systems Design and Implementation (**NSDI**), 2021.

9. Renjie Zhao, Timothy Woodford, Teng Wei, **Kun Qian**, Xinyu Zhang, "M-Cube: a Millimeter-Wave Massive MIMO Software Radio", ACM International Conference on Mobile Computing and Networking (**MobiCom**), 2020 (**Best Paper Award**).

10. Yue Zheng, Yi Zhang, **Kun Qian**, Guidong Zhang, Yunhao Liu, Chenshu Wu, Zheng Yang, "Zero-Effort Cross-Domain Gesture Recognition with Wi-Fi", ACM International Conference on Mobile Systems, Applications, and Services (**MobiSys**), 2019.

11. **Kun Qian**, Chenshu Wu, Yi Zhang, Guidong Zhang, Zheng Yang, Yunhao Liu, "Widar2.0: Passive Human Tracking with a Single Wi-Fi Link", ACM International Conference on Mobile Systems, Applications, and Services (**MobiSys**), 2018.

12. **Kun Qian**, Chenshu Wu, Fu Xiao, Yue Zheng, Yi Zhang, "Acousticcardiogram: Monitoring Heartbeats using Acoustic Signals on Smart Devices", IEEE International Conference on Computer Communications (**INFOCOM**), 2018 (**Best In-Session Presentation Award**).

13. **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 Theory, Algorithmic Foundations, and Protocol Design for Mobile Networks and Mobile Computing (**MobiHoc**), 2017.

14. **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 (**CHI**), 2017 (**Honorable Mention Award**).

15. **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 (**INFOCOM**), 2016.

16. 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 (**INFOCOM**), 2015.

17. **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 (**ICPADS**), 2014 (**Best Paper Candidate**).

SELECTED JOURNAL PUBLICATIONS

1. John Nolan, **Kun Qian**, Xinyu Zhang, "KeyStub: A Passive RFID-based Keypad Interface Using Resonant Stubs", ACM Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (**IMWUT**), 7(4), 2024.

2. Yi Zhang, Yue Zheng, **Kun Qian**, Guidong Zhang, Yunhao Liu, Chenshu Wu, Zheng Yang. "Widar3.0: Zero-Effort Cross-Domain Gesture Recognition with Wi-Fi", IEEE Transactions on Pattern Analysis and Machine Intelligence (**TPAMI**), 44(11), 2022.

3. **Kun Qian**, Zhaoyuan He, Xinyu Zhang, "3D Point Cloud Generation with Millimeter-Wave Radar", ACM Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (**IMWUT**), 4(4), 2020.

4. Jingao Xu, Hengjie Chen, **Kun Qian**, Erqun Dong, Min Sun, Chenshu Wu, Li Zhang, Zheng Yang, "iVR: Integrated Vision and Radio Localization with Zero Human Effort", ACM Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (**IMWUT**), 3(3), 2019.

5. **Kun Qian**, Chenshu Wu, Zheng Yang, Zimu Zhou, Xu Wang, Yunhao Liu, "Enabling Phased Array Signal Processing for Mobile WiFi Devices", IEEE Transactions on Mobile Computing (**TMC**), 17(8), 2018.

6. **Kun Qian**, Chenshu Wu, Zheng Yang, Yunhao Liu, Fugui He, Tianzhang Xing, "Enabling Contactless Detection of Moving Humans with Dynamic Speeds using CSI", ACM Transactions on Embedded Computing Systems (**TECS**), 17(2), 2018.

Books

1. Zheng Yang, **Kun Qian**, Chenshu Wu, Yi Zhang, "Smart Wireless Sensing: From IoT to AIoT", Springer, 2021.

Honors & Awards

Best Paper Award, SenSys 2023 (1/179)	2023
Best Paper Award, MobiCom 2020 (2/384)	2020
Best In-Session Presentation Award, INFOCOM 2018 (1/4)	2018
Honorable Mention Award, CHI 2017	2017
Best Paper Candidate, ICPADS 2014 (4/323)	2014
Beijing Outstanding Postgraduate Award	2018
National Scholarship	$2015 - 2018$
Tsinghua Future Scholar Fellowship	2014
Tsinghua Outstanding Graduate Award	2014
Beijing Outstanding Graduate Award	2014
Tsinghua Outstanding Graduate Thesis Award	2014
Tsinghua "December 9th" Scholarship	2013
National Scholarship	2012

Teaching

Tsinghua University   Fall $2014 - 2016$

34100294 - Computer And Network Architecture (1)
Teaching Assistant

Service

Reviewer: ToSN, TMC, ToN, TWC, TVT, IMWUT, IoT Journal, UIST'21

TPC Member: S3'19, ICPADS'19, MSN'21, CoNext'23

Track Chair: BigCom'24