

KUN QIAN

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RESEARCH INTERESTS

- AI for wireless sensing and communication (e.g., generative models)
- Wireless IoT/mobile system and hardware (e.g., RIS, backscatter)
- Applications of wireless sensing (e.g., health, transportation, environment)

PROFESSIONAL EXPERIENCE

University of Virginia

Feb. 2024 - Present

- Department of Computer Science
- Assistant Professor

University of California San Diego

Apr. 2019 - Jan. 2024

- Department of Electrical and Computer Engineering
- Postdoc Researcher

EDUCATION

Tsinghua University

Jan. 2019

- Ph.D. in Software Engineering
- Advisor: Prof. Yunhao Liu

Tsinghua University

Jul. 2014

- B.Sc. in Software Engineering (Rank: 1/60)

SELECTED CONFERENCE PUBLICATIONS

1. Shunqiang Feng, Swastik Kanjilal, **Kun Qian**, Ish Jain, “BeamFormer: Transformer-based Beam Management for 6G Networks.” In *Proceedings of the ACM International Conference on Mobile Systems, Applications, and Services (MobiSys)*, 2026.
2. **Kun Qian**, Parth Pathak, “Toward Spoofing-Resilient and Communication-Integrated MmWave Radar Sensing.” In *Proceedings of the ACM International Conference on Mobile Systems, Applications, and Services (MobiSys)*, 2025.
3. Xingyu Chen, Zihao Feng, **Kun Qian**, Xinyu Zhang, “Radio Frequency Ray Tracing with Neural Object Representation for Enhanced RF Modeling.” In *Proceedings of the IEEE Computer Vision and Pattern Recognition Conference (CVPR)*, 2025.
4. Xingyu Chen, Zihao Feng, Ke Sun, **Kun Qian**, Xinyu Zhang, “RFCanvas: Modeling RF Channel by Fusing Visual Priors and Few-shot RF Measurements.” In *Proceedings of the ACM Conference on Embedded Networked Sensor Systems (SenSys)*, 2024.
5. Timothy Woodford, **Kun Qian**, Xinyu Zhang, “Metasight: High-Resolution NLoS Radar with Efficient Metasurface Encoding.” In *Proceedings of the ACM Conference on Embedded Networked Sensor Systems (SenSys)*, 2023.
6. Kai Zheng, **Kun Qian**, Timothy Woodford, Xinyu Zhang, “NeuroRadar: A Neuromorphic Radar Sensor for Low-Power IoT Systems.” In *Proceedings of the ACM Conference on Embedded Networked Sensor Systems (SenSys)*, 2023.

7. **Kun Qian**, Lulu Yao, Kai Zheng, Xinyu Zhang, Tse Nga Ng, “UniScatter: a Metamaterial Backscatter Tag for Wideband Joint Communication and Radar Sensing.” In *Proceedings of the ACM International Conference on Mobile Computing and Networking (MobiCom)*, 2023.
8. Zheng Yang, Yi Zhang, **Kun Qian**, Chenshu Wu. “SLNet: A Spectrogram Learning Neural Network for Deep Wireless Sensing.” In *Proceedings of the USENIX Symposium on Networked Systems Design and Implementation (NSDI)*, 2023.
9. **Kun Qian**, Lulu Yao, Xinyu Zhang, Tse Nga Ng, “MilliMirror: 3D Printed Reflecting Surface for Millimeter-Wave Coverage Expansion.” In *Proceedings of the ACM International Conference on Mobile Computing and Networking (MobiCom)*, 2022.
10. **Kun Qian**, John Nolan, Xinyu Zhang, “RoS: Passive Smart Surface for Roadside-to-Vehicle Communication.” In *Proceedings of the ACM Special Interest Group on Data Communication (SIGCOMM)*, 2021.
11. **Kun Qian**, Shilin Zhu, Xinyu Zhang, Li Erran Li, “Robust Multimodal Vehicle Detection in Foggy Weather Using Complementary Lidar and Radar Signals.” In *Proceedings of the IEEE Computer Vision and Pattern Recognition Conference (CVPR)*, 2021.
12. **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.” In *Proceedings of the USENIX Symposium on Networked Systems Design and Implementation (NSDI)*, 2021.
13. Renjie Zhao, Timothy Woodford, Teng Wei, **Kun Qian**, Xinyu Zhang, “M-Cube: a Millimeter-Wave Massive MIMO Software Radio.” In *Proceedings of the ACM International Conference on Mobile Computing and Networking (MobiCom)*, 2020.
14. Yue Zheng, Yi Zhang, **Kun Qian**, Guidong Zhang, Yunhao Liu, Chenshu Wu, Zheng Yang, “Zero-Effort Cross-Domain Gesture Recognition with Wi-Fi.” In *Proceedings of the ACM International Conference on Mobile Systems, Applications, and Services (MobiSys)*, 2019.
15. **Kun Qian**, Chenshu Wu, Yi Zhang, Guidong Zhang, Zheng Yang, Yunhao Liu, “Widar2.0: Passive Human Tracking with a Single Wi-Fi Link.” In *Proceedings of the ACM International Conference on Mobile Systems, Applications, and Services (MobiSys)*, 2018.
16. **Kun Qian**, Chenshu Wu, Fu Xiao, Yue Zheng, Yi Zhang, “Acousticcardiogram: Monitoring Heartbeats using Acoustic Signals on Smart Devices.” In *Proceedings of the IEEE International Conference on Computer Communications (INFOCOM)*, 2018.
17. **Kun Qian**, Chenshu Wu, Zheng Yang, Yunhao Liu, Kyle Jamieson, “Widar: Decimeter-Level Passive Tracking via Velocity Monitoring with Commodity Wi-Fi.” In *Proceedings of the ACM International Symposium on Theory, Algorithmic Foundations, and Protocol Design for Mobile Networks and Mobile Computing (MobiHoc)*, 2017.
18. **Kun Qian**, Chenshu Wu, Zimu Zhou, Yue Zheng, Zheng Yang, Yunhao Liu, “Inferring Motion Direction using Commodity Wi-Fi for Interactive Exergames.” In *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems (CHI)*, 2017.
19. **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.” In *Proceedings of the IEEE International Conference on Computer Communications (INFOCOM)*, 2016.
20. Chenshu Wu, Zheng Yang, Zimu Zhou, **Kun Qian**, Yunhao Liu, Mingyan Liu, “PhaseU: Real-time LOS Identification with WiFi.” In *Proceedings of the IEEE International Conference on Computer Communications (INFOCOM)*, 2015.

21. **Kun Qian**, Chenshu Wu, Zheng Yang, Yunhao Liu, Zimu Zhou, “PADS: Passive Detection of Moving Targets with Dynamic Speed using PHY Layer Information.” In *Proceedings of the IEEE International Conference on Parallel and Distributed Systems (ICPADS)*, 2014.

SELECTED JOURNAL PUBLICATIONS

1. John Nolan, **Kun Qian**, Xinyu Zhang, “KeyStub: A Passive RFID-based Keypad Interface Using Resonant Stubs.” *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.” *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.” *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.

EXTERNAL GRANTS

1. NSF NeTS PI, Oct. 2024 - Sept. 2028
 - *Project title*: “NeTS: Medium: Generative Channel Cartography for Giga MIMO Networks on the 6G Upper Mid-band”
 - *Co-PI*: Prof. Xinyu Zhang (UCSD)

INTERNAL GRANTS

1. UVA CCI Research Grant FY25 PI, Jan. 2025 - Jun. 2026
 - *Project title*: Spoofing-Resilient and Communication-Compatible MmWave Radar Sensing for Autonomous Systems
 - *Co-PI*: Tariq Iqbal (SIE)

TEACHING

University of Virginia

- CPS 1 - Cyber-Physical Systems Technology and Ethics Fal 2026
- CS/ECE 4501 - Wireless for the Internet of Things Sp 2025 - 2026
- CS 6501 - Wireless Sensing for Internet of Things Fal 2024 - 2026

SERVICE

- Associate Editor, ACM IMWUT 2026
- TPC member, ACM MobiHoc 2026
- TPC member, IEEE INFOCOM 2025 - 2026
- TPC member, ACM MobiSys 2025
- TPC member, ACM RCom Workshop 2024
- Track Chair, IEEE BigCom 2024
- TPC member, ACM CoNext 2023
- TPC member, IEEE MSN 2021
- TPC member, IEEE ICPADS 2019
- TPC member, ACM S3 Workshop 2019

HONORS & AWARDS

- Distinguished TPC Member, INFOCOM 2025 2025
- 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
- Beijing Outstanding Postgraduate Award 2018
- National Scholarship 2015 - 2018
- Honorable Mention Award, CHI 2017 2017
- Best Paper Candidate, ICPADS 2014 (4/323) 2014
- 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