

Kai Zheng | Curriculum Vitae

3535 Lebon Dr. – San Diego, CA 92122

+1 (646) 717 4078 • kaizheng28@gmail.com • kaizheng.me

Research Interest

Wireless Sensing and Networking: mmWave Radar Systems (Joint radar-communication, sparse array, AI-enhanced perception); novel radio hardware and software design (Software-Defined Radios, mmWave/FR3 massive-MIMO platform); metasurface design.

Mobile and Ubiquitous Computing: Low-power reliable IoT networking, neuromorphic computing and sensing.

Education

University of California San Diego (UCSD)

Ph.D. in Electrical and Computer Engineering

Advisor: Prof. Xinyu Zhang

La Jolla, CA

2020–2025 Expected June

New York University (NYU)

M.S. in Computer Engineering

Advisor: Prof. Sundeep Rangan

Brooklyn, NY

2017–2019

Fudan University (FDU)

B.S. in Electrical Engineering

Shanghai, China

2011–2015

Work Experience

Pi Radio Inc. (NYU WIRELESS Spinoff)

Radio-Frequency Engineer (Software-Defined Radio)

Brooklyn, NY

2019–2020

Huawei Technology Co., Ltd.

Baseband Hardware Engineer (Smartphone)

Shanghai, China

2015–2017

Publication

Paper in Submission

- “NEAR: Neural Electromagnetic Array Response”
Yinyan Bu, Jiajie Yu, **Kai Zheng**, Xinyu Zhang, Piya Pal. In submission.
- “Differentiable Rendering of Electromagnetic Waves in the Radio Frequency Spectrum”
Xingyu Chen, Jianrong Ding, **Kai Zheng**, Xinmin Fang, Xinyu Zhang, Tzuma Li, Zhengxiong Li. In submission.
- “ULPAN: Neural Radio Modulation for Ultra-Low-Power Asymmetric Communication”
Yufan Wei, **Kai Zheng**, Xinyu Zhang, Zhi-Li Zhang. In revision.
- “metaPolar: Passive mmWave Radar-Readable Metasurface Road Signs with High Encoding Capacity”
Kai Zheng, Wuqiong Zhao, Xinyu Zhang. In preparation.

Conference Papers

- “Enhancing mmWave Radar Sensing Using a Phased-MIMO Architecture”
Kai Zheng, Wuqiong Zhao, Timothy Woodford, Renjie Zhao, Xinyu Zhang, Yingbo Hua.
The 22nd Annual International Conference on Mobile Systems, Applications and Services (**MobiSys**), 2024.
(16.3% acceptance rate)

- “NeuroRadar: A Neuromorphic Radar Sensor for Low-Power IoT Systems”
Kai Zheng, Kun Qian, Timothy Woodford, Xinyu Zhang.
The 21th ACM Conference on Embedded Networked Sensor Systems (**SenSys**), 2023.
(19.0% acceptance rate, **Best Paper Award, Communications of the ACM Research Highlight**)
- “SlimWiFi: Ultra-Low-Power IoT Radio Architecture Enabled by Asymmetric Communication”
Renjie Zhao, Kejia Wang, **Kai Zheng**, Xinyu Zhang, and Vincent Leung.
The 20th USENIX Symposium on Networked Systems Design and Implementation (**NSDI**), 2023.
(16.0% acceptance rate)
- “UniScatter: a Metamaterial Backscatter Tag for Wideband Joint Communication and Radar Sensing”
Kun Qian, Lulu Yao, **Kai Zheng**, Xinyu Zhang, and Tse Nga Ng.
The 29th Annual International Conference On Mobile Computing and Networking (**MobiCom**), 2023.
(29.4% acceptance rate)
- “Calibrating a 4-channel fully-digital 60 GHz SDR”
Aditya Dhananjay, **Kai Zheng**, Jaakko Haarla, Lorenzo Iotti, Marco Mezzavilla, Dennis Shasha, Sundeep Rangan.
Proceedings of the 14th International Workshop on Wireless Network Testbeds, Experimental Evaluation & Characterization (**WiNTECH**), 2020.
- “Characterizing 60 GHz patch antenna segments for fully digital transceiver”
Jaakko Haarla, Vasilii Semkin, **Kai Zheng**, Aditya Dhananjay, Marco Mezzavilla, Juha Ala-Laurinaho, Ville Viikari.
14th European Conference on Antennas and Propagation (**EuCAP**), 2020.
- “Software-defined Radios to Accelerate mmWave Wireless Innovation”
Kai Zheng, Aditya Dhananjay, Marco Mezzavilla, Arjuna Madanayake, Shubhendu Bharadwaj, Viduneth Ariyaratna, Abhimanyu Gosain, et al.,
The IEEE International Symposium on Dynamic Spectrum Access Networks (**DySPAN**), 2019.
- “MillimeTera: Toward a large-scale open-source mmWave and terahertz experimental testbed”
Polese, Michele, Francesco Restuccia, Abhimanyu Gosain, Josep Jornet, Shubhendu Bhardwaj, Viduneth Ariyaratna, Soumyajit Mandal, **Kai Zheng**, et al.
Proceedings of the 3rd ACM Workshop on Millimeter-wave Networks and Sensing Systems (**mmNets**), 2019.

Journals

- “A Neuromorphic Radar Sensor for Low-Power IoT Systems” (**Invited, Highlighted**)
Kai Zheng, Kun Qian, Timothy Woodford, and Xinyu Zhang.
GetMobile: Mobile Computing and Communications. 2024.
- “Structural Pseudocapacitors with Reinforced Interfaces to Increase Multifunctional Efficiency”
Lulu Yao, **Kai Zheng**, Nandu Koripally, Naresh Eedugurala, Jason D. Azoulay, Xinyu Zhang, Tse Nga Ng.
Science Advances, 2023.
- “Pi-Radio v1: Calibration techniques to enable fully-digital beamforming at 60 GHz”
Aditya Dhananjay, **Kai Zheng**, Marco Mezzavilla, Lorenzo Iotti, Dennis Shasha, Sundeep Rangan. Computer Networks. 2021.

Teaching

UC San Diego
Teaching Assistant for ECE191 (Group Engineering Project)

La Jolla, CA
2021–Present

UC San Diego
Teaching Assistant for ECE257A (Modern Communication Networks)

La Jolla, CA
2024

Awards

2023: ACM SenSys'23 Best Paper Award (1/179)

2018: NYU Tandon School of Engineering MS Student Achievement Award

Service

Reviewer: IEEE Transaction on Mobile Computing