Kai Zheng | Curriculum Vitae

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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) — **La Jolla, CA**
Ph.D. in Electrical and Computer Engineering — *2020–2025 Expected June*
Advisor: Prof. Xinyu Zhang

New York University (NYU) — **Brooklyn, NY**
M.S. in Computer Engineering — *2017–2019*
Advisor: Prof. Sundeep Rangan

Fudan University (FDU) — **Shanghai, China**
B.S. in Electrical Engineering — *2011–2015*

Work Experience

Pi Radio Inc. (NYU WIRELESS Spinoff) — **Brooklyn, NY**
Radio-Frequency Engineer (Software-Defined Radio) — *2019–2020*

Huawei Technology Co., Ltd. — **Shanghai, China**
Baseband Hardware Engineer (Smartphone) — *2015–2017*

Publication

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 Ariyarathna, 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 Ariyarathna, 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 — **La Jolla, CA**
Teaching Assistant for ECE191 (Group Engineering Project) — *2021–Present*

UC San Diego — **La Jolla, CA**
Teaching Assistant for ECE257A (Modern Communication Networks) — *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