Renjie Zhao | Curriculum Vitae

• ✉ *Email Address* • ➠ *Personal Page* • ☞ *Google Scholar*
Computer Science Department at Johns Hopkins University
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RESEARCH INTEREST

• Wireless Systems and Networking: next-generation wireless network architectures (5G millimeter-wave, 6G joint communication and sensing, Internet of Things); novel radio hardware and software design (software defined radio, wireless brain interfaces, low-power ultra-wide-band).

• Mobile and Ubiquitous Computing: ubiquitous communication and sensing systems (smart homes, virtual/augmented reality, localization, ultra-reliable RFID for supply chains)

EDUCATION

University of California San Diego (UCSD) — **San Diego, CA, US**
Ph.D. Candidate, Electrical Engineering — *Sept. 2018 - Aug. 2023*
Advisor: Professor Xinyu Zhang

University of California San Diego (UCSD) — **San Diego, CA, US**
M.S., Electrical Engineering — *Sept. 2018 - June 2020*

Shanghai Jiao Tong University (SJTU) — **Shanghai, China**
B.E. in Electric Power Engineering and Automation — *Sept. 2014 - June 2018*

EMPLOYMENT

Johns Hopkins University — **Baltimore, US**
Assistant Professor. — *Aug. 2023 - Present*

Microsoft Corporation — **Remote, US**
Researcher Intern. Host: Krishna Chintalapudi — *June 2021 - Dec. 2021*

Alibaba Group — **Remote, US**
Research Intern. Host: Pengyu Zhang, Yunfei Ma — *July 2020 - Sept. 2020*

Alibaba Group — **Bellevue, WA, US**
Research Intern. Host: Pengyu Zhang, Yunfei Ma — *Sept. 2019 - Jan. 2020*

UCSD — **La Jolla, CA, US**
Graduate Student Researcher. Advisor: Professor Xinyu Zhang — *Sept. 2018 - June 2023*

PUBLICATIONS

Note: '*' marks co-primary authors.

Conference Papers:

[C5] "SlimWiFi: Ultra-Low-Power IoT Radio Architecture Enabled by Asymmetric Communication"
Renjie Zhao, Kejia Wang, Kai Zheng, Xinyu Zhang, and Leung Vincent
20th USENIX Symposium on Networked Systems Design and Implementation ***(NSDI)***, 2023
(46 out of 288 submissions (Fall), acceptance ratio: 16.0%)

[C4] "RF-Chord: Towards Deployable RFID Localization System for Logistic Networks"
Bo Liang*, Purui Wang*, **Renjie Zhao**, Pengyu Zhang, Xinyu Zhang, Hongqiang Harry Liu and Chenren Xu
20th USENIX Symposium on Networked Systems Design and Implementation ***(NSDI)***, 2023
(50 out of 272 submissions (Spring), acceptance ratio: 18.4%)

[C3] "NFC+: Breaking NFC Networking Limits through Resonance Engineering"
Renjie Zhao*, Purui Wang*, Yunfei Ma, Pengyu Zhang, Hongqiang Harry Liu, Xianshang Lin, Xinyu Zhang, Chenren Xu and Ming Zhang
Annual conference of the ACM Special Interest Group on Data Communication on the applications, technologies, architectures, and protocols for computer communication ***(SIGCOMM)***, 2020
(54 out of 250 submissions, acceptance ratio: 21.6%)

[C2] "M-Cube: A Millimeter-Wave Massive MIMO Software Radio"
Renjie Zhao, Timothy Woodford, Teng Wei, Kun Qian and Xinyu Zhang
ACM International Conference on Mobile Computing and Networking ***(MobiCom)***, 2020
(62 out of 384 submissions, acceptance ratio: 16.1%)
Best Paper Award (2 out of 384 submission);
Highlighted by ACM GetMobile (Top Picks of ACM SIGMOBILE)
Open source research platform, *M-Cube website*, used by 15+ research groups

[C1] "OFDMA-Enabled Wi-Fi Backscatter"
Renjie Zhao, Fengyuan Zhu, Siyuan Peng, Yuda Feng, Xiaohua Tian, Hui Yu and Xinbing Wang
ACM International Conference on Mobile Computing and Networking ***(MobiCom)***, 2019
(55 out of 290 submissions, acceptance ratio: 19.0%)

Journal:

[J5] "Enabling OFDMA in Wi-Fi Backscatter"
Fengyuan Zhu, Renjie Zhao, Bingbing Wang, Xinbing Wang, Xinping Guan, Chenghu Zhou, and Xiaohua Tian
IEEE/ACM Transactions on Networking, 2023

[J4] "M-CUBE: A Millimeter-Wave Massive MIMO Software Radio" (Invited)
Renjie Zhao, Timothy Woodford, Teng Wei, Kun Qian, and Xinyu Zhang
GetMobile: Mobile Computing and Communications, Volume 25, Issue 1, Mar. 2021, pp 30–33

[J3] "Synthesis of CuInS2 nanowire arrays via solution transformation of Cu2S self-template for enhanced photoelectrochemical performance"
Ming Li, **Renjie Zhao**, Yanjie Su, Jing Hu, Zhi Yang, and Yafei Zhang
Applied Catalysis B: Environmental, Volume 203, Apr. 2017, pp 715-724

[J2] "Hierarchically CuInS2 Nanosheet-Constructed Nanowire Arrays for Photoelectrochemical Water Splitting"
Ming Li, **Renjie Zhao**, Yanjie Su, Jing Hu, Zhi Yang, and Yafei Zhang
Advanced Materials Interfaces, Volume 3, Issue 20, Oct. 2016, 1600494

[J1] "Carbon Quantum Dots Decorated Cu2S Nanowire Arrays for Enhanced Photoelectrochemical Performance"
Ming Li, **Renjie Zhao**, Yanjie Su, Zhi Yang, and Yafei Zhang
Nanoscale, Volume 8, Issue 16, 2016, pp 8559-8567

Demo:

[D2] "Demo: M-Cube: An Open-Source Millimeter-Wave MIMO Software Radio for Wireless

Communication and Sensing"
Renjie Zhao, Timothy Woodford, Teng Wei, Kun Qian and Xinyu Zhang
The 20th ACM International Conference on Mobile Systems, Applications, and Services ***(Mobisys)***, 2022

[D1] "Demo: M-Cube: An Open-Source Millimeter-Wave MIMO Software Radio for Wireless Communication and Sensing Applications"
Renjie Zhao, Timothy Woodford, Teng Wei, Kun Qian and Xinyu Zhang
ACM International Conference on Mobile Computing and Networking ***(MobiCom)***, 2020

Poster:
[P2] "Poster Abstract: An RFID Localization System for Smart Logistics"
Purui Wang, Bo Liang, **Renjie Zhao**, Pengyu Zhang, Xinyu Zhang and Chenren Xu
The 20th ACM Conference on Embedded Networked Sensor Systems ***(SenSys)***, 2022

[P1] "Poster Abstract: Ultra-Wideband Backscatter Towards General Passive IoT Localization"
Renjie Zhao, Penyu Zhang, Yunfei Ma and Xinyu Zhang
The 20th ACM Conference on Embedded Networked Sensor Systems ***(SenSys)***, 2022

HONORS AND AWARDS

• ACM MobiCom Best Paper Award **(2 out of 384 submissions)** *2020*

PRESENTATIONS

• Tutorial on M-Cube RF front-end and phased arrays
Tutorial at the M-Cube User workshop, La Jolla, August 2023

• SlimWiFi: Ultra-Low-Power IoT Radio Architecture Enabled by Asymmetric Communication
Conference talk at NSDI, Boston, April 2023

• M-Cube: A Millimeter-Wave Massive MIMO Software Radio
Conference talk at MobiCom, Virtual, September 2020

• NFC+: Breaking NFC Networking Limits
Conference talk at SIGCOMM, Virtual, August 2020

• OFDMA-Enabled Wi-Fi Backscatter
Conference talk at SIGCOMM, Los Cabos, October 2019

SERVICE

• HotMobile 2024
• SenSys 2022 Shadow PC
• External reviewer of MobiCom 2019-2023, SigMetrics 2023, Conext 2023
• Reviewer of IEEE Transactions on Networking
• Reviewer of IEEE Transactions on Wireless Communications
• Reviewer of IEEE Transactions on Sensor Networks