JUNFENG (JAYDEN) GUAN

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RESEARCH INTERESTS

Wireless Networking and Sensing Systems, Millimeter-Wave Radar Perception, Joint Communication and Sensing, Millimeter-Wave and 5G Networks, Machine Learning (for Wireless and Radar)

EDUCATION

École Polytechnique Fédérale de Lausanne Apr. 2022 - Present
Postdoctoral Researcher *Advisor: Prof. Haitham Hassanieh*

University of Illinois Urbana-Champaign May. 2017 - Aug. 2022
Doctor of Philosophy in Electrical and Computer Engineering *Advisor: Prof. Haitham Hassanieh*

University of Illinois Urbana-Champaign Aug. 2013 - May. 2017
Bachelor of Science in Electrical Engineering (with Highest Honors) *Advisor: Prof. Songbin Gong*

MAIN CONFERENCE AND JOURNAL PUBLICATIONS

13. **[ICASSP'23]** Junfeng Guan, Sohrab Madani, Waleed Ahmed, Samah Hussien, Saurabh Gupta, Haitham Hassanieh. "Exploiting Virtual Array Diversity For Accurate Radar Detection." *IEEE International Conference on Acoustics, Speech and Signal Processing*, 2023. [pdf]

12. **[IPSN'23]** Ishani Janveja, Jiaming Wang, Junfeng Guan, Suraj Jog, Haitham Hassanieh. "WINC: A Wireless IoT Network for Multi-Noise Source Cancellation." *ACM/IEEE International Conference on Information Processing in Sensor Networks*, 2023. [pdf]

11. **[ECCV'22]** Sohrab Madani*, Junfeng Guan*, Waleed Ahmed*, Saurabh Gupta, Haitham Hassanieh. "Radatron: Accurate Detection Using Multi-Resolution Cascaded MIMO Radar." *European Conference on Computer Vision*, 2022. [pdf] (* coprimary authors)

10. **[NSDI'22]** Suraj Jog, Junfeng Guan, Sohrab Madani, Ruochen Lu, Songbin Gong, Haitham Hassanieh. "Enabling IoT Self-Localization Using Ambient 5G Signals." *USENIX Symposium on Networked Systems Design and Implementation*, 2022. [pdf]

9. **[NSDI'21]** Junfeng Guan, Jitian Zhang, Ruochen Lu, Hyungjoo Seo, Jin Zhou, Songbin Gong, Haitham Hassanieh. "Efficient Wideband Spectrum Sensing Using MEMS Acoustic Resonators." *USENIX Symposium on Networked Systems Design and Implementation*, 2021. [pdf]

8. **[TMTT'21]** Junfeng Guan, Arun Paidimarri, Alberto Valdes-Garcia, Bodhisatwa Sadhu. "3D Imaging Using Millimeter Wave 5G Signal Reflections." *IEEE Transactions on Microwave Theory and Techniques*, 2021. [pdf]

7. **[CVPR'20]** Junfeng Guan, Sohrab Madani, Suraj Jog, Saurabh Gupta, Haitham Hassanieh. "Through Fog High Resolution Imaging Using Millimeter Wave Radar." *IEEE Conference on Computer Vision and Pattern Recognition*, 2020. [pdf]

6. **[RFIC'20]** Junfeng Guan, Arun Paidimarri, Alberto Valdes-Garcia, Bodhisatwa Sadhu. "3D Imaging using mmWave 5G Signals." *IEEE Radio Frequency Integrated Circuits Symposium*, 2020.[pdf]

5. **[NSDI'19]** Suraj Jog, Jiaming Wang, Junfeng Guan, Thomas Moon, Haitham Hassanieh, Romit Roy Choudhury. "Many-to-Many Beam Alignment in Millimeter Wave Networks." *USENIX Symposium on Networked Systems Design and Implementation*, 2019. [pdf]

4. **[VLSI'19]** Thomas Moon, Junfeng Guan, Haitham Hassanieh. "Online Millimeter Wave Phased Array Calibration Based on Channel Estimation." *IEEE VLSI Test Symposium*, 2019. [pdf]

3. **[SIGCOMM'18]** Sheng Shen, Nirupam Roy, Junfeng Guan, Haitham Hassanieh, Romit Roy Choudhury. "MUTE: Bringing IoT to Noise Cancellation." *ACM SIGCOMM*, 2018. [pdf]

2. **[IMS'17]** Brandon Arakawa, Liuqing Gao, Yansong Yang, Junfeng Guan, Anming Gao, Ruochen Lu, Songbin Gong. "Simultaneous Wireless Power Transfer and Communication to Chip-Scale Devices." *IEEE International Microwave Symposium*, 2017. [pdf]

1. **[IMS'17]** Ali Kourani, Yong-Ha Song, Brandon Arakawa, Ruochen Lu, Junfeng Guan, Anming Gao, Songbin Gong. "A 150 MHz Voltage Controlled Oscillator using Lithium Niobate RF-MEMS Resonator." *IEEE International Microwave Symposium*, 2017. [pdf]

POSTERS AND ARTICLES

4. **[SIGCOMM'22 Poster]** Junfeng Guan, Suraj Jog, Sohrab Madani, Ruochen Lu, Songbin Gong, Haitham Hassanieh. "Enabling IoT Self-Localization Using Ambient 5G mmWave Signals." *ACM SIGCOMM*, 2022. [pdf]

3. **[GetMobile'21]** Junfeng Guan, Jitian Zhang, Ruochen Lu, Hyungjoo Seo, Jin Zhou, Songbin Gong, Haitham Hassanieh. "Efficient Wideband Spectrum Sensing Using MEMS Acoustic Resonators." *ACM GetMobile: Mobile Computing and Communications*, 2021. [pdf]

2. **[IEEE D&T'20]** Thomas Moon, Junfeng Guan, Haitham Hassanieh. "Know Your Channel First, then Calibrate Your mmWave Phased Array." *IEEE Design & Test Magazine*, 2020. [pdf]

1. **[MobiCom'18 Poster]** Sheng Shen, Nirupam Roy, Junfeng Guan, Haitham Hassanieh, Romit Roy Choudhury. "Poster: Networked Acoustics Around Human Ears." *ACM MobiCom*, 2018. [pdf]

SELECTED HONORS AND AWARDS

ACM SIGMOBILE Research Highlights	2021
Qualcomm Innovation Fellowship [website]	2020
RFIC'20 Industry Best Paper Finalists	2020

PATENTS

2. Junfeng Guan, Bodhisatwa Sadhu, Arun Paidimarri, Asaf Tzadok, Alberto Valdes Garcia. "Imaging with wireless communication signals." *US Patent App*, 2021.

1. Junfeng Guan, Sohrab Madani, Suraj Jog, Saurabh Gupta, Haitham Hassanieh. "Neural network-based millimeter-wave imaging system." *US Patent App*, 2021.

INDUSTRIAL EXPERIENCES

- **Nokia Bell Labs** Jun. 2021 - Aug. 2021
  Radio Systems Bell Labs Summer Intern
- **IBM Research** May. 2019 - Aug. 2019
  Graduate Research Intern

SERVICES

- Shadow Program Committee - ACM SenSys 2022 June 2022
- Reviewer: ICCV'23, CVPR'23, ECCV'22, Internat. J. of Wireless Information Networks, IEEE Trans. on Microwave Theory and Techniques (TMTT), IEEE Trans. on Instrumentation and Measurement, IEEE Trans. on Mobile Computing, IEEE Globecom Workshops, IEEE Access.