

JUNFENG (JAYDEN) GUAN

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RESEARCH INTERESTS

Wireless Sensing and Networking Systems, Millimeter-Wave Radar Perception, Integrated Sensing and Communication, Millimeter-Wave and 5G/6G Networks, Machine Learning (for Wireless and Radar)

EDUCATION

École Polytechnique Fédérale de Lausanne (EPFL)

Postdoctoral Researcher - [SENS Lab](#)

Apr. 2023 - Present

Advisor: Prof. [Haitham Hassanieh](#)

University of Illinois Urbana-Champaign

Doctor of Philosophy in Electrical and Computer Engineering

May. 2017 - Aug. 2022

Advisor: Prof. [Haitham Hassanieh](#)

University of Illinois Urbana-Champaign

Bachelor of Science in Electrical Engineering (with Highest Honors)

Aug. 2013 - May. 2017

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. [\[pdf\]](#) [\[ACM SIGMOBILE Research Highlights\]](#)
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. [\[pdf\]](#) [\[Best Industrial Paper Finalists\]](#)
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. [VLSP'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. "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
Highest Honors at Graduation, UIUC ECE	2017
Edward C. Jordan Award, UIUC ECE	2017

PATENTS

- L3. Saeed Reza Khosravirad, [Junfeng Guan](#), Harish Viswanathan, Jakub Sapis. "Resource Allocation in Joint Communication and Sensing." *Patent Number: US-20230284122-A1*, 2023.
- L2. [Junfeng Guan](#), Bodhisatwa Sadhu, Arun Paidimarri, Asaf Tzadok, Alberto Valdes Garcia. "Imaging With Wireless Communication Signals." *Patent Number: US-20210215814-A1*, 2021.
- L1. [Junfeng Guan](#), Sohrab Madani, Suraj Jog, Saurabh Gupta, Haitham Hassanieh. "Neural Network-Based Millimeter-Wave Imaging System." *Patent Number: US-20210192762-A1*, 2021.

PROFESSIONAL EXPERIENCE

Nokia Bell Labs	Jun. 2021 - Aug. 2021
<i>Radio Systems Bell Labs Summer Intern</i>	<i>Murray Hill, NJ (Remote)</i>
- Publications & Patents: L3.	
IBM Research	May. 2019 - Aug. 2019
<i>Graduate Research Intern</i>	<i>Thomas J. Watson Research Center, Yorktown Heights, NY</i>
- Publications & Patents: [TMTT'21], [RFIC'20], L2.	

TEACHING EXPERIENCE

- Communication Networks (ECE 438, UIUC) Aug. 2019 - Dec. 2019
- Communication System Laboratory (ECE 463, UIUC) Aug. 2018 - Dec. 2018

SERVICES

- Shadow Program Committee - ACM SenSys 2022
- Conference Reviewer:
 - IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2024
 - IEEE Vehicular Technology Conf. (VTC) 2023
 - International Conference on Computer Vision (ICCV) 2023
 - IEEE / CVF Computer Vision and Pattern Recognition Conference (CVPR) 2023
 - European Conference on Computer Vision (ECCV) 2022
 - IEEE Globecom Workshops 2022
- Journal Reviewer:
 - IEEE Transactions on Microwave Theory and Techniques (TMTT)
 - IEEE Transactions on Instrumentation and Measurement
 - IEEE Transactions on Mobile Computing
 - IEEE Access
 - Internat. J. of Wireless Information Networks

SUPERVISION OF JUNIOR RESEARCHERS

- Dhairya EPFL Summer Intern 06/2023 - 09/2023
- Koushal EPFL Summer Intern 05/2023 - 08/2023
- Jeremy. “CubeSAT X-Band SDR Design.” *EPFL Master’s Semester Project*, 2023.
- Ishani. “WINC: A Wireless IoT Network for Multi-Noise Source Cancellation.” *ACM/IEEE IPSN*, 2022.
- Waleed Ahmed. “Accurate Detection for Self-Driving Cars Using Multi-Resolution MIMO Radar.” *UIUC CS Master’s Thesis*, 2022.
- Jitian Zhang. “Mitigating Radar Interference via Time Hopping.” *UIUC ECE Master’s Thesis*, 2022.
- Akshay Bhamidipati. “A Wireless Approach to Streaming of XR Traffic.” *UIUC ECE Undergraduate Senior Thesis*, 2022.
- Karthik Prasad. “Radio Altimeter Spoofing.” *UIUC Undergraduate Independent Study*, 2022.
- Hailan Shanbhag. “A Scalable Software-Defined Phased Array Using Commercial 60 GHz Chipset.” *UIUC ECE Undergraduate Senior Thesis*, 2021.
- Luting Chen. “High-Resolution Millimeter-Wave Imaging for Humans.” *UIUC ECE Undergraduate Senior Thesis*, 2019.

REFERENCES

- **Prof. Haitham Hassanieh**
Associate Professor, École Polytechnique Fédérale de Lausanne (EPFL)
School of Computer and Communication Sciences
Website: <https://people.epfl.ch/haitham.alhassanieh>

- **Prof. Romit Roy Chouhury**

Professor, University of Illinois Urbana-Champaign

Department of Electrical and Computer Engineering & Computer Science

Website: <http://croy.web.engr.illinois.edu>

- **Prof. Saurabh Gupta**

Assistant Professor, University of Illinois Urbana-Champaign

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