Hailan Zhang Shanbhag

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Research Interests

Wireless Imaging & Sensing, Wireless Networks, Joint Communications and Sensing, RF/mmWave Systems

Education

École Polytechnique Fédérale de Lausanne *Jan 2023 – present*
PhD in Computer and Communication Sciences

University of Illinois Urbana Champaign *Aug 2021 – Dec 2022*
MS in Electrical and Computer Engineering

- GPA: 4.0/4.0

University of Illinois Urbana Champaign *Aug 2017 – May 2021*
BS in Computer Engineering

- GPA: 3.84/4.0

Experience

Doctoral Research Assistant *Lausanne, Champaign*
EPFL, Prof. Haitham Hassanieh *Jan 2023 – present*
UIUC, Prof. Haitham Hassanieh *Aug 2021 – Dec 2022*

- Designed and implemented a wireless material sensing system using both acoustics and mmWave signals.
- Implemented novel algorithms for non-line-of-sight millimeter-wave imaging in practical scenarios.
- Studied 3D neural reconstruction of complex objects using synthetic aperture radar and robotics.

Senior Research Project & Thesis *Champaign, IL*
UIUC, Prof. Haitham Hassanieh *Aug 2020 – May 2021*

- Calibrated four 60 GHz Qualcomm phased array antennas to construct a 12x12 MIMO array for both a transmitter and receiver (hardware acquired from the M-Cube project of UCSD).
- Measured beam patterns of the transmitter and receiver radios and prepared the hardware for future applications.
- Implemented a fast calibration algorithm for antenna calibration on the 12x12 MIMO array.

Silicon Verification Intern *Sunnyvale, CA*
Microsoft *Jun 2019 – Aug 2019*

- Enhanced a UVM based verification IP by providing support for OCP VIPs.
- Created a translation layer from the AXI protocol to the OCP protocol, which was integrated into an inhouse verification IP.
- Integrated part of the translation layer via fully synthesizable code to reuse an inhouse AXI slave.

Undergraduate Research Assistant *Champaign, IL*
UIUC, Prof. Viktor Gruev *May 2018 – May 2019*

- Designed and fabricated a PCB for a Hamamatsu CMOS area image sensor realizing low-noise multi-spectral imaging for image-guided surgery and underwater polarization imaging.
- Began programming XEM7310 OpalKelly FPGA in Verilog to communicate with and process LVDS pixel data received from the image sensor.
- Communicated to the FPGA using OpalKelly's FrontPanel C++ API to interface through a PC.

Publications

[**NeurIPS '25**] **"GeRaF: Neural Geometry Reconstruction from Radio Frequency Signals".** *The Thirty-Ninth Annual Conference on Neural Information Processing Systems.* ***(Spotlight)***

Hailan Shanbhag, Jiachen Lu , Haitham Hassanieh

[**MobiCom '24**] **"Around the Corner mmWave Imaging in Practical Environments".** *In ACM International Conference on Mobile Computing and Networking.*

Laura Dodds, ***Hailan Shanbhag***, Saurabh Gupta, Haitham Hassanieh

[**MobiSys '23**] **"Contactless Material Identification with Millimeter Wave Vibrometry".** *In ACM International Conference on Mobile Systems, Applications, and Services.*

Hailan Shanbhag, Sohrab Madani, Akhil Isanaka, Deepak Nair,Saurabh Gupta, Haitham Hassanieh

Teaching

Mobile Networks (COM 405)
Fall 2024, Fall 2025

- Created a radar imaging lab exercises for image processing algorithms.
- Created and held a hands on tutorial to help students get familiar with radars.
- Held office hours and guided students through material on all things wireless.

Communication Projects (COM 304)
Fall 2023, Spring 2024, Spring 2025

- Helped create and teach a project-based course on robotics, wireless communications and sensing.
- Created video lectures on wireless systems and signal processing.
- Prepared tutorials and created a Python codebase for TI's AWR1843 77 GHz radar.
- Met with students weekly to help with problems and guide their projects.

Fellowships & Awards

Promise of Excellence Fellowship *Aug 2021 – May 2022*
TI Women STEM Stars Scholarship *Aug 2017 – May 2021*

Skills

Languages: Python, MATLAB, C++/C, Verilog/SystemVerilog, x86
Frameworks: PyTorch, Eagle, KiCad, mmWave Studio, CUDA, ROS
Hardware: TI 77 GHz Radar (XWR1843), Franka Research 3
Spoken Languages: English (native), Mandarin Chinese (first language), French (A2), German (A1)

Service

EDIC Pre-Filtering Committee *December 2024*
MobiCom Student Volunteer *March 2022*

Supervised Students

Eugen Bosnjak: EPFL Master Project, Spring 2025 - present
Andrea Tarabay: EPFL Summer Intern, Summer 2024
Charchit Gupta: EPFL Summer Intern, Summer 2023
Deepak Nair: UIUC Summer Intern, Summer 2022
Akhil Isanaka: UIUC Summer Intern, Summer 2022