

Haofan Lu

Email: haofan@cs.ucla.edu | Phone: (310) 622-2943 | Homepage: luhaofan.github.io
404 Westwood Plaza, ENG VI Room 497, Los Angeles, CA 90095

RESEARCH INTERESTS

- Internet of things, Wireless sensing and communication systems, Signal processing, Machine learning

EDUCATION

University of California, Los Angeles

Sept. 2021 – Present

PhD student in Computer Science Department

- Advisor: Professor Omid Abari
- **Research focus areas:** wireless sensing systems, machine learning
- Major area: Computer Network Systems
- Minor area: Artificial Intelligence, Human-Computer Interaction
- Relevant courses: Operating System (A), Embedded Systems (A), Network Protocol and Systems Software Design for Wireless and Mobile (A), IoT Connectivity and Sensing (A+), Intelligent IoT Systems (A), Fundamentals of Artificial Intelligence (A)

Zhejiang University-University of Illinois at Urbana-Champaign Institute

Sept. 2017 – June 2021

B. Eng. in Electrical Engineering and Automation from Zhejiang University

B. S. in Electrical Engineering from University of Illinois at Urbana-Champaign

- Thesis Advisor: Professor Romit Roy Choudhury
- Thesis Project: Indoor Localization with the Assistance of Ultrasonic Beacons
- Relevant courses: Signal and Systems, Digital Signal Processing, Communication Networks, Wireless Networks, Mobile Computing Algorithms and Applications, Multi-media Signal Processing, Machine Learning

PUBLICATIONS

- **[International Journal of Heat and Mass Transfer 2022]** [Haofan Lu](#), Yi Yu, Ankit Jain, Yee Sin Ang, Wee-Liat Ong, "Deep learning techniques elucidate and modify the shape factor to extend the effective medium theory beyond its original formulation", IF:5.584
- **[To appear in HotNets'22]** [Haofan Lu](#), Tianxiang Li, Reza Rezvani, Ali Abedi, Omid Abari, "Bringing WiFi Localization to Any WiFi Devices", Acceptance rate: $32/104 = 30.8\%$.
- **[Under submission]** Alex Chen, [Haofan Lu](#), Ali Abedi, Omid Abari, "WiFi Physical Layer Stays Awake and Responds When Should Not".
- **[Under submission]** Tianxiang Li, Mohammad Hossein Mazaheri, Kalaivani Kamalakannan, [Haofan Lu](#), Omid Abari, "Can 5G Networks Transfer Power to IoT Devices?".

SELECTED RESEARCH PROJECTS

WiFi Physical Layer security loopholes and their implications

Sept. 2021 – Present

- Reveal that WiFi Physical layer replies ACK to any packet, even those coming out of the network.
- Reveal that WiFi Physical layer power-saving mechanism can be manipulated by fake beacon packets.
- Investigate the possible security implications of these loopholes, including the disclosure of sensitive information, such as breathing rate; battery drainage of important IoT devices, such as security cameras.

WiFi Localization for IoT devices with a single RF chain

March 2022 – Present

- Investigate the WiFi Probing Mechanism and combine it with the Frequency Scanning Antenna (FSA) technique for Angle-of-Arrival (AoA) measurement.
- Develop Time-of-Flight (ToF) based ranging techniques that achieve sub-meter level accuracy on ESP32 platform.
- Combine ToF and AoA information to enable localization for devices with a single RF chain.

PROGRAMMING LANGUAGES & SKILLS

- Languages: Python, C/C++, JAVA, JavaScript, MATLAB
- Frameworks: PyTorch, ESP-IDF, GNU Radio, Unity, Django

HONORS & AWARDS

Graduation with Highest Honor of University of Illinois at Urbana-Champaign

2021

Dean's List of University of Illinois at Urbana-Champaign

2020

Second-class Scholarship for Academic Excellence of Zhejiang University

2020