William Hunter

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ECE incoming PhD studying RF sensing.

Education

Fall 2025 **P.h.D., ECE**
Univ of California, San Diego

2023-2025 **M.S., ECE**
Univ of California, San Diego

2019 – 2023 **B.S., ECE**
Univ of California, San Diego
GPA: 3.84

Languages

C	●●●●
Python	●●●●
BASH	●●●●
SystemVerilog	●●●○
MATLAB	●●○○

Tools & Systems

Linux, networking.
SDRs.
Git, CMake, Standard dev tools.
SystemVerilog, FPGA
802.11 & mmWave radios.
ROS.

Coursework

Modern Communication Networks

Digital Signal Processing

Probability and Random Processes

Sensing and Estimation in Robotics

Linear Algebra

Convex Optimization & Applications

Statistical and Machine Learning

Data Networks & Socket Programming

Research Experience

Mar '21 – Present **Student Researcher**,
Advisor: Dinesh Bharadia

Research in wireless sensing for indoor and outdoor localization and timing. Developed full-stack wireless localization systems from RTL design to signal processing and control algorithms. Projects undertaken include:

Sub-Microsecond Wireless Clock Synchronization : Development of an FPGA platform and DSP algorithms to accurately synchronize clocks to within 10 nanoseconds over a LoRA link. Applications in localization, cell-free MIMO and as a GNSS fallback.

RF Sensing for SLAM : Integration of bearing measurements from a MIMO antenna array with GTSAM to estimate robot trajectory and map wireless devices.

Open-Source WiFi Tools : Development of a full-stack C++/Python RF sensing platform for ROS to enable indoor Wi-Fi based sensing for robotics.

Skills Used: Machine Learning, wireless hardware and systems development, signal processing, nonlinear optimization, C, C++, Systemverilog, Python

Employment

Jun '23 – Mar '24 **Wireless Embedded Systems Intern**, Synaptics Inc.

Full-stack BT/BLE/802.15.4 controller design in C for Synaptic's BT+WiFi combo chips.

Wrote new memory allocator to replace legacy design and brought up an ZephyOS from bare metal for an ARM CM-4 SOC.

Publications

Mundra, P., Huang, Z., **Hunter, W.**, Arun, A., Khadela, D., Sinha, P., Bharadia, D., Ayyasomayajula, R. (2024). WiSenseHub: Architecture to deploy a building-scale Wi-Fi Sensing System. ACM Workshop on Wireless Network Testbeds, Experimental evaluation & Characterization (WiNTECH 2024).

Arun, A., **Hunter, W.**, Ayyalasomayajula, R., and Bharadia, D. (2024). WAIS: Leveraging WiFi for Resource-Efficient SLAM. International Conference on Mobile Systems, Applications and Services (MOBISYS '24).

Arun, A., **Hunter, W.**, and Bharadia, D. (2023) Demo Abstract: Accessible WiFi sensing leveraging Robot Operating System.(IPSN '23).

Arun, A., Ayyalasomayajula, R., **Hunter, W.**, and Bharadia, D. (2022). P2SLAM: Bearing based WiFi SLAM for Indoor Robots. IEEE Robotics and Automation Letters.