Callaghan R. Berry

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Education

Tufts University, Medford MA Graduated May 2023

Bachelor of Science in Electrical Engineering, Minor in Mathematics

GPA: **3.73/4.0**, Summa Cum Laude

Relevant Coursework: Digital Signal Processing, Communication Systems, Feedback Control Systems, Distributed Machine Learning, Probabilistic Systems, Electromagnetic Fields and Waves, Analog/Mixed Signal IC Design

Work Experiences

MIT Lincoln Laboratory

Assistant Staff - HF Radar Engineer, Lexington, MA June 2023 - Present

- Researched new and existing technologies and their applications in radar and sensor systems to improve figures of merit such as signal-noise ratio, range and doppler accuracy, and clutter filtering
- Designed experimental and prototype systems, including choices of digital waveform generators, timing systems, software defined radio receivers, and RF amplifiers, performing end-to-end tests and validation before deployment
- Analyzed sensor data using data analysis and signal processing techniques such as Power Spectral Density, Beamformers, and Spectrograms using MATLAB and Python
- Engaged in field deployments to test and showcase systems, setting up antenna arrays, analyzing element responses, connecting and testing RF hardware and implementing experimental test plans

Tufts University ECE Department

Teaching Assistant, Medford, MA January 2023 - May 2023

- Guided students throughout a semester long course to design, build, and test prototype autonomous robots
- Implemented lesson plans and assisted students during office hours to help design and troubleshoot microcontrollers, motor controllers, light and color sensors, communication systems, and battery systems

Tufts University Residential Life

Resident Assistant, Medford, MA January 2021 - May 2023

- Ensured 200+ students have a safe and enjoyable experience in a living residence community
- Planned and put on hall events to keep residents active and engaged with the campus community

Texas Instruments

Process Integration Intern, South Portland, ME June - August 2022

- Investigated fab issues across multiple teams to improve wafer yields on a variety of products and technologies
- Monitored electrical characteristics of silicon ICs through data analysis to identify and fix process variations in wafer fabrication to ensure functional and reliable products
- Redesigned a failing electrical test structure using Cadence in accordance with design rules, reducing wafer scrap and increasing testing robustness across multiple products in production

Projects

Audio Localization Device Capstone Project

- Designed a portable audio localization device to aid members of hard of hearing communities in identifying the location of audio cues in a space
- Integrated an array of microphones with a microcontroller and computed time delay and angle of arrival relative to each microphone via the Generalized Cross Correlation Phase Transform method
- Tested the device in a variety of acoustic settings to analyze performance relative to customer requirements

Skills

Software/Tools: MATLAB, Python, C/C++, Linux, Cadence, LTSPICE, VHDL, Assembly/Machine Code

Hardware: Vector Network Analyzers, Oscilloscopes, Function Generators, Multimeters, Probes, Microcontrollers, FPGAs