Wesley Soo-Hoo

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—Education—

Olin College of Engineering Needham, MA   Graduation: Spring 2023
Major: B.S. in Engineering with Concentration in Robotics

Skills: Python, Java, C++, ROS, MatLab, Simulink, Git, Web Development (Django), Vim, KiCAD, SysML, Solidworks, Autodesk Fusion, Autodesk Inventor, Siemens NX, FMEA, LaTeX, Confluence, Design for Manufacturing, Common Shop Tools

Relevant Coursework: Robotics Systems Integration, Fundamentals of Robotics, Quantitative Engineering Analysis, Products and Markets, Design Nature, Modeling and Simulation, Sensors Instrumentation and Measurement

—Experience—

Waymo (Mountain View, CA / Remote)   June 2020 – Present
Systems Engineering Intern

- Designed high level system models for vehicle low voltage system using SysML and Cameo System Designer to create a single source of truth for the vehicle's model-based development and reduce errors in modeling parameters.

Formula SAE - Olin Electric Motorsports (Needham, MA)   August 2019 – Present
Electrical Design Lead (2020-Present), Electrical Engineer (2019-2020)

- Designed, assembled, and tested PCBs for wheel speed sensing and real-time closed loop traction control subsystem.
- Programmed and debugged ATMEGA MPUs in C for digital signal processing and filtering and CAN and SPI protocols.
- Built production vehicle harnesses and test harnesses for bench testing of individual PCBs and sensors.

Olin Robotics Lab (Needham, MA)   August 2019 – Present
Robotics Engineer

- Programmed 2D and 3D LiDAR Gazebo simulations and ROS drivers and integrated into tractor autonomy code.
- Created tools to effortlessly compile and deploy the software to an onboard computer and Teensy 2.0 microcontroller.
- Developed top-down system design and long-term project plan for a multi-terrain autonomous quadrupedal robot.

Motivo Engineering (Gardena, CA)   June 2018 – January 2020
Junior Electrical Engineer

- Developed and tested embedded firmware, designed and built electrical harnesses, and handled client interactions for projects in automotive, agricultural, and consumer electronics industries for both start-ups and established companies.
- Autonomous Shuttle: Retrofitted a van to work with client's autonomy system. Programmed and debugged two low level controllers to interface and control the van's brake, steering, throttle, and body functions with full redundancy.
- Designed fault-redundant systems using FMEA processes for power management subsystem and sensor systems.
- Programmed automatic testing scripts to accelerate bench and track testing for over 600 vehicle single faults.
- Autonomous Delivery Vehicle: Led firmware development for a robotic cargo system to securely deliver packages.
- Integrated over 10 actuators and over 60 sensors in a compressed two-month timeline for demonstration at CES.
- Agricultural Cultivator Vision System: Programmed and trained neural network vision system that classifies plants and weeds using the YOLOv3 algorithm and Darknet framework. Increased detection accuracy to 99% in all conditions.
- Autonomous Semi Truck: Designed and tuned the controls architecture for a pneumatic-based Brake by Wire system.
- Wrote detailed documentation for the bring up and tuning processes for a high-volume batch build by a subcontractor.
- Semi-Truck Battery Subsystem: Developed battery management firmware for a semi truck's battery system to safely handle the startup and shutdown sequences of the truck and detect hardware failures internal to the battery pack.

The Boeing Company (Huntington Beach, CA)   June 2017 – August 2017
Phantom Works Quality Engineering Intern

- Developed and presented a project proposal and systems level top-down project plan to the site executive and team.
- Discussed and mitigated risks and opportunities with Boeing R&D projects to prevent schedule and budget losses.

FIRST Robotics (Carson, CA; El Segundo, CA)   May 2014 – May 2019
Team 4201: Mentor (2018-2019), Team 687: Mentor (2018-2019), Team Captain (2016-2018)

- Team Captain (2016-2018): led team (100) through two build and competition seasons, pit crew (repaired robot between matches) and award presenter at multiple regional competitions and the world championships.
- Mentored students in software and mechanical design and supported them in development of the competition robot.
- Drive Coach: Facilitated communication between students (both within team and with other teams) in time-sensitive and high-pressure situations, empowered students to lead discussions with students and mentors from other teams
- Awards: 2019: World Champion Winners, Newton Division Winners, Chairman's Award, Innovation in Controls Award, Autonomous Award, Gracious Professionalism Award; 2018: Newton Division Semifinalist, Las Vegas Regional Finalists, Beach Blitz Winners; 2017: Dean's List Finalist, Fall Classic Finalists; 2016: Fall Classic Finalists