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 components.

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.
- Autonomous Electric Tractor: Implemented hardware abstraction ROS nodes for tractor's autonomy platform

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.
- Designed, built, and programmed an autonomous exploration robot for the Boeing HSI robotics challenge.

—Projects—

Coop.ai — November 2019
Yale Hackathon – Runner Up

- Created a graph-based mesh networking protocol to facilitate collision avoidance algorithms for autonomous cars.
- Simulated multiple autonomous cars running simultaneously in road conditions using the CARLA simulation suite.