James Seto

4th Year Engineering Physics UBC | jameseto1@gmail.com | https://otes10.github.io/

Technical Skills

Prototyping	KiCAD, PCBA, LTSpice, Solidworks, ANSYS FEA, 3D Printing, Oscilloscope, Embedded
Programming Languages	Shell Script, Python, Java, C++, Javascript
Tools and Frameworks	Linux, Raspberry Pi, Git, ROS, Tensorflow, NodeJS

Professional Experience

Experimental Robotics Engineer | A&K Robotics   **Sep – Dec 2021**
Implemented hardware features for clients' and company's fleet of robots
- **Electrical:** Upgraded a docking station with magnetic sensors and LEDs to indicate vehicle docking to passengers and operators. Incorporated p-FETs, voltage and current protection circuits to develop a reliable load switch for robot power distribution. Simulated in LTSpice and developed a test PCB to verify the load switch.
- **Mechanical:** Designed and assembled shipping strap mounts for our autonomous vehicle to withstand air freight shipping. Performed a vehicle power study to recommend a motor that can double the vehicle's max velocity. Rapidly iterated 3D printed sensor mounts to convert a powered wheelchair to a rugged mapping vehicle.

Hardware and Firmware Co-op | Brave Technology Coop   **May – Aug 2021**
Developed and commissioned overdose detection devices for dozens of Vancouver clients
- **Firmware & Software:** Developed telemetry firmware using the Particle API to track the status of our deployed devices. Implemented a server endpoint to parse telemetry data into a Postgres database to record our device status. Modified firmware for next-gen radars to communicate with legacy radars, extending EOL by months.
- **Hardware:** Selected, tested and integrated a watchdog chip into our device PCBs to automate recovery from firmware crashes. Streamlined a procedure to manufacture dozens of PCBs reliably and quickly.
- **Product Deployment:** Packaged devices to be intuitive and simple for clients to install. Communicated with correspondents at shared homes and health clinics to solve device outages and obtain feedback.

Technical Projects

Gas, Brake Pedal Assembly | UBC Solar   **May – Jun 2020**
Designed pedals, mounting, and brake line routing of UBC Solar's solar-powered competition car
- **Modelling:** Modelled pedal assembly to determine positioning about chassis and driver. Designed pedal geometries to provide sufficient mechanical leverage. Validated safety by simulating emergency braking with ANSYS FEA.
- **Component Selection:** Selected cost-effective fasteners to meet competition and design constraints. Analyzed and selected appropriate flange bearings, torsion springs, and hydraulic line adapters. Specified a bill of materials to track total costs, streamline manufacturing, and determine EOL. Formally presented design decisions to admin team.

Recycling Robot | UBC ENPH Program   **May – Aug 2020**
Autonomous soda can retriever with hobbyist tools at home (team of 4)
- **Mechanical:** Designed chassis in OnShape to plan component placement. Iterated rapidly through prototyping cycles with household materials to develop a backdoor trigger, enabling can disposal without an extra servo. Prepared detailed procedures of assembly instructions to teammates to collaborate virtually.
- **Electrical:** Verified breadboard prototypes of motor H-bridge with an oscilloscope before constructing through-hole soldered circuit boards. Shrink-wrapped and keyed external connections to reduce risk of shorting. Isolated microcontroller from motors with optocouplers to prevent damage from noise.
- **Software:** Programmed control software in C++ for an STM-32 microcontroller to track tape path and control tire speeds. Wired potentiometers to calibrate PID parameters and tape sensors.

Education

BASc. in Engineering Physics | University of British Columbia **|** Average 88.4%   **Sep 2018 – May 2023 (Expected)**