

Andrew C. *Engineering Physicist*

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Key Skills

Software

Python, Rust, OpenCV, Pandas, PyTorch, ROS1/2, Googling

Electrical

Altium, KiCAD, LTSpice, Embedded Programming, Reading Datasheets

Mechanical

SolidWorks, 3D Printing, Laser/Waterjet Cutting, Machining

Technical Experience

Sensor Design/Integration Engineering Intern, *Tesla Motors* [↗](#) 09/2022 – 01/2023

- Assisted with testing GNSS performance, IMU noise mitigation, and occupant classification algorithms by performing data analytics, automating data collection/processing, and identifying possible root causes/solutions.
- Utilized Plotly, Dash, FastAPI, S3, and PostgreSQL to perform full stack development of a GNSS data visualizer, a car data logger, and other internal tools to help support ongoing validation efforts.

Diagnostics and Controls Engineering Intern, *General Fusion* 05/2022 – 09/2022

- Wrote, unit-tested, and validated a series of Python APIs to allow for experimental use of various digitizers, ranging from NI DAQs, in-house designed high-speed electronics, and other precision measurement devices.
- Architected and wrote code for controlling a distributed system of PLCs using Python, MQTT, and TwinCat3.
- Created multiple GUIs using PySide6 to streamline the manual control and allow for live data visualization for various instruments, ranging from high-speed oscilloscopes, to hundred-channel digitizers to infrared cameras.

Avionics Tech Lead/Project Manager, *UBC AeroDesign* [↗](#) 03/2021 – Present

- Leading a multidisciplinary team of 20 students through the design, manufacturing, and testing of power, embedded, and software systems for two fixed-winged airplanes, as entries for the SAE AeroDesign competition.
- Designing system architecture, performing design reviews, writing a Systems Engineering Management Plan/requirements/ConOps, conducting FMEAs, making timelines, and leading meetings.
- Guiding students through the engineering design process and teaching them about computer vision, machine learning, RF communication, PCB design, embedded programming, and various hands-on skills.

Systems Engineering Intern, *General Fusion* [↗](#) 05/2021 – 12/2021

- Worked with the Systems Engineering team to help manage the complexity of designing and building a novel nuclear fusion reactor through requirements management, interface definition, and performing various analyses.
- Worked under Chief Scientist to conduct experiments and research interactions between liquid lithium and materials ranging from calcium aluminate glasses to polyimide-matrix carbon fiber composites.

Technical Projects

Monarch, *Python, Rust, OpenCV, Altium*

- Architecting and implementing an embedded system capable of accurately landing an autonomous drone onto 2' diameter marker disks from a moving aircraft using a custom machine learning algorithm, PCB, and gimbal.

Fuel Cell Monitoring System, *Circuit Design, KiCAD, C++, C*

- Designed, manufactured, and tested an electrically-isolated, high-voltage, modular, and cost-effective fuel cell monitoring system in a team of four as a sophomore capstone project for FuelCell Energy.

Iris, *Rust, STM32, Altium, Onshape*

- Designed a custom 2-DOF light-weight gimbal that stabilizes a 12-MP camera and LIDAR module, and transmits video over a 5.8 GHz frequency band with a range of over 1000 ft using OpenHD.

License Plate Scanning AI, *OpenCV, ROS, Gazebo, Tensorflow*

- Programmed and trained a robot using ROS that used imitation learning to drive autonomously inside a Gazebo simulation, and was able to detect and read license plates using OpenCV and a CNN built in TensorFlow.

Can Return Bot, *Circuit Design, C++, SolidWorks, 3D Printing*

- Designed an H-Bridge and various mechanical components for a PID-based line-following robot capable of picking up stray aluminum cans from the ground and returning them to a pre-determined collection bin.

Every Evangelion Frame, *Python, OpenCV, AWS*

- Automated a script to sequentially post every unique frame of the anime Neon Genesis Evangelion to Facebook.

Fizz Discord Bot, *Python, discord.py, MongoDB*

- Programmed a bot for music playing, moderation, organization, and linked it to a MongoDB to collect statistics.

Education

University of British Columbia, *B.ASc, Engineering Physics* [↗](#)

2018 – 2024 | Vancouver, Canada