Brianna Gopaul *Electrical Engineering Internship*

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Education

University of British Columbia, *B.ASc Engineering Physics* 2021 – 2026
Focus on upper-level mathematics and physics with a blend of Electrical Engineering, Mechanical Engineering and Software Engineering.

Specializing in ELEC.
Relevent Courses: ELEC401-Analog Integrated Circuits, ELEC341-Control Systems, ELEC462- Microelectromechanical systems

Skills

Electrical Engineering
Altium, SPICE, Oscilloscope, Multimeter, Reading Datasheets

Mechanical
SolidWorks, Laser/Waterjet Cutting, Machining

Software
Python, Java, Matlab, OpenCV, Tensorflow, Keras

Misc
PCR, Gel Electrophoresis, UHV Vacuum Equipment

Engineering Experience

Sensors & Comms Aerodesign Member, *UBC Aerodesign* 04/2024 – present
- Designing custom flight controller PCBA. Completed all schematic capture and PCB layout in **Altium**
- Flight controller uses STM32H7 to interface with IMU, Barometer, external airspeed sensor, receiver, camera, and 9 PWM channels to control a fixed winged airplane. Sensors communicate via **I2C, SPI, UART** and **CAN**.
- Flight controller used for flight and autonomous payload release/capture for the SAE AeroDesign competition

Autonomous Overcooked Playing Robot, *Altium, Solidworks, C++* 05/2024 – 08/2024
- Designed IR sensing PCB including schematic capture, PCB layout in **Altium**, and soldering components. Used peak detection circuit, band pass circuits, differential amplifiers and more.
- Schematic capture and PCB layout for H Bridge PCBs and optical tape following PCBs in **Altium** to enable robot to drive using PID
- Debugged PCBs using oscilloscope + multimeter and worked with power boards including **buck converters** and **LDOs**

License Plate Scanning AI, *Python, OpenCV, ROS, Gazebo, Tensorflow* 01/2024 – 04/2024
- Programmed a CNN in Keras to read and detect signs while driving in sim. CNN achieved 94% accuracy on validation set
- Wrote **Python** scripts to generate and augment training data using OpenCV
- Won first place in ENPH353 competition and achieved the fastest completition time to date

R&D Engineering Intern, *General Fusion* 05/2021 – 08/2021
- Determined suitable plasma-facing components for General Fusion's reactor involving UHV Vaccum systems, liquid lithium evaporation setups, and more
- Designed and assembled a functioning liquid lithium syringe in **Solidworks** to dispense controlled amounts of lithium 10-15 mL

ML Research Intern, *SanctuaryAI* 07/2020 – 08/2020
- Experimented with variational autoencoders and transformers in Tensorflow (NDA)

Inertial Confinement Fusor, *Vacuum, High Voltage, Soldering* 09/2020 – 04/2021
- Sourced parts and assembled vacuum system. Debugged vacuum system and achieved foreline vacuum pressure of 50 microns
- Designed a spherical tungsten cathode of radius 5cm
- Project halted due to undergraduate degree but created a video showcasing the progress: Fusor Progress Video
- Won $10,000 Emergent Ventures Fellow grant to source parts.