Brianna Gopaul *Engineering Physicist*

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Skills

Electrical Engineering	**Mechanical**	**Software**	**Misc**
Altium, Reading Datasheets	SolidWorks, Laser/Waterjet Cutting, Machining	Python, Java, OpenCV, Tensorflow, Keras	PCR, Gel Electrophoresis, UHV Vacuum Equipment

Professional Experience

Research Assistant, *Yachie Lab, UBC SBME*   05/2023 – 08/2023
- Designed and conducted wet lab experiments for DNA GPS ⧉ , a novel large-scale optics-free spatial transcriptomic technique, using PCR, Gel Electrophoresis and other common wet lab techniques
- Reviewed biotech literature and wrote internal research documents to evaluate modern transcriptomic sequencing techniques

Research Intern, *Cambridge Existential Risk Initiaitve*   05/2022 – 08/2022
- Led a 10-week research project on identifying technological bottlenecks in biosurveillance systems to prevent future pandemics under Akhil Bhansal
- Published report ⧉ that investigates the core technological bottlenecks in metagenomic sequencing technology for use in clinical and environmental settings

R&D Engineering Intern, *General Fusion*   05/2021 – 08/2021
- Conducted material science experiments to find suitable plasma-facing components for General Fusion's commercial fusion 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

Highschool AI Research Intern, *SanctuaryAI*   07/2020 – 08/2020
- Implemented variational autoencoders and used transformers under Dr.Geordie Rose to create better attention mechanisms

Highschool Research Intern, *Xanadu*   07/2019 – 08/2019
- Wrote documentation for Strawberry Fields a photonic quantum computing package, for visualizing quantum circuits and quantum states: CV Quantum Gate Visualization ⧉

Projects

License Plate Scanning AI, *Python, OpenCV, ROS, Gazebo, Tensorflow*
- Programmed and trained a robot using ROS and Tensorflow that used a Soft Actor Critic model to drive autonomously inside a Gazebo simulation. The robot was able to detect and read license plates using OpenCV and a CNN built in Keras.
- Got first place in ENPH353 Competition

Autonomous Overcooked Robot, *Altium, Solidworks, C++*
- Designed various PCBs in Altium: H Bridge, IR Sensing with electronic filtering, Tape Following
- Debugged protoboards and PCBs using oscilloscope
- Robot got fourth place in ENPH253 competition

Inertial Confinement Fusor, *Vacuum, High Voltage, Soldering,*
- Built an inertial confinement fusor (small fusion reactor) in my basement.
- Fusor Progress Video ⧉ (project halted due to undergraduate degree and internship)

Education

University of British Columbia, *B.ASc Engineering Physics* ⬈   2021 – 2026
Focus on foundational and upper-level mathematics and physics with a blend of Electrical Engineering, Mechanical
Engineering and Software Engineering. Often described as a mechatronics degree + physics degree hybrid.

Awards

Emergent Ventures Fellow, *Mercatus Center*   2021
Grant program that supports entrepreneurs and brilliant minds with highly scalable, "zero to one" ideas for
meaningfully improving society.