



Kyle Mackenzie

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TECHNICAL SKILLS

Languages: Python, C/C++, Java, JavaScript, Matlab

Frameworks / Packages: Tensorflow, PyTorch, OpenCV, ROS, Numpy, Pandas, Matplotlib & Seaborn

Tools/Environments: Git, Jupyter Notebooks, Unix Command Line

EDUCATION

University of British Columbia

Vancouver, BC

Engineering Physics - Bachelor of Applied Science

Sep. 2020 - May 2025 (expected)

Coursework: Software Design, Microcomputers, Signals and Systems, Machine Learning, Calculus, PDEs.

RELEVANT EXPERIENCE

Controls Systems Co-op

September 2023 – Present

Corvus Energy

Richmond, BC

- Utilized MATLAB and Simulink to develop and test control algorithms for battery management systems.
- Developed a thermal model of the precharge system of the battery pack to control the precharge current.
- Added temperature sensors to a hardware-in-the-loop test bench for the battery management system software.

Drivetrain Firmware Developer

Sep. 2022 – Present

UBC Formula Electric Student Design Team

Vancouver, BC

- Researched existing research papers detailing algorithms on torque vectoring algorithms for electric vehicles.
- Developed a high-level torque vectoring algorithm for the UBC Formula Electric vehicle from first principles and the current state-of-the-art methods.
- Wrote embedded-C code on an STM32F1 board to control torque requests to the motors.
- Led testing and validation of the torque vectoring algorithm, by developing defined track dimensions and data collection procedure to measure performance across multiple test days.

Research Assistant

May 2023 – Present

Cognitive Neuroscience of Schizophrenia Lab, BC Children's Hospital

Vancouver, BC

- Wrote a script in both Python and MATLAB to perform Constrained Principal Component Analysis on brain fMRI data, and extract functional brain network components.

Full-Stack Developer Co-op

Jan. 2022 – Apr. 2022

ICBC

Vancouver, BC

- Reduced scripting development time by 50% using a new software library, Robot Framework.
- Developed prototype for automation of company process to reduce labour and resources spent and expedite results to customers.
- Prototyped a 3D, gamified version of current ICBC Knowledge Practice Test to increase customer engagement.

TECHNICAL PROJECTS

Robot Design & Fabrication | 4 person project - C/C++, OnShape

Oct. 2021

- Designed the CAD model, circuit boards, and wrote the firmware in C for a wheeled robot to navigate a course and collect objects as part of the ENPH 253 course.
- Fabricated robot using sheet metal parts, laser-cut hardboard, and 3D-printed components.
- Assembled, soldered, and tested custom-designed printed circuit boards

Rap-GPT | Python, PyTorch

Aug. 2021

- Surveyed and trained a Generative Transformer model from scratch to generate rap lyrics.
- Finetuned model to generate lyrics that rhyme and follow a specific style.