



Kyle Mackenzie

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TECHNICAL SKILLS

Languages: Python, C/C++, MATLAB, Erlang

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

Tools/Environments: Git, Linux 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

- Facilitated hardware and software testing for safety-critical battery management systems.
- Developed a thermal model of the pre-charge system of the battery pack to control the pre-charge current.
- Added wiring and sensors to extend functionality of a hardware-in-the-loop test bench for the battery management system software.

Drivetrain Firmware Developer

Sep. 2022 – Present

UBC Formula Electric

Vancouver, BC

- Surveyed existing research on vehicle dynamics and torque vectoring algorithms to design a custom drive algorithm to control power limiting, an active software differential, and torque control for traction optimization.
- Wrote embedded-C code on the STM32F1 board to implement the custom driving algorithm.
- Developed and led execution of a plan to test, gather data on, and validate the torque vectoring algorithm 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 novel web-scraping software library, Robot Framework.
- 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 for power distribution and drive control.

Rap-GPT | Python, PyTorch

Aug. 2021

- Implemented a Generative Transformer machine learning model in PyTorch based on the design outlined in Google's research paper *Attention is All You Need*.
- Finetuned model to generate lyrics that rhyme and follow a specific style.