



# Kyle Mackenzie

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## TECHNICAL SKILLS

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

**Frameworks / Packages:** Tensorflow, PyTorch, OpenCV, 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

**Full-Stack Developer Co-op**

Jan. 2022 – Apr. 2022

ICBC

Vancouver, BC

- Produced automation solutions while improving development time by 50% compared to company standard.
- Developed prototype for automation of company process to reduce labour and resources spent and expedite results to customers.
- Developed test cases for complex internal web application.
- Prototyped a 3D, gamified version of current ICBC Knowledge Practice Test to increase customer engagement.

**Drivetrain Firmware Developer**

Sep. 2022 – Present

UBC Formula Electric Student Design Team

Vancouver, BC

- Developed traction control algorithms to react to slipping in real-time and auto-correct to stabilize car.
- Researched and documented experimental control algorithms for high-performance electric cars.

**Front-End Developer**

May 2021 – Sep. 2021

Charlene's Web Services

Remote

- Developed a slideshow application using JS, express.js, HTML/CSS for deployment on WordPress marketplace.

**Embedded Systems Developer**

Jan. 2021 – Sep. 2021

UBC Solar Student Design Team

Vancouver, BC

- Developed multi-threaded communication firmware for micro-controllers to communicate through serial, radio, and cellular for real-time data acquisition during solar car races.

## TECHNICAL PROJECTS

**Full-Stack Robot** | 4 person project - C/C++, OnShape

Oct. 2021

- Designed, prototyped, and developed the hardware, electrical, and software components of a treasure-hunting and line-following robot.
- Designed and soldered sensory circuits, and developed C-code to sense the robot's environment, and designed mechanical components of robot to navigate and exploit its environment.

**Rap-GPT** | Python, PyTorch

Aug. 2021

- Implemented a Generative Transformer model using PyTorch Tensors multiplication to generate rap lyrics.
- Trained model on rap lyrics and poetry to generate a new style of rap.

**Self-Driving with Deep-Q and Q-Learning** | Python, Tensorflow

Sep. 2020 – Oct. 2020

- Developed a Reinforcement Learning agent first with a Q-Learning model, then a Q-Learning with neural net model (Deep-Q Learning) to take in a raw video feed and output driving commands.

## INTERESTS

Hiking • Robotics • Music Production • Web Design