


# BRIAN LI

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## SKILLS

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Programming Languages: Python, C++, Java, HTML/CSS, Tailwind CSS, Javascript, Typescript, SQL, Dart  
Frameworks: React, NextJS, NodeJS, Flutter, Langchain, Pytorch, Tensorflow, Keras, Selenium, Jenkins  
Tools and Technologies: Git, Linux, AWS, Docker, Kubernetes, STM32, Arduino, Raspberry Pi, OpenCV, FPGA, FFmpeg, Whisper, Elasticsearch, Figma

## RELEVANT EXPERIENCE

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### Eon Media

*AI/ML Developer Intern*

April 2024 - August 2024

- Spearheaded research and integration of NLP capabilities into **OpenSearch cluster**, performed testing and deployment of **TorchScript models** and **ingest pipelines**. Utilized models for natural language understanding (NLU) of input text and conversion of metadata into **dense vectors** for **KNN-indexing**.
- Designed and trained a custom **binary classifier** from scratch to identify logos in images using **Convolutional Neural Networks (CNNs)** and **transfer learning** of the **ResNet50 model**. Achieved **93%** accuracy, improving existing classifier's performance by **45%**.
- Improved text detection model through introduction of dewarping function, leveraging a **Generalized Additive Model (GAM)** to calculate curvature and map points to perpendicular offset using Bresenham's algorithm; resulted in a **50%** improvement in recall rate and an **80%** reduction in runtime of pod.
- Facilitated **cloud deployment of pods** through **EKS clusters**, performed and optimized **containerization** of various pods and algorithms, reducing **docker image sizes** by **40%** and **resolving bottlenecks in pipeline**.

### Wat.AI

*Lead Neural Network Developer*

September 2023 - Present

- Led sub team of 3 in designing and prototyping **sparse** and **denoising autoencoders** using **PyTorch** for compression of IoT cybersecurity data (CICIOT 2023); optimized draft autoencoders with **exponential learning rate decays** and **learning curve analysis** 🔗
- Contributed in writing and updating [team substack articles](#) to highlight progress of team project; helped with the testing of **machine learning models** focused on cyberattack detection for IoT devices

### Waterloo Formula Electric

*Lead Firmware Developer*

September 2023 - Present

- Created hardware-in-the-loop (**HIL**) tests using **Python** to validate electric car components and determine expected behavior of unit and **RTOS**; utilized tools such as **STM32IDE**, **Virtual Box** and **Vagrant** to find translation between code and firmware input values
- Analyzed the Battery Management Unit (**BMU**) by stimulating its state of charge; conducted in-depth examination of **multithreading** firmware code in **C** and schematics to identify source variables and functions

## PROJECTS

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### "Spotify-Roots" — *NextJS, Typescript, Flask, Langchain, llama.cpp, Qdrant* 🔗

- Developed a web application using a **RAG-based approach** to provide origin information of song, album or artist, integrating Genius API for annotation extraction and **Llama 3.1 model** for inference and conversion of data.
- Application built with **OAuth2 protocol** for Spotify account logins, allowing users to perform analysis on personal playlists.

### Data Visualization Software — *Java, JavaFx, CSS* 🔗

- Created a software that visualizes **real-time** data sheets in various graphic forms; data sheets are pulled from OurWorldinData with seamless **processing** of complex data
- Visualizations are **dynamic** and customizable based on user inputs and adjustments

### "Sumo Car Bot" — *Python, Arduino, Raspberry Pi, HTML, Linux, Flask*

- Led a group of 4 in developing a fully operational miniature car capable of **autonomous navigation** and user control via a **Flask** hosted web server; organized and planned individual tasks for members
- Utilized **Arduino** and **Raspberry Pi** for the implementation of the embedded system; coded car functions within a **Ubuntu** environment using **SSH protocol** and **VIM**. Constructed with WHIMIS guidelines

## EDUCATION

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### University of Waterloo

Candidate for Bachelor of Applied Science in Computer Engineering

Waterloo, ON

September 2023 - Present