

AVERY CHIU



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MECHATRONICS ENGINEERING STUDENT

EDUCATION

University of Waterloo

Waterloo, Ontario, Sept 2019 - Apr 2024

Candidate for Bachelor of Applied Science in Mechatronics Engineering

Artificial Intelligence Option, GPA: **3.97** (93.5% cumulative average)

Important Courses:

- Experimental Measurement & Statistical Analysis
- Linear Algebra for Engineering
- Numerical Methods
- Introduction to Computer Structures & Real-Time Systems
- Algorithms and Data Structures
- Advanced Calculus

SKILLS

Python, C/C++, Numpy, Pandas, Matplotlib, SciKit-Learn, PyTorch, TensorFlow, Keras, OpenCV, SQL, MATLAB, ROS, AWS, Git, Docker

WORK EXPERIENCE

Algorithms / Machine Learning Engineering Intern

Waterloo, Ontario, May 2022 - Aug 2022

Enlighted Inc

- Researched synthetic data generation methods, such as GANs, using **TensorFlow** to augment Bluetooth localization data.
- Added **Python** code profiling for the preprocessing pipeline and optimized it to reduce runtime by 23%.
- Tuned LSTM hyperparameters using grid search to reduce model size and decrease training time by 34%.

Display Engineering Intern

Palo Alto, California, Sept 2021 - Dec 2021

Tesla

- Developed the calibration and testing sequence for a 3-axis touch screen testing robot to assess the accuracy of car displays.
- Designed a GUI with **PyQt5** to interface with the display testing robot, utilizing multi-threading to handle events, visualize the robot's movement, and display test results using **Matplotlib**.
- Built **Bluetooth** and **WiFi** reliability testing system for Tesla car computers using **Bash** scripts.

Computer Vision Undergraduate Research Assistant

University of Waterloo Vision and Image Processing Lab

Waterloo, Ontario, Apr 2021 - Sept 2021

- Implemented Mask-RCNN, Faster-RCNN, and RetinaNET with **Detectron2** and **PyTorch** in **AWS Sagemaker** to detect Northern Leaf Blight disease in maize, achieving an accuracy of 94.6% in detecting diseased plants.
- Created a **Python** script to compute the average precision and recall from each image and output a PDF with a side-by-side comparison of the ground truth versus the predicted bounding boxes using **OpenCV**.

Automotive R&D Intern

Waterloo, Ontario, May 2020 - Aug 2020

Geotab

- Analyzed vehicle data from customers using **Google BigQuery (SQL)** and prepared dashboards to display visualizations, such as geographic heatmaps, with **Python** using libraries such as **Matplotlib**, **NumPy**, and **Pandas**.

DESIGN TEAMS

Co-Founder

Waterloo, Ontario, July 2021 - Present

WATOLINK

- Co-founded a BCI (brain-computer interface) student design team, with 40+ members, to compete in the NeuroTechX competition and to develop a device used to communicate with others online using brain signals.
- Developed scripts to sample data from EEG headsets for data preprocessing using **Brainflow API**.
- Created visualizations of EEG data with **Fast-Fourier Transform** using **SciPy** and **Matplotlib**.

Telemetry/CAN Interface Manager

Waterloo, Ontario, Dec 2020 - Jan 2022

WATonomous

- Led a team of 4 people to develop the telemetry system and CAN interface to monitor and control a self-driving Chevrolet Bolt EV for the SAE Autodrive Challenge.
- Designed the software architecture to facilitate communication between the **ROS** network and the **CAN** network, allowing for messages to be packed and sent to the vehicle for autonomous control.
- Refactored **Python** code to follow **OOP** principles, improving the readability and reusability of the software.