

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

RESEARCH INTERESTS

SKILLS

TOOLS

- Machine Learning
- Python
- SQL
- Tensorflow
- OpenCV
- AWS
- W&B
- MongoDB
- Computer Vision
- C/C++
- HTML/CSS
- PyTorch
- Numpy
- ROS
- Plotly
- DynamoDB
- Neural Interfaces
- MATLAB
- Javascript
- SciKit-Learn
- Pandas
- GCP
- Git
- Redash
- Embedded Systems
- Java
- Bash
- Keras
- Matplotlib
- Docker
- BigQuery

WORK EXPERIENCE

Software Engineering Intern

Toronto, Ontario, Sept 2022 - Dec 2022

SBX Robotics (YC W21)

- Integrated image augmentation **Python** library into post-processing to augment images with transformations such as fog, blur, and flipping, providing a 14% lift in the F1 score for synthetically generated images.
- Implemented **stable diffusion** into the post-processing pipeline to improve the realism of synthetic data.
- Optimized image analysis tool to sample pixel data from synthetic and real data, decreasing run-time from 30 minutes to 30 seconds.

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%.
- Utilized grid search to optimize hyperparameters for an LSTM model, resulting in decreased training time by 34%.

Display Engineering Intern

Palo Alto, California, Sept 2021 - Dec 2021

Tesla

- Designed and implemented a touch screen testing robot using **Python** to automate the testing process for car displays.
- Created 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**.

Computer Vision Undergraduate Research Assistant

Waterloo, Ontario, Apr 2021 - Sept 2021

University of Waterloo Vision and Image Processing Lab

- 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.
- Developed tools for the analysis of segmentation masks, including metrics for evaluating the accuracy and overlap of masks and visualizations for comparing different segmentation approaches.

Automotive R&D Intern

Waterloo, Ontario, May 2020 - Aug 2020

Geotab

- Employed **Google BigQuery** (SQL) and **Python** libraries such as **Matplotlib** and **Plotly** to design and implement dashboards for analyzing vehicle data, allowing for the visualization of key trends and insights through the use of interactive charts.

PROJECTS

Co-Founder

Waterloo, Ontario, July 2021 - Present

WATOLINK

- Co-founded a BCI (brain-computer interface) student design team that won first place in the 2022 NeuroTechX competition by designing a neural interface to assist people with speech disabilities.
- Created visualizations of EEG data with **Fast-Fourier Transform** using **SciPy** and **Matplotlib**.