

Anthony Ho

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Skills

- **Languages:** Python, Bash/Linux, C/C++, Java, JavaScript, HTML/CSS, LaTeX, Racket
- **Technologies:** OpenCV, Numpy, Matplotlib, SQLite, Redis, AWS EC2, GCP NLP, Socket programming, React
- **Other Skills:**
 - Network engineering skills (static IP DHCP server, bridging, packet forwarding, ad-hoc networks, TCP/IP)
 - Industrial communication experience (Modbus RTU, wire selection + installation, vendor communications, socket programming)

Experience

IoT Railway Tunnel Monitoring Research Assistant | University of Waterloo 2022/05 – present

Python, Redis, Modbus RTU, SQLite, DHCP, AWS EC2, Javascript, React, Sockets

- Engineered an environment monitoring **IOT system** for **industrial use** using **Raspberry Pis** and **AWS EC2**, capable of **scaling** into multiple tunnel networks.
- Supported a **dynamic number of nodes** and consistent node identification using a **customized static DHCP IP** assignment protocol, designed for "**plug and play**" immediate installation.
- Designed a **Redis primary database** that aggregates datapoints by time-based downsampling, increasing data storage efficiency by **1800%**.
- Implemented an interactive dashboard with **React + Express** containing data visualization of real-time sensor data and user alerts during emergencies.

Stereo / Computer Vision Research Assistant | University of Waterloo 2019/07 – 2019/08

Python

- Researched, implemented stereo vision models after analyzing multiple research papers using **OpenCV**, resulting in a passable "ground truth" output.
- Augmented training data using **OpenCV** and improved the efficacy of a colleague's CNN stereo model.

Projects

(Winner) Staples Studio Startups | React, Express, MongoDB 2022/08 – 2022/08

- **Won the HT6 Staples Studio Challenge** (400+ participants) by building a platform using **MongoDB, Express, and React** that connects startups' products to consumers.
- **Visualized data** on interactive charts with a stylish page built using **Material UI**.

CoverMaster | Python, JavaScript, GCP NLP 2022/01 – 2022/01

- Built a **Google Chrome Extension** with **Javascript** and **Python** that automates cover letter creation using **Google Cloud's Natural Language AI**
- Used webscraped job postings from WaterlooWorks, **GCP NLP**, and a **Flask** server to generate cover letters in **real time**.

Balloon Deflation Tracking & Modelling | Python 2021/01 – 2021/02

- Developed an algorithm that models a balloon's deflation using **OpenCV**, resulting in the find of a **high correlation** model. (**R-squared = 0.94**)
- Used Taylor polynomials and non-linear **Numpy** regressions to generalize a mathematical equation for balloon deflations.

Education / Awards

Candidate for: 2021/09 – 2026/05

Bachelors of Computer Science and Bachelors of Business Administration
University of Waterloo and Wilfred Laurier University.

Awards:

- Distinction Award (top 25%) for the 2021 CEMC Euclid math contest
- Scored 42 / 45 in IB, placing among the top 12% of all worldwide 2021 graduates
- 2021 University of Waterloo President's Scholarship of Distinction (\$2000)
- 2022 NSERC Undergraduate Student Research Award (\$6000)

Interests

- Blue Jays!