Ryan Seto

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Experience

ECE Student Research Fellowship | *Docker, Linux, Python, Flask, C++, Arduino, Fusion 360* May 2023 – Aug. 2023
University of Toronto *Toronto, Canada*

- Provisioned a Raspberry Pi cluster to solve linear systems in parallel by deploying a Flask server that published tasks to a message queue with Docker Compose, and distributed asynchronous jobs across workers in a Docker Swarm
- Programmed and taught a robotics workshop where students learned Fusion 360 to design a line tracking robot controlled by an Arduino microcontroller, with 89% of students rating the overall experience 9/10 or higher
- Yielded over $3000 of funding from the Chair of the ECE Department for the next year's robotics workshop equipment
- Designed and taught a software workshop on object oriented programming in C++, with 83% of students rating the overall experience 8/10 or higher alongside requests for another workshop

Back-End Software Engineering Intern | *Python, FASTAPI, Hasura, GCP* May 2022 – Aug. 2022
Heliolytics *Toronto, Canada*

- Developed REST APIs that generated analysis tasks for solar field analysts to generate reports on the wattage, potential faults, and profit of a client's solar farm using Python and FASTAPI
- Completed a user authentication middleware that allowed developers to toggle authentication during development, streamlining the development of 10+ back-end APIs by removing the need for admin tokens in each request
- Linked a report's GCP files and images by relating image UUIDs to reports in a PostgreSQL database using Hasura
- Refactored a legacy script that migrated solar field data from Google Drive into a PostgreSQL database to be concise and modular, as well as added remote functionality using PyDrive2 and Hasura

Part-Time Engineering Assistant Intern | *Arduino, Solidworks* Jan. 2022 – Apr. 2022
ePIC Blockchain *Toronto, Canada*

- Prototyped an Arduino circuit that monitored the flow rate and temperature of a hash board water block with 1.5% error
- Created a 3D printed case to protect the Arduino circuit from water using Solidworks, leading to no damaged parts
- Designed the body for a client's router to match their requested look using Solidworks and 3D printed two separate orders
- Implemented a fixture to hold PCA boards in place to improve compatibility validation using Solidworks and 3D printing

Software Engineering Intern | *Python, Flask, OpenCV* May 2019 – Aug. 2019
Heliolytics *Toronto, Canada*

- Built a web-based trade show demo using Python and Flask that could exchange an infrared selfie for the user's contact information and facilitate networking for the Business Development Team
- Streamed infrared footage from a Flask application to an HTML user interface using OpenCV and multithreading

Projects

UTMIST: NucleAIse Protein Function Predictor | *Python, BioPython, PyTorch, NumPy* Jul. 2023 – Present

- Researching how to implement an ensemble neural network to predict the gene ontology of a protein based on its amino acid sequence, taxonomy, and subcellular location
- Preprocessed protein data from the UniProt database to extract the amino acid sequence, taxonomy, subcellular location, and gene ontology of human-native proteins to form a dataset for the ensemble neural network

HomeCook+ | *C++, Linux, Git* Jan. 2023 – Apr. 2023

- Built a full-stack application to plan grocery routes by providing an ArcGIS user interface to save and load routes
- Processed OpenStreetMap geolocation data into an object oriented database and rendered the map using GTK

Music Genre Classifier | *Python, Tensorflow, NumPy* Feb. 2023 – Mar. 2023

- Trained a convolutional neural network to predict the genre of a music sample based on timbre, frequency, and volume analysis to 70% accuracy with background noise

Education

University of Toronto Toronto, Canada
B.A.Sc in Computer Engineering – 3.55/4.0 cGPA (Dean's Honour List) *Expected June 2026*

- Pursuing an Artificial Intelligence Minor and Music Technology Certificate
- Awarded the *UofT National Book Award* in 2021 for ranking top of the class in high school with a 98.3% final average