

## Education

Sep 2019 - Present  
Expected: May 2024  
Year: 3

### University of Toronto (BSc)

Specialist in Computer Science and Minor in Mathematics.

Received **Dean's List Scholar** (2020, 2021) award with a cGPA of **3.94/4.00** (Major: 4.0). Entered with a **\$2000** UofT Entrance Scholarship.

## Technologies

<b>Languages</b>	Python, C, Java, GoLang, C++, Typescript, HTML, CSS, SQL, bash
<b>Frontend</b>	React, Next, Tailwind
<b>Backend</b>	Node, Express
<b>Databases</b>	MongoDB, PostgreSQL
<b>Tools</b>	Git, Unix, Postman, Makefile, Vercel, Docker, PyTorch, NumPy, scikit-learn, Neovim, tmux

## Experience

### illuminote @ Hack the North

[repo](#)  
[devpost](#)  
[demo](#)

Pair-programmed a mixed-reality multiplayer game submitted to University of Waterloo's Hack the North 2020++ written in **Pygame** and **OpenCV**.

Used canny edge detection to extract features from sticky notes on a monitor through a photo. Allows players to design their own game map and interact with the real world.

Accurately applied a transformation matrix to the screen contour to warp the image to a regular perspective.

### argus. @ Hack the 6ix

[repo](#)  
[devpost](#)

Built a real-time accident detection solution for CCTV footage leveraging **TensorFlow's** machine learning model in **Python** at Hack the 6ix.

Reports road accidents immediately to the web and phone via **Express** and Twilio API to reduce response time for assistance accommodations.

Displays the location of the crash using Google geolocation and shows truncated footage of the crash.

## Projects

### readme. [repo](#)

Developed a fully-featured backend for curating projects targeted towards developers. Posts include comments and a voting system much like Reddit.

Designed a scalable, maintainable RESTful API using **Typescript**, Express, and **Postgres**.

Architected performant, robust code with resilient error and exception handling, and used **JWT** authentication middleware to persist session information.

### Competitive Programming

[repo](#)

A repository containing over **400** competitive programming solutions to online judges such as Codeforces, DMOJ, and Leetcode written in **C++**, Java, and Python.

Included a C++ **open-source** library of blazingly-fast templates for algorithms and data structures. Covered topics on Graph Theory, Dynamic Programming, Data Structure, and more.

Certified for [Advanced Algorithms and Complexity](#) as per the **Google** CSSI Program, offered by UCSD.

### Personal Website

[demo](#)

Engineering and maintaining a website using Typescript, **Next**, and Tailwind.

Shipping a blog with live markdown preview and  $\text{L}^{\text{A}}\text{T}_{\text{E}}\text{X}$  rendering support, deployed through **Vercel**.

Currently writing about the [Kademlia DHT protocol](#).

### go-tcp [repo](#) [IPR]

Implementing the TCP protocol in Go. Followed **RFC 793**, the original protocol, to establish an incoming TCP connection using the **three-way handshake** and gracefully terminate a connection.

Designing support for data segments, retransmissions, and timers. Currently implementing **RFC 1122** and **RFC 7414**, which lay out the requirements for clean interoperability for internet hosts.

Building out multiple TCP streams management, with support for blocking operations, reading and writing data, and application-controlled shutdown.