

## Education

Sep 2019 - Present  
Expected: May 2023

### University of Toronto (BSc)

Specialist in Computer Science and Minor in Mathematics.

Received **Dean's List Scholar** award with a GPA of **3.94** (Major: 4.0). Entered with a **\$2000** UofT Entrance Scholarship.

## Technologies

<b>Languages</b>	Python, Java, C, Go, Typescript, HTML, CSS, Rust, SQL, zsh
<b>Frontend</b>	React, Next, Tailwind
<b>Backend</b>	Node, Express
<b>Databases</b>	MongoDB, PostgreSQL
<b>Tools</b>	Git, Unix, Postman, Makefile, Docker, Neovim, tmux

## Projects

### illuminote

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

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

Arrange sticky notes on the screen to design the game map, scan the map with a phone allowing the players to interact with the real world by shooting bullets off sticky notes or using them as portals. Used **canny** edge detection to extract sticky notes and the screen contour.

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

### kNN-predict

[repo](#)

A distributed, lightweight handwriting recognition tool written in **C** using k-nearest neighbors (with Euclidean and cosine distance heuristic functions).

Used **parallelism** to efficiently distribute classification over multiple cores in the CPU.

Increased speeds up to **x64** using this multi-threaded approach.

### argus.

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

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

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

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

### Othello/Reversi

[repo](#)

Created a Java application that uses Minimax and Alpha-Beta Pruning for artificial intelligence to play Othello.

Designed the **heuristic** function which calculates the utility value of a board position by assigning different weights to the corners captured on any given board configuration.

Optimized the AI to make a move in under **1 second** of real-time.

### 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.

### Personal Website

[demo](#)

Engineered a website using React, Typescript, Next.js, and Tailwind.

Maintain a blog and shipped live markdown preview with LaTeX rendering support and deployed through Vercel.

## Interests

Large scale distributed algorithms and systems, concurrent computing, web development