




Sean Kim

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EDUCATION

University of Toronto

Sep 2021 – Present

Bachelor of Applied Science in Computer Engineering

Toronto, ON

- **cGPA: 3.84** / 4.0
- **Honours:** NSERC Undergraduate Student Research Award (2023), Dean's Honour List in All Semesters
- **Relevant Coursework:** Computer Fundamentals (C), Programming Fundamentals (C++, OOP), Digital Systems (FPGA, Verilog), Computer Organization (ARM Assembly, Processor Design), Software Design and Communication (C++ GIS Design), Linear Algebra, Signals and Systems (MATLAB)

EXPERIENCE

Undergraduate Research Intern

May 2023 - Sep 2023

University of Toronto - iQua Group

Toronto, ON

- Evaluated **Strato**, an inter-cloud ML pipeline overlay network, by extending over **10** different **Rust** test functions to analyze **TCP** connection and metric transmission
- Developed a **WebSocket** server utilizing **Node.js**, integrating with a **Rust**-based dataplane for increased data processing speed and transmission efficiency by **120%**
- Engineered an analytics dashboard for web and command line, using **Next.js**, **TailWindCSS**, and **Python**, providing real-time tracking and display of bandwidth from highest to lowest by per-node, per-link, and per-flow
- Devised a Max-min fairness re-router algorithm with **SciPy** linear programming and the **NetworkX** library, optimizing the lowest flow bandwidth by up to **300%**
- Wrote a comprehensive paper on the above rerouter algorithm and linear programming, applying complex equations and visualizations with precision, using **LaTeX** and **Overleaf**

Full-stack Web Developer

Jul 2022 – Present

UofTHacks

Toronto, ON (Remote)

- Contributed to the website and dashboard for the **Canada's first student-run** hackathon, UofTHacks X, benefiting over **600+** hackathon participants with seamless access
- Utilized Atomic Design with **React.js**, **Next.js**, and **stitches.dev**, resulting in a **20%** reduction in file size

PROJECTS

Azami | *Qualcomm Tiny ML Kit, Arduino Nano 33 BLE Sense, Edge Impulse, Neo Pixels*

2023

- **MakeUofT 2023 Winner** of Most Innovative Power Efficient Hack using Tiny ML Kit
- Created an innovative voice recording device, utilizing **Tiny ML Kit**, **Arduino Nano 33 BLE Sense**, and **Neo Pixels**, to aid individuals with dementia, which captures and replays the last **10 seconds** of audio upon recognizing the voice command, "I forgot," using a Machine Learning (UMAP) voice recognition system

OTFMap | *C++, GTK, Glade, EZGL, OpenStreetMap API*

2023

- Developed a functional GIS application with **C++** (STL) and **OSM API**, along with a customized database
- Implemented **Dijkstra**, **Parallel Dijkstra**, and **A*** algorithms for optimized path-finding in **20** different cities and Travelling Courier Problem, surpassing all TA algorithms in travel time and ranking within **top 10%** of the class

TrackTC | *React.js, Node.js, Express.js, MongoDB, TTC API*

2022

- Developed a responsive web app that alerts commuters of potential TTC and bus delays via email reminders and real-time transit information to users, built with **MERN** stack and **TTC API**

TECHNICAL SKILLS

Languages: C, C++, Python, Rust, HTML5, CSS3/SCSS, JavaScript (ES6+), ARM v7 Assembly, SQL, MATLAB

Technologies: React.js, Redux, Next.js, Node.js, Express.js, Git/GitHub, Docker, Vim, tmux, Valgrind, GTK/Glade, WebSocket, TCP/IP Networking

Hardware and Electrical: Verilog (HDL), ModelSim, NI MultiSim, FPGA/Intel Quartus Prime, DE1-SoC Boards