




Sean Kim

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EDUCATION

University of Toronto

Sep 2021 – Present

Bachelor of Applied Science in Computer Engineering

Toronto, ON

- **Cumulative GPA: 3.84** / 4.0
- **Honours:** NSERC Undergraduate Student Research Award (2023), Dean's Honour List in All Semesters
- **Coursework:** Algorithms and Data Structures, Computer Networks, Operating Systems, Software Design and Communication, Computer Organization, Digital Systems, Computer Fundamentals, Programming Fundamentals, Probability and Applications, Linear Algebra, Multivariable Calculus, Signals and Systems

EXPERIENCE

Computer Networking Researcher Intern

May 2023 – Sep 2023

iQua Research Group - University of Toronto

Toronto, ON

- Evaluated an inter-cloud overlay network, by extending over **10** different **Rust** test functions to analyze **TCP** connection and metric transmission via evaluating network packets
- Devised a Max-min fairness routing algorithm with **SciPy** linear programming and the **NetworkX** library, optimizing the lowest flow bandwidth by up to **300%**
- Engineered an analytics dashboard for web and command line, using **Next.js** and **Python**, leveraging data from **PostgreSQL** via queries, tracking of bandwidth from highest to lowest by destination, link, and virtual circuit
- Developed a **WebSocket** server utilizing **Node.js**, integrating with a **Rust**-based dataplane for increased data processing speed and transmission efficiency by **120%**

Full-stack Web Engineer

Jul 2022 – Present

UofTHacks

Toronto, ON (Remote)

- Developed 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

CareerTrace | *React.js, Node.js, Express.js, MongoDB, Google OAuth 2.0, AWS*

2023

- Developed a responsive web app that effortlessly track user's job applications, monitor application stages, and keep a record of important interview dates, built with **MERN** stack and **Google OAuth 2.0**, deployed with **AWS**

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

2023

- 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 UMAP voice recognition system
- Won the **MakeUofT 2023** category of Most Innovative Power Efficient Hack using Tiny ML Kit

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

2023

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

16-bit Processor | *Verilog (HDL), Assembly, FPGA, ModelSim, DESim*

2023

- Developed a **16-bit** architecture processor with **8** registers with **Verilog**, enabling execution of various instructions
- Conducted thorough verification of the processor's functionality on an **FPGA**, implementing a word matching game written in its architecture's **Assembly**

TECHNICAL SKILLS

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

Frameworks/Libraries: React.js, Redux, Next.js, Node.js, Express.js

Developer Tools: Git, Linux, Docker, Vim, tmux, GTK/Glade

Hardware: Verilog (HDL), FPGA/Intel Quartus Prime, DE1-SoC Boards

Others: WebSocket, LaTeX, TCP/IP Networking, Data Structures and Algorithms