SEAN KIM

Computer Engineering Student at University of Toronto

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Education

University of Toronto   **Toronto, ON**
Bachelor of Applied Science in Computer Engineering   *Sep 2021 – Present*
- **cGPA: 3.84** / 4.0
- **Awards:** NSERC Undergraduate Student Research Award, 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*
- Architecting a high-performance virtual switch using **Rust** programming language, optimized for efficient inter-cloud data transport at ultra-fast speeds, while incorporating smart traffic management features
- Developed a WebSocket server in **Node.js**, enabling efficient data collection from diverse sources and establishing seamless integration with a **Rust** dataplane for optimized data processing and transmission.
- Utilized **Docker** to containerize and deploy the virtual switch, ensuring integration with existing cloud infrastructure and facilitating rapid deployment and scalability

Full-stack Developer   **Jul 2022 − Present**
UofTHacks   *Toronto, ON (Remote)*
- Contributed to the website and dashboard for the **Canada's first student-run** hackathon, UofTHacks X, serving over **600+** hackathon participants accessing the site
- Implemented an Atomic Design approach utilizing **React.js**, **Next.js**, and **stitches.dev**, resulting in a **20%** reduction in file size and improved organization of unnecessary components
- Collaborated with the design team to translate User Interface designs from **Figma** into functional, responsive components, ensuring a seamless experience for hackathon participants

Projects

Aazami | *Qualcomm Tiny ML Kit, Arduino Nano 33 BLE Sense, Edge Impulse, Neo Pixels*
- **MakeUofT 2023 (Largest Hardware Hackathon in Canada) Winner of Most Innovative Power Efficient Hack using Qualcomm Tiny ML Kit**
- Created an innovative voice recording device, utilizing **Qualcomm 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 voice recognition system
- Conducted extensive Machine Learning training with **Edge Impulse** on the voice recognition system, totaling over **1 hour** and **27 minutes** of voice data, resulting in a **98.7%** accuracy rate

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

TrackTC | *React.js, styled-components, Node.js, Express.js, MongoDB, TTC API*
- Created a responsive and user-friendly 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

Technical Skills

Languages: C, C++, Python, Rust, HTML5, CSS3/SCSS, JavaScript (ES6+), ARM v7 Assembly, PHP, MATLAB
Technologies: React.js, Redux, Next.js, Node.js, Express.js, MongoDB, Git/GitHub, Docker, Valgrind, GTK/Glade, WebSocket, TCP/IP Networking
Hardware and Electrical: Verilog (HDL), ModelSim, NI MultiSim, FPGA/Intel Quartus Prime, DE1-SoC Boards

Leadership

DEEP Summer Program Counsellor   **Jun 2022 − Jul 2022**
University of Toronto Engineering Outreach Office   *Toronto, ON*
- Cooperated with graduate students to mentor **20+** high school students in STEM fields in a total of **106 hours** of class