Sean Kim

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Education

University of Toronto — Anticipated: May 2026

Bachelor of Applied Science in Computer Engineering, Double Minor in AI and Robotics — *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, Operating Systems, Computer Networks, Software Design, Databases, Deep Learning, Computer Organization, Digital Systems, Control Systems, Probability and Statistics

Experience

Software Engineer Intern — May 2024 – Present

Mozilla Corp. — *Toronto, ON*

- Firefox Necko Networking Team

Distributed ML Systems Research Intern — May 2023 – Sep 2023

iQua Research Group – University of Toronto — *Toronto, ON*

- Devised a Max-min fairness routing algorithm with **SciPy** linear programming and the **NetworkX** library, optimizing the lowest flow bandwidth by up to **300%**
- Leveraged **React.js** and **Python (psycopg2)** to create an analytics dashboard able to track bandwidth from highest to lowest by destination, link, and virtual circuit, displaying data queried from **PostgreSQL** DBMS
- Extended **10+** unit tests in **Rust** to analyze **TCP** connection and transmission via evaluating packets

Full Stack Web Engineer — Jul 2022 – Jan 2024

UofTHacks X and 11 – Organizer Team — *Toronto, ON (Remote)*

- Developed reusable **Next.js** components of the website and applicant dashboard for the **Canada's first student-run** hackathon, UofTHacks, benefiting over **600+** hackathon participants with seamless access
- Developed **RESTful API** backend endpoints using **Express.js**, effectively handling application data

Projects

CareerTrace - Job Tracker | *React.js, Node.js, Express.js, MongoDB, Google OAuth 2.0, AWS* — Demo Link

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

OTFMap - C++ GIS Mapper | *C++ (STL), GTK, Glade, EZGL, OpenStreetMap API* — Demo Link

- Developed a functional GIS application built with **C++** (STL) and **OSM API**, along with a customized database
- Implemented **Djikstra**, **Parallel Djikstra**, **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

Operating System Libraries - Thread & Process Manager | *C, Linux, Unix, Systems Programming*

- Implemented a user-space thread and process libraries in **C** features including terminating a thread, yielding a thread back to the queue, joining after the thread's termination, monitoring processes, and serving as a subreaper
- Created a test case for **300+** students in ECE344H1 (Operating Systems), approved by the Course Instructor

Handwritten Text Recognition (CNN + GRU) | *PyTorch, OpenCV, Pandas, CNN + GRU* — Demo Link

- Developed and trained a **CNN-GRU** model with **PyTorch** for text recognition on handwritten word images
- Enhanced model accuracy to **51.6%** on the test set via Levenshtein distance (surpassed baseline model with 29%)

TCP Multi-Party Text Conferencing | *C, Linux, TCP/IP, Socket Programming* — Demo Link

- Developed server and client components for a multi-user text conferencing system in **C** using **TCP/IP** protocols
- Integrated ACK/NACK packets and multi-threading within the server architecture, allowing diverse client requests

Technical Skills

Languages: C, C++ (STL), Python, Java, SQL, HTML5, CSS3, JavaScript (ES6+), TypeScript (ES6+), Rust, ARM v7 Assembly, Verilog (HDL), MATLAB

Frameworks/Libraries/DBMS: React.js, Redux, Next.js, Node.js, Express.js, PostgreSQL, MySQL, NumPy, SciPy, psycopg2, PyTorch, Matplotlib, TensorFlow

Developer Tools: Git, Linux/Ubuntu, Unix, Docker, Vim, tmux, GTK/Glade, JUnit, Jupyter Notebook