Brian Tsoi

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Education

University of Toronto Expected May 2026
Bachelor of Applied Science in Computer Engineering GPA: 3.65/4.00

Relevant Coursework: Operating Systems, Algorithms & Data Structures, Computer Networks I, Distributed Systems, Introduction to Artificial Intelligence, Applied Fundamentals of Deep Learning

Experience

Mozilla Corporation
May 2024 – Present

Backend Software Engineer Intern - Operating Systems Integration Team

- Contributing to the **C++/Rust** backend of **Firefox** as a full-time year-long intern
- Validated **230K+ crash reports** monthly by adding inconsistency detection via **x86-64 ASM** parsing to the **open source** crash analyzer **Rust-minidump**, used by Mozilla, Microsoft and Sentry
- Conducted early testing on over **25,000 reports** with 5 OS exceptions to ensure feature reliability
- Developing an **open source RAM scanning** library to detect faulty hardware and flag unusable crash reports, incorporating **15+** memory testing algorithms written with **low-level Rust** features

UofT Spark Design Team
Sep 2022 – Present

Student Software Project Lead

- Spearheading a **Raspberry Pi/C++** 12"x12"x48" arcade game community project with a **team of 10**
- Designed a **Python/OpenCV** ball-tracker with **79ms** latency for a 48"x36"x30" pinball machine
- Reviewed **10+ pull requests**, providing constructive feedback to uphold code quality across project
- Organized workshops for **15+ team members** on use of **Git/Github** to streamline teamwork process

UofT Aerospace Team
Sep 2022 – Jan 2024

Student Software Engineer

- Implemented a **Python** compression algorithm for satellite images, achieving **50% compression rate**
- Improved runtime performance by **18 times** with rewrite in **C** and ported to **STM32** microcontrollers
- Engineered a **multi-threaded** framework in **FreeRTOS** to orchestrate satellite subsystems seamlessly

Projects

Distributed Key-Value Database Jan 2024 – Apr 2024

- Architected a leader-based concurrent distributed NoSQL database in **Java** with a team of 3
- Tested with the **2.6 GB** Enron dataset, achieved **99.3% reliability** and below **5ms latency**
- Improved ring-based **consistent hashing** mechanism with **virtual nodes** for effective load balancing

Google Maps Clone Jan 2023 – Apr 2023

- Rendered OpenStreetMap data at **60 fps** with **GTK** by writing efficient **C++** graphics algorithms
- Reduced path routing time to under **23ms** by utilizing **A* path finding** algorithm

Terminal Text Editor Sep 2022 – Apr 2023

- Constructed a terminal text editor using **C**, **POSIX API** and **VT100** terminal sequences
- Implemented Vim-like keyboard bindings and **modal editing** functionality

Skills

Programming: C, C++, Python, Rust, Java, Go, x86-64 Assembly, HTML, CSS, JavaScript, SQL, Git
Embedded/Hardware: STM32 microcontrollers, RTOS, Arduino, Raspberry Pi, UART, I2C, SPI