

Brayden Zhong

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EDUCATION

University of Waterloo

Electrical and Computer Engineering, BAsC

Sep. 2024 – Aug. 2029 (Expected)

Waterloo, ON

- Relevant Coursework: Fundamentals of Programming (C++)

EXTRACURRICULARS

Software Developer

UW Reality Labs (Student Design Team)

Sep. 2024 – Present

Waterloo, ON

- Developed Unity/AI interface in C# for real-time (1ms latency) inference of hand gestures in VR at 95% accuracy
- Engineered C#/Unity pipeline for automatic data collection and neural network training on any gesture in 5 min.
- Implemented neural network architecture supporting two hands, increasing pool of recognizable gestures by 500%+
- Deployed ESP32 camera module firmware and computer vision software to enable VR eye tracking from scratch

Firmware Subteam

Electrium Mobility (Student Design Team)

Sep. 2024 – Present

Waterloo, ON

- Worked on the Battery Management System (BMS) for real-time monitoring of the electric Go-Kart's battery packs, ensuring accurate cell voltage and capacity measurements.
- Debugged and optimized firmware for the BQ IC to ensure reliable communication between the BMS and other vehicle subsystems.
- Integrated BMS with motor controller and auxiliary systems via the CAN bus protocol, facilitating real-time data exchange and communication.

PROJECTS

PayMe - Banking App | *React, Typescript, Node.js*

September 2024

- Developed a full-stack payment application using React, TypeScript, Express, Material-UI, and SQL, enabling secure account creation, money transfers, and transaction histories.
- Designed a relational SQL database schema supporting complex user relationships and transactions, ensuring accurate balance updates and integrity across 50+ test scenarios.
- Integrated Cypress to implement end-to-end (E2E), API, and UI tests, achieving 95% workflow coverage and verifying edge cases like overdrafts and invalid transfers.

Memory Management Simulator | *Javascript, HTML/CSS*

August 2024

- Developed a memory allocation simulator using JavaScript with an intuitive HTML/CSS interface.
- Implemented Best-Fit dynamic partitioning to allocate memory efficiently and minimize fragmentation.
- Managed memory blocks using linked lists for efficient allocation, deallocation, and memory compaction.

IP Network Scanner | *Bash*

November 2024

- Developed a modular IP network scanning tool in Bash, capable of handling scans with real-time progress tracking and estimated time-to-completion.
- Implemented reachability detection using ping and HTTP server checks via curl, saving results to a structured JSON output.
- Enhanced functionality with reverse DNS lookup and traceroute capabilities, offering detailed insights into IP routing and hostnames for each target address.

VOLUNTEER EXPERIENCE

Director of Technology

Canadian Young Investors Society

May 2023 – July 2024

Toronto, ON

- Implemented an email scraping and sending system using Python, BeautifulSoup, and Bash scripts, enabling regular refreshing of over 150+ sponsorship leads without manual intervention.
- Developed custom automation scripts using Python, Google Sheets API, and Bash to streamline data entry, ensuring automated handling of file management and data parsing, reducing manual recruitment tasks by 60%.

TECHNICAL SKILLS

Languages/Software: JavaScript, TypeScript, HTML/CSS, SQL, Python, C#, C++, Bash, Git, Docker

Awards: AMC Certificate of Distinction (AIME Qualifier, Top 5%)