

# ANDREW MAO

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## EDUCATION

**Bachelor of Science, Computer Science**  
University of British Columbia, Vancouver, BC

Expected Grad: May 2027  
(Current GPA: 4.33/4.33)

## EXPERIENCE

### Software Engineering Intern

Redbrick, Victoria, BC

January 2025 – August 2025

- Developer for the Shift Browser specializing in the development of the base application services using Chromium such as browser features, build processes, and API implementations.
- Implemented and A/B tested browser startup features for wakes and unlocks resulting in **10%** increased user installs.
- Improved Web IDL to C++ code generation support using Generate Ninja for the V8/Blink compiler, modularizing and decoupling in-house extensions to the Blink rendering engine.
- Conducted agile spikes towards auto-exporting user settings from legacy products using LevelDB and extending the IndexedDB API, clarifying architectural decisions on the migration strategy to new products.

### UBC ThunderBots Software Developer

UBC ThunderBots, Vancouver, BC

September 2023 – Present

- Roster member in UBC's multidisciplinary student team to design autonomous soccer robots for worldwide RoboCup competitions (~3000 participants). Ranked **2<sup>nd</sup> in RoboCup** 2024 SSL Division B as Grand Finalists.
- Introduced an onboard diagnostics CLI leveraging Typer, pybind11, and Unicast for a simplified debugging process via SSH without a pre-configured development machine.
- Established hermetic cross-compilation for ARM64 Python executables using Bazel and remote deployment with Ansible from team-standard x86 development systems allowing python binaries to run on robots.
- Overhauled defensive gameplay and implemented Enemy Free Kick defensive response using Boost/SML state machines to allow for new active ball acquisition tactics and significant reductions to acquired fouls during competition.

## PROJECTS

### Tongue Tied Tale - Unity Game Engine, C#

- Directed a team of 12 over 96 hours to design a 2D chameleon-themed Metroidvania for the 2024 "Built to Scale" Game Maker's Toolkit game development competition.
- Implemented core gameplay features such as grappling mechanics, mass-reliant physics, and cutscene management using the C# MonoBehaviour-based scripting API, Unity Scene Editor, and Cinemachine.
- Ranked top **25%** amongst **32 500** participants in the largest game jam in Itch.io history (2024).

### Slack Off - TypeScript, Python, OpenAI API

- Developed an educational web app leveraging GPT3.5-Turbo to analyze PDF-based lecture slides by generating notes, explaining key points, and building practice material through personalized study plans during nwHacks 2024.
- Implemented responsive frontend UI using React and file upload features with HTTP protocols for Python-Flask backend.
- Facilitated app deployment via Ubuntu 22.04 server using NGINX, Unicorn, and systemd, to support internet access.

### Handshake - C++, React.js, Firebase

- Designed a multi-client WIFI controlled robot intended to encourage social interactions from anywhere in the world.
- Engineered and manufactured hardware from the chassis, PCB, and power-electronics design centered around an ESP32.
- Built onboard software in C++ using the Firebase API hosted with SPIFFS to handle controls & communication data.
- Deployed a web controlled React interface hosted using Firebase and Google Auth for per user to control their robots.

## TECHNICAL SKILLS

- **Languages/Frameworks:** Python, C++, C#. JavaScript, Typescript, Java, React, R, HTML, CSS, Racket
- **Developer Tools:** Ubuntu, Platform.io, Bazel, Git, Unity, Firebase, Redis, Protocol Buffers, GN
- **Design Programs:** Inventor, Fusion 360, Cura, Fritzing