

# ANDREW MAO

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## EDUCATION

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### Bachelor of Science, Computer Science

University of British Columbia, Vancouver, BC

Expected Grad: May 2027

## PROJECTS

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### Flint - JS, TS, Firebase API

- Developed **open-source plugin** for Obsidian notes app with Firebase App & Storage APIs for cloud storage and cross device remote access solution for Obsidian notes
- Leveraged HTTP protocols to design uploading/downloading processes that saves local notes data in Firebase Storage buckets and copied remote data to local instances
- Integrated personal UI, and hotkey support into Obsidian with Typescript APIs to streamline user experience

### Soccer Bots - HTML, CSS, JS, C++

- Programmed web app and C++ server for personally designed WIFI soccer bots with an ESP32 microcontroller, L298N motor driver and custom PCBs for remote control
- Constructed frontend mobile UI for joystick robot control and optimized latency with Web Socket API to link frontend to ESP32 access point server
- Showcased project to tech department and approved for **adoption into future curriculum** course-work

### Collidy Road - Unity Game Engine, C#

- Launched 2D web-based game in team of four for 2023 Game Maker's Toolkit game development competition
- Built core gameplay mechanics such as world controllers/physics, item pickup interfaces and enemy behaviour types with Unity C# scripting
- Ranked **top 30%** amongst **23 000 participants** in the largest game jam in Itch.io history (2023)

## EXPERIENCE

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### Software Technical Member

Thunderbots, UBC

Sept 2023 –Present

- Collaborates with various sub-team members to design autonomous soccer robot simulation tools, gameplay AI, and strategy execution for global RoboCup competitions
- Implemented C++ based error code processing with Google Protobufs between Jetson Nano bots and Python-based simulation interface for real-time hardware status alerts
- Improved game replay performance by **10%** and write stability through reducing OS overheads in updating file writing processes

### Engineering Club President

Hugh McRoberts Secondary, Canada

Jun 2020 – Jun 2023

- Procured and taught workshops to high school students in topics ranging from VEX robotics, circuit design, or programming to CAD design
- Co-founded district-wide initiative in collaboration with University of Victoria, Kwantlen Polytechnic University, and Simon Fraser University to promote STEM education accessibility
- Lead weekly club schedules and meetings grow club from a **40 to a 100-member organization** across three years

## TECHNICAL SKILLS

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- **Languages:** Intermediate Python, C++, C#. Proficient in JavaScript/Typescript, Racket
- **Developer Tools:** Visual Studio Code, JSON, Platform.io, Arduino IDE/IOT Cloud/Create, GitHub, Unity Game Engine, Firebase
- **Design Programs:** Inventor, Fusion 360, TinkerCAD, Ultimaker Cura, Fritzing