ANDREW MAO

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EDUCATION

Bachelor of Science, Computer Science Expected Grad: May 2027
University of British Columbia, Vancouver, BC (Current GPA: 4.33)

TECHNICAL PROJECTS

Flint - *TypeScript, Firebase*

- Developed Obsidian Notes plugin using Firebase API to provide self-hosted cloud backup and cross-platform notes access services.
- Leveraged HTTP protocols to design uploading/downloading processes that save 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, JavaScript, WebSockets, C++*

- Designed a full-stack web app for remote-controlled ESP32 microcontroller robots to joust and play soccer.
- Optimized preexisting latency issues of the standard Arduino IOT framework using WebSocket protocols for concurrent bidirectional communication resulting in improved robot dynamics.
- Claimed 2nd place in a course tournament and adopted by the department as a model for future coursework.

Collidy Road - *Unity Game Engine, C#*

- Launched a Crossy Road-themed beat 'em up for the 2023 Game Maker's Toolkit game development competition.
- Built core gameplay mechanics such as world controllers/physics, item interactions and enemy behaviours.
- Ranked top 30% amongst 23 000 participants in the largest game jam in Itch.io history (2023)

EXPERIENCE

Software Technical Member
UBC ThunderBots, Vancouver, BC *Sept 2023 – Present*

- Collaborates in a multidisciplinary team to design autonomous soccer robots for worldwide RoboCup competitions (~3000 participants).
- Developed network diagnostics tool for measuring round-trip time using C++ and Google Protobufs to investigate high latency issues during gameplay resulting in the resolution of critical bugs in the codebase.
- Redesigned defensive gameplay using state machines and systematic testing with PyTests to allow for more dynamic defence and code readability.
- Ranked 2nd in RoboCup 2024 SSL Division B as Grand Finalists.

Engineering Club President
Hugh McRoberts Secondary, Richmond, BC *Jun 2020 – Jun 2023*

- Directed club operations and leadership across three years resulting in club growth from 40 to 100 members.
- Manufactured custom PCB kits to teach C++, robotics, and embedded systems to high school students.
- Co-founded a district-wide STEM initiative consisting of over 120 members in collaboration with the University of Victoria, Kwantlen Polytechnic University, and Simon Fraser University to promote education accessibility.

TECHNICAL SKILLS

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