Finn Cullen
US and Canadian Dual Citizen

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Education

- **University of Waterloo** — Waterloo, ON, Canada
  Bachelors of Software Engineering — *Sept. 2024 – Present*
- **Glenlyon Norfolk High School (International Baccalaureate Program)** — Victoria, BC, Canada
  100% average in STEM subjects - 95% Overall - Final Grade: 38 IB — *Sept. 2020 – July. 2024*

Skills

- **Languages**: Python, C#, JavaScript, TypeScript, CSS, C++, C, Lua, Bash, Assembly
- **Technologies/Frameworks**: React, Flask, AWS, Git, Docker, Unity, RobotOS, Expo, HTML, Latex, SolidWorks
- **Other Skills**: Circuit Design, 3D Modeling, Engineering Schematic Creation, Soldering, Bread-Boarding

Projects

- **Debug Debacle**: Multiplayer online competitive coding website, where users compete to correct bugs in code fastest. Built for MCHacks 2025, winning 3rd place. Uses React for front-end, Flask for back-end. My work focused on automatically generating unique problem sets and test cases for each game instance, as well as validating them, through generative AI workflows created using Gumloops API and Web-hooks. Link
- **FATChess**: Chess engine and AI created without external chess libraries. Written in C# with Unity for UI. AI uses Min-Max search with alpha-beta pruning. Learned about game-dev, AI implementation, and front end design
- **PathMaxer**: Smartphone application for interfacing with campus tour guide robot PathMaxer. Takes uploaded schedule along with current location determines tour path, uploading to robot via Bluetooth. Pathfinding uses Dijkstra's algorithm. Coded in React Native and Expo, as well as C++ for path-finding backend.
- **Personal Website**: Portfolio website built in React with Tailwind CSS and GitHub Pages. Features interactive background animation and lazy image loading for smoother user experience. Link
- **3D Graphics Engine**: Python based 3D graphics environment. Features OBJ file support and real-time quaternion-based camera movement. Graphics algorithms uses projection matrices with hidden face occlusion and dithered shading

Relevant Experience

- **University of Waterloo Orbital** — Waterloo, ON, Canada
  Firmware Team Member — *Sept 2024 - Present*
  - Ground station backend development for cube satellite design team, using Python and Fast-API
  - Implemented Doppler effect correction algorithms for communications, calculating relative velocities from TLE data and correcting frequencies in Software Defined Radio system
- **MiNa Labs - Engineering and Computer Science - University of Victoria** — Victoria, BC, Canada
  Research Assistant — *July 2023 - Sept 2023*
  - Microfluidics and nanotechnology engineering lab led by Dr. Mina Hoorfar, Dean of Engineering
  - Designed and deployed software and hardware systems to improve lab efficiency and safety
  - Gained experience in SolidWorks and Fritzing for CAD and producing physical components and circuits
- **Horner Foundation** — Victoria, BC, Canada
  Junior Grant Maker — *2020 - July 2024*
  - Leader of the Youth Grant Making Committee at the Horner Foundation, not-for-profit.
  - Made grant allocation decisions, reviewed grant applications to ensure proper allocation of funding, organized and led committee meetings, and formally presented results to the board

Other Achievements

- **Hackathons**: 2nd place at UTRA Hacks 2025 (150+ teams), 3rd place at MCHacks 2025 (200+ teams)
- **CanHack**: Team leader for CanHack CTF coding competition team. Led team in solves and mentored new students
- **Waterloo Math Competitions**: Certificates of distinction earned for all competitions since 2018