Justin Bax

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Education

University of Waterloo — Waterloo, Ontario
Bachelor of Software Engineering — *September 2024 — May 2029*

Skills

Programming Languages: TypeScript, Python, Java, C, C++, HTML/CSS, 6502 Assembly
Tech/Tools: Next.js, React, SQL, MongoDB, CI/CD, Google Cloud API, AWS, GitHub Actions, Flask, Linux

Professional experience

Julie Plante Computer Science Laboratory — Waterloo, Ontario
AI research intern — *September 2024 — May 2025*

- Expected to complete a 32-week, 300 hours AI research internship during the 2024-2025 academic year
- Selected out of 2000 students to receive a governmental grant for college-level research

Tail'ed — Montreal, Quebec
Full-stack developer intern — *June 2024 — Present*

- Built and deployed a candidate ranking AI using vector databases, leading to costs 30% lower than the previous iteration
- Took the initiative to add automatic unit tests, improving the test coverage from 0% to 84% on an internal API
- Developed and deployed a web scraping API to AWS to integrate Devpost data in the application
- Initiated the automation of the CI/CD workflow (auto-build, check & deploy) with GitHub Actions and AWS CLI tools
- Optimized the leaderboard system to reduce the amount of database fetches required by ∼50%

Projects

Spinich — *AI-powered optimized job search by cold emails* — January 2024

- Development of the backend and the REST API of a Web app automating the sending of personalized cold emails
- Constant monitoring of the user's email inbox and AI analysis of the replies received for maximum efficiency
- Podium place and 3 prizes at BrebeufHx. Approached by a team of startup founders to discuss the innovative idea

SingularIO — *Winning submission for McGill Physics Hackathon 2023* — November 2023

- Development of an interactive, physically accurate n-body simulation with a visualization of space-time distortion
- Chosen out of 140 participants to win First Place prize and People's Choice award. Built with Pygame and NumPy

NESRev — *Cycle-accurate NES emulator & Rendering engine* — August 2021 — March 2022

- Solo development of a Nintendo emulator achieving industry-level cycle accuracy. Features step-by-step execution, debugging tools, ROM file creation from assembly source code and correct graphics and audio pipeline.
- Built in plain C using a custom pixel rendering engine in OpenGL

Leadership experience

FLOSS (Open-Source) Club — Montreal, Quebec
Lead Organizer, Co-researcher — *September 2023 — Present*

- Co-researcher in a statistical study on the usability of Debian, resulting in a talk at a worldwide open-source conference
- Created data analysis software to automate 63 statistical tests, leading to 9 informed suggestions to the Debian team
- Organized a hardware inventory marathon, leveraging skills in command-line scripting, troubleshooting and Linux
- Hosted a technical workshop for 20+ participants on networking-related use cases for Raspberry Pi
- Organized a day-long educational unconference-style event with a libre/open-source theme

Additional information

Activities: Math tutoring, jazz ensemble leader, classical trombone competitions, high ranking in annual math contests
Interests: Jiu-jitsu, chess, quantum physics, learning Mandarin, non-fictional prose, game theory