

Justin Bax

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Education

University of Waterloo

Bachelor of Software Engineering

Waterloo, Ontario

September 2024 — May 2029

Skills

Programming Languages: Python, Java, TypeScript, C, C++, , 6502 Assembly

Tech/Tools: MongoDB, SQL, NumPy, Matplotlib, Data scraping, Next.js, AWS, Linux, CI/CD

Professional experience

Julie Plante Computer Science Laboratory

AI research intern

Waterloo, Ontario

September 2024 — May 2025

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

Debian

Co-researcher, Outreach organizer

Montreal, Quebec

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

Tail'ed

Software developer intern

Montreal, Quebec

June 2024 — September 2024

- Built and deployed a candidate ranking AI using vector databases, leading to costs 30% lower than the previous iteration
- Initiated the automation of the CI/CD workflow (auto-build, check & deploy) with GitHub Actions and AWS CLI tools
- Took the initiative to add automatic unit tests, improving the test coverage from 0% to 84% on an internal API
- Singlehandedly developed and deployed a web scraping API to AWS to integrate Devpost data in the application
- 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 — justinbax/nesrev

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

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