Justin Bax

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Education

University of Waterloo — September 2024 — May 2029
Bachelor of Software Engineering (expected) — *Waterloo, Ontario*
- **Academics**: 4.0 GPA, 98% academic average

Skills

Programming Languages: C, C++, Python, TypeScript, Java, HTML/CSS, 6502 Assembly
Tech/Tools: Next.js, MongoDB, SQL, AWS, Linux, Docker, FreeRTOS, GitHub Actions, CI/CD

Professional Experience

AI Research Intern — September 2024 — May 2025
Julie Plante Computer Science Laboratory — *Waterloo, Ontario*
- Expected to complete a 32-week AI/ML research internship during the 2024-2025 academic year
- Selected out of 2000 students to receive a 5000$ governmental grant for college-level research

Software Engineer Intern — June 2024 — September 2024
Tail'ed — *Montreal, Quebec*
- Built and deployed a candidate ranking AI using vector databases, leading to costs 30% lower than 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
- Optimized the leaderboard system to reduce the amount of database fetches by 60%
- Developed and deployed a web scraping API to AWS to integrate Devpost data in the application

Projects

NESRev — *Cycle-accurate NES emulator & Rendering engine* — justinbax/nesrev
- 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 C using a custom pixel rendering engine in OpenGL

Spinich — *AI-powered optimized job search by cold emails* — justinbax/brebeufhx
- 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

NoInsta — *Automate rerouting Instagram messages to SMS* — justinbax/noinsta
- Used AWS Lambda and S3 to automate the retrival of a user's unread Instagram messages, rerouting them to SMS
- Achieved 79% speedup by utilizing S3 to store session information, keeping total costs under 0.03$/month

SingularIO — *Winning submission for McGill Physics Hackathon 2023* — Devpost page
- Developed a n-body and spacetime distortion simulation in an interactive, physically accurate environment
- Chosen out of 140 participants to win First Place prize and People's Choice award. Built with Pygame and NumPy

Leadership Experience

Co-Researcher, Lead Organizer — September 2023 — Present
FLOSS (Open-Source) Club — *Montreal, Quebec*
- Created data analysis software to automate 63 statistical tests, leading to 9 informed suggestions to the Debian team
- Co-researcher in a statistical study on the usability of Debian, resulting in a talk at a worldwide open-source conference
- Hosted a technical workshop for 20+ participants on networking-related use cases for the Raspberry Pi
- Organized a hardware inventory marathon, leveraging skills in command-line scripting, troubleshooting and Linux
- Orchestrated a day-long educational unconference-style event with a libre/open-source theme

Additional Information

Activities: Math tutoring, jazz ensemble leader, annual math contests, jiu-jitsu, chess, game theory