

Justin Bax

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Skills

Programming Languages: C, C++, Python, TypeScript, Java, HTML/CSS, 6502 Assembly

Tech/Tools: React, 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

- Actively completing a 32-week research project on modern priority queues in AI algorithms using **C** and **Python**
- Selected out of 2000 students to receive a 5000\$ government grant for college-level research

Software Engineer Intern

June 2024 — September 2024

Tail'ed

Montreal, Quebec

- Developed a job/candidate ranking AI, leading to **30%** lower infrastructure costs than the previous iteration, using Pinecone **vector databases**, **Python** and Cohere
- Initiated the automation of the **CI/CD** workflow (auto-build, check & deploy) with **AWS** tools and GitHub Actions
- Took the initiative to add automatic Python unit tests, improving test coverage from 0% to 84% on an internal API
- Optimized the résumé leaderboard cache system to reduce database fetches by 60% using **Next.js** and **TypeScript**
- Developed and deployed a web scraping API to AWS to integrate Devpost data in the application using **Python**

Projects

NESRev — C, Assembly, OpenGL

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 using a custom pixel rendering engine in **OpenGL** and **C**

Spinich — TypeScript, Next.js, MongoDB, Google Cloud API

justinbax/brebeufhx ↗

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

NoInsta — Python, AWS Lambda, S3

justinbax/noinsta ↗

- Automated the rerouting of a user's unread Instagram messages to SMS using **AWS Lambda** and **S3**
- Decreased runtime by **80%** and costs by half by utilizing S3 to store session information

SingularIO — Python, NumPy, PyGame

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 at McGill Physics Hackathon

Leadership Experience

Co-Researcher, Lead Organizer

September 2023 — Present

FLOSS (Open-Source) Club

Montreal, Quebec

- Created software to automate 63 statistical tests, leading to 9 suggestions to the Debian team, using **Python/NumPy**
- Co-researcher in a statistical study on Debian usability, 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 testing volunteering event, leveraging skills in command-line scripting, troubleshooting and Linux

Education

University of Waterloo

September 2024 — May 2029

Bachelor of Software Engineering (expected)

Waterloo, Ontario

- **Academics:** 4.0 GPA, 98% academic average

Additional Information

Activities: 4x hackathon winner, math tutoring, jazz ensemble leader, annual math contests, jiu-jitsu, chess, game theory