

Karl-Alexandre Michaud

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EDUCATION

University of Toronto

Toronto, Ontario, CA

Honours Bachelor of Science, Double Major in Computer Science, Mathematics

Sep 2023 – Jun 2027

- **Relevant Courses:** Software Design, Systems Programming, Data Structures, Algorithms

EXPERIENCE

Software Developer

May 2025 – Present

University of Toronto, Department of Computer Science

Toronto, Ontario, CA

- Designing and maintaining core features of **PythonTA**, a static code analysis tool used by **35,000+ students** since 2016, leveraging **Python** and **Astroid**
- Optimized performance by **reducing** import time by **9.98%**, improving efficiency for **3900+ annual users**
- Reduced **undetected runtime failures** by extending error-detection with a static checker for infinite loops
- Developed comprehensive **unit tests** using **Pytest** to ensure reliability and correctness for users
- Participated in weekly **team sprints**, **presenting** updates and **collaborating** on design and features

PROJECTS

CExpress | C, Make, Homebrew

Sep 2025

- Created CExpress, a lightweight open-source **HTTP server / microservice framework** for **C** that enables rapid prototyping and web API development with minimal overhead
- Implemented key features such as **dynamic routing**, **HTTP/1.1 request handling**, **static file serving**, and **JSON API support** with an optimized memory footprint
- Delivered **cross-platform compatibility** (Linux, macOS) and streamlined installation via a **Homebrew** formula
- Wrote clear, comprehensive **documentation** and examples to accelerate adoption and ease of use

AI Video Generator | C, Python, Deepseek API, Whisper

May 2025

- Built an AI-powered **video generator** in **C**, automating short-form video creation through script generation, text-to-speech, subtitle syncing, and video/audio merging
- Architected a **modular pipeline** of **5 standalone CLI programs**, enabling seamless data flow via **Unix** pipes
- Developed a custom **HTTP client** to query the **DeepSeek API** for dynamic script generation

Recyclobot (DeltaHacks 11) | Swift, SwiftUI, Python, Firebase, GPT-4 API

Jan 2025

- Built an AI-powered **waste management system** for real-time waste classification, promoting recycling habits
- Delivered a fully functional prototype within **36 hours**, combining hardware, AI, and software into a unified system
- Deployed an **iOS application** that processes waste data and delivers personalized sustainability tips to users

Talk To a Club | Java, Maven, JUnit, Firebase

Nov 2024 – Dec 2024

- Led the development of an interactive **social app**, simplifying club discovery and engagement for UofT students
- Implemented critical use cases and optimized **back-end microservices and data pipelines**, managing **cloud-hosted infrastructure** for reliable access to users
- Engineered and tested robust **back-end logic in Java** following **object-oriented design (OOD)** and **Software Development Life Cycle (SDLC)** principles, ensuring **maintainable, reusable code**

LEADERSHIP AND INVOLVEMENT

Event Coordinator

Aug 2024 – May 2025

University of Toronto, STEP UofT Student Club

Toronto, Ontario, CA

- Led **event planning** during the club's founding year, organizing **5 events** with **15+ attendees**
- Onboarded **25+ new members**, driving club growth through strategic **communication and collaboration**
- Secured **5 UTSL Club Award nominations** in our inaugural year by improving event logistics

TECHNICAL SKILLS

Languages: Python, Java, C, JavaScript, Swift, HTML, CSS, SQL, Shell, MIPS Assembly, Makefile

Frameworks: Node.js, Next.js, SwiftUI, Maven

Libraries: React.js, Pytest, JUnit, Astroid

Developer Tools: Git, GitHub, MySQL, Firebase, Linux, OpenAI / DeepSeek API, Whisper