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 – Present*
- **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 PythonTA's performance by reducing import time by **9.98%**, improving efficiency for users
- Implemented a new **static analysis checker** to detect infinite loops, extending PythonTA's error-detection
- Shipped a configurable error-handling feature in PythonTA, greatly enhancing user flexibility
- Developed comprehensive unit tests using **Pytest** to ensure reliability and correctness for **3900+ annual users**

PROJECTS

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 media merging
- Architected a **modular pipeline** of 5 standalone CLI tools, 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 **24** hours, combining hardware, AI, and software into a unified system
- Deployed a functional iOS application that processes waste data and delivers personalized sustainability tips and insights 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 engineered scalable entities, showcasing back-end expertise
- Optimized **data pipelines** for Firebase cloud storage, ensuring efficient and reliable data retrieval
- Improved software quality by writing **45%** of unit tests and conducting code reviews

NFC Security System | *Python, JavaScript, HTML, CSS MySQL, Bash*   Sep 2022 – Mar 2023
- Led a team of **4** to develop a key card security system, improving safety awareness for **200+ students**
- Managed project timelines, coordinated team meetings, and optimized workflows, ensuring successful completion
- Invited to present the project at **CESI Engineering School** in Paris, delivering a technical presentation to **50+ students and faculty**
- Designed and managed a remote MySQL database, ensuring scalability and efficiency

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**
- Accelerated club growth by onboarding **25+ new members** through strategic communication and collaboration
- Secured **5 UTSL Club Award nominations** in our inaugural year by improving event logistics and delivering engaging events

TECHNICAL SKILLS

Languages: Python, Java, C, TypeScript, Swift, HTML, CSS, SQL, Shell, MIPS Assembly
Frameworks: Node.js, Next.js, SwiftUI, Maven
Libraries: React.js, Pytest, JUnit, Astroid
Developer Tools: Git / GitHub, MySQL, Firebase, Linux, OpenAI / DeepSeek API, Whisper