Maximilian Miller

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Education

University of Waterloo **May 2028**
Honours Bachelor of Mathematics (Co-op) *Waterloo, ON*

Technical Skills

Languages: Python, JavaScript, C++, Swift, Racket
Developer Tools: VS Code, Git, Figma, Jupyter Notebook, Postman
Technologies/Frameworks: GitHub, MongoDB, React, Electron, Flask, Node.js, PostgreSQL

Experience

ArteMed Stiftung **Sep 2023 – Present**
Software Engineer *Munich, DE*

- Developed a Windows app using **Electron**, and **PostgreSQL** to streamline patient data management, expected to reduce manual data entry time by **60%** and enable more effective monitoring and prevention of illness outbreaks.
- Enabling Burmese doctors to track **200+** patients daily across **16** villages on the Irrawaddy river using offline software.
- Implemented offline data storage and Excel export functionality using **SQL**, will reduce manual errors by **25%**.

Google **Jun 2022 – Jul 2022**
Software Engineer Intern (High School) *Munich, DE*

- Spearheaded the full-stack development, creating personalized recommendations for users, leveraging **Node.js**, **Express.js**, and providing mentorship in coding and technical design.
- Improved response time by optimizing API calls with caching mechanisms and parallel processing with **Axios**.
- Reduced deployment errors and shortened time to deployment by **15%** by rigorously following the software development lifecycle, from design documentation and mockups to production deployment.

Projects

Fluent Flow | *Python, Flask, Jinja2, GPT3.5, TTS, Whisper, FFmpeg*

- Developed a web app that uses fine-tuned **OpenAI API models** to help users practice foreign language skills through real-time conversations with AI, supporting **15+** languages and used by **50+** users.
- Implemented real-time audio capture and processing using **FFmpeg**, reducing response latency by **20%** and enhancing conversational flow for seamless user interactions; integrated **Google Authentication**, providing secure sessions.

Uniply | *Swift, XCode, Figma*

- Developed an iOS app using Xcode and Swift to guide students through the university application process, providing resources to foster academic growth; achieved a **90%** user satisfaction rate among **30+** surveyed users.
- Designed app pages in Figma, creating a user-centered interface that streamlined university application steps.
- Built a To-Do feature to keep users on track with application tasks, boosting organization and accountability.

Extracurricular

University of Waterloo EcoCAR Design Team | *C++, Matlab, Simulink, Roadrunner* **Oct 2024 – Present**

- Developed part of the autonomous driving stack for the Connected & Automated Vehicles Team, simulating complex driving scenarios in **C++** with **Roadrunner**.
- Integrated key sensors such as **LIDAR**, and IMUs into the vehicle's system, enhancing sensor fusion and real-time data processing, contributing to an increase in sensor accuracy for autonomous navigation.

Differential Privacy Research | *Python, NumPy, Matplotlib, Tensorflow* **Aug 2022 – Nov 2023**

- Conducted **150+** hours of research on Differential Privacy, exploring how noise mechanisms enhance data privacy, optimizing the Laplace mechanism to achieve **89%** accuracy at an epsilon value of 0.2.
- Analyzed Laplace and Gaussian distributions to determine optimal privacy-utility trade-offs for secure data handling.
- Developed expertise in probability distributions and privacy-preserving methods to protect sensitive datasets effectively.

Awards

$1000 – 3rd place, In Code We Trust Environmental Hackathon

$2000 – President's Scholarship of Distinction