

# MAXIMILIAN MILLER

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## Education

### University of Waterloo

*Honours Bachelor of Mathematics (Co-op)*

May 2028

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, Bootstrap, MySQL

## Experience

### ArteMed Stiftung

Sep 2023 – Present

*Software Engineer*

*Munich, DE*

- Developed a Windows app using **Electron**, and **ReactJS** to streamline patient data management, will reduce manual data entry time by **60%** and enable more effective monitoring and prevention of illness outbreaks in rural communities.
- 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**, reducing 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 globally, 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 which 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