

# MAXIMILIAN MILLER

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Personal Website

maximiliantmiller

maxtmiller

## Education

University of Waterloo | 80% / 3.5 GPA

Sep 2024 – Present

Bachelor of Mathematics (Co-op) | CS Club, Data Science Club

Waterloo, ON

## Technical Skills

Languages: Python, JavaScript, C++, Swift

Frameworks: Node.js, Flask, FastAPI, Express, Electron, React.js, MongoDB, PostgreSQL

Tools: VS Code, Git, Figma, Jupyter Notebook, Postman, Azure

## Experience

### JENLY.AI

May 2025 – Aug 2025

Munich, DE

Software Engineer Intern (Full-Time)

- Developed a full-featured Microsoft Word Add-in using **TypeScript** and **React**, integrating a RAG pipeline to generate regulatory documentation drafts within enterprise regulatory workflows, increasing first-draft generation by **60%**.
- Integrated **RAG AI** methods into the core application, enabling source traceability, content quality reports, and a AI chatbot for querying regulatory documents, generating tables, and structured outputs, reducing review time by **35%**.
- Automated cloud infrastructure with **Azure Bicep**, ensuring automatic, scalable deployment on Azure App Service.

### ArteMed Stiftung

Sep 2023 – Apr 2025

Remote

Software Engineer Volunteer (Part-Time)

- Developed a cross-platform 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

Munich, DE

Software Work Experience (High School)

- Developed a personalized game recommendation system using **Steam Web APIs**, **Node.js**, and **Express**.
- Improved response time by optimizing API calls with caching mechanisms and parallel processing with **Axios**.
- Worked collaboratively in a team of four following the **SDLC** and presented work to the Google host team.

## Projects

### AlphaPoisson



| Python, Pytorch, FastAPI

- Designed and trained a PyTorch residual CNN chess policy-value network using board-state tensors and legal-move encoding, incorporating residual blocks, and achieving **79%** top-3 move accuracy using the Lichess Elite database.
- Implemented a full training pipeline with gradient clipping, cosine learning-rate scheduling, MLflow logging, and alpha-beta-compatible policy outputs, optimizing inference quality under time constraints with a 8-layer model.

### Spot Sense @ DeltaHacks



| Python, Flask, Tensorflow, Keras, Pillow

- Led creation of a web app to detect skin cancer images using a self-trained **TensorFlow** model with **86%** accuracy.
- Integrated **Google Maps API**, and a **Cohere**-powered chatbot, providing rapid specialized skin health guidance.

### Fluent Flow



| Python, Flask, Jinja2, GPT3.5, TTS, Whisper, FFmpeg

- Built a web app for practicing foreign languages through real-time conversations with AI, supporting **15+** languages.
- Implemented real-time audio capture and processing using **FFmpeg**, reducing response latency by **20%**.

## Extracurricular

### University of Waterloo EcoCAR Design Team



| C++, Matlab, Simulink, Roadrunner

Oct 2024 – Feb 2025

- Developed part of the autonomous driving stack for the Connected & Automated Vehicles Team, simulating complex driving scenarios across diverse traffic conditions in **C++** with **Roadrunner** as part of a team of Waterloo students.
- Integrated key sensors such as **LiDAR** and IMUs into the vehicle's system, improving sensor fusion and real-time data processing pipelines, contributing to increased perception accuracy and more reliable 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 for a high school research paper.
- 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.

## Interests



| Chess, Numismatics, Guitar, Ski Racing, Cross Country Skiing, Hiking