

# Zain Mahmoud

AI & Software Developer | 3A Mechatronics Student at the University of Waterloo

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🌐 [GitHub](#)

🌐 [LinkedIn](#)

🌐 [Website](#)

## Skills

- **Languages & Platforms:** Python, JavaScript/TypeScript, C++, cross-platform development (Linux, Windows, macOS)
- **Frameworks & Libraries:** ReactJS, React Native, Next.js, Expo, FastAPI, Flask, Uvicorn, Node.js, TailwindCSS
- **AI & Machine Learning:** OpenAI, Hugging Face, Langchain, TensorFlow, PyTorch, CUDA; built RAG systems with Qdrant and FAISS; fine-tuned and integrated domain-specific LLMs
- **Cloud & DevOps:** Supabase, PostgreSQL, Docker, GCP, AWS, CI/CD with GitHub Actions, Nginx, HTTPS load balancing
- **APIs & Integrations:** Stripe (wallets, payments), ADB (Android automation), RQ (task queues), CUPS (print services), ngrok (local server tunneling)
- **Systems & Architecture:** Token-based auth, WebSockets, real-time AI interfaces; led multiple end-to-end full-stack builds with strong focus on usability, performance, and scalability

## Relevant Experience

### Lead AI & Full Stack Developer – Jilani Place App

Jan 2025 – April 2025

Jilani Place Inc, Etobicoke ON ([link](#))

- Led the end-to-end development of a full-stack coworking app from the ground up using React Native (Expo), FastAPI, and Supabase for room bookings, account management, and amenity access.
- Developed an in-app AI assistant using Qdrant (RAG), OpenAI, and Hugging Face to handle bookings and support.
- Created separate dashboards for users, companies, and admins with calendar bookings and screen reservations.
- Integrated Stripe API for Wallet top-ups and payments, reducing payment friction and enabling self-service.
- Automated Android-based room displays and print jobs with RQ, ADB, and CUPS for real-time facility control.
- Used ngrok to securely share the local server and API from our work computers for remote access.

### Lead AI & Software Developer – AI Healthcare Planner

Feb 2024 – December 2024

Workhorse Health, Toronto ON ([link](#))

- Designed, developed, and deployed an AI healthcare planning app with a React (Next.js) + Node.js frontend and FastAPI, Uvicorn, Firebase backend, enabling interactive planning and real-time AI assistance.
- Integrated OpenAI, Langchain, Hugging Face, and CUDA to deliver fast, GPU-accelerated summarization and personalized healthcare insights, cutting staff workload by up to 60x.
- Built a RAG system with FAISS (single-user) and Qdrant (multi-user) to ensure accurate medical data retrieval and scalable access.
- Created a web scraper with Selenium, BeautifulSoup, and OpenAI to ingest and embed trusted medical content into RAG,
- Deployed containerized application to GCP using GCR and an HTTPS load balancer in a production server environment.

## Education

### University of Waterloo, Waterloo, ON

2022 - 2027

Bachelor Of Applied Science (BASC) In Mechatronics Engineering Honors, Co-operative Program

Relevant Coursework: Digital Computation, Algorithms and Data Structures, Intro to Microprocessors and Digital Logic (GPA: 3.0/4.0)

### George Brown College, Toronto, ON

2019 - 2022

Advanced Diploma in Electromechanical Engineering Technology (GPA: 3.8/4.0; Dean's List)

## Personal Projects

### AI-Powered Construction Estimator

January 2025 - Present

- Built a full-stack AI assistant using React, FastAPI, and Supabase that generates project plans, sources materials, and auto-updates pricing with real-time scrapers from Home Depot, RONA, and Home Hardware.
- Fine-tuned a generative AI model on Canadian building codes to deliver expert guidance, automating construction planning from user intent to material checkout.

### Portfolio Website ([link](#))

May 2024 – July 2024

- Built a responsive portfolio website using React, Tailwind CSS, Node.js, and Supabase to showcase projects, skills, and experience in a clean, accessible layout.
- Integrated a Llama-based AI chatbot to guide visitors through the site in real time, demonstrating interactive AI and enhancing user experience.