Ahmed Elzaria

905-519-7303 | elzariaahmed@gmail.com | ahmedelzaria.com

Education

McMaster University Hamilton, ON

Bachelor of Engineering (B.Eng.) in Software Engineering (CO-OP) *Expected Graduation: May 2026*

Coursework: Software Design I & II, Object-Oriented Programming, Data Structures & Algorithms, Databases, Software Engineering Practice, Requirements Engineering & Security Considerations, Computer Architecture, Digital Systems & Interfacing, Engineering Design I & II, Linear Optimization, Discrete Mathematics I & II, Statistics

Awards: Dalvi Family Research (**$6000**), George and Nora Elwin (**$5000**), McMaster Award of Excellence (**$3000**)

Experience

University of Quebec in Montreal (UQAM) Sept 2024 – Present

On-Device NLP Research Assistant - Remote *Montreal, QC*

- Continuing part-time work from my previous internship remotely while pursuing my Fall 2024 studies.

McMaster's Centre for Software Certification (McSCert) May 2024 – Aug 2024

AI/NLP Software Engineer Intern *Hamilton, ON*

- **Led** the development of **MindMend**, an AI-powered mental health journaling app, enabling **cross-platform functionality** on iOS and Android using Vue.js, Quasar, and Capacitor, **improving user accessibility**.
- **Integrated and fine-tuned** sentiment analysis models using Hugging Face Transformers and TensorFlow, achieving a **15% improvement in classification accuracy,** enhancing user feedback reliability.
- **Optimized** the MobileBERT model size to 28MB while maintaining a **90% F1 score** and ensuring sub-300ms latency by implementing **dynamic quantization,** facilitating **on-device AI deployment**.
- **Implemented** an on-device AI solution, reducing latency by **20%** and safeguarding user privacy by **eliminating reliance on cloud-based processing,** addressing resource constraints of mobile platforms.

McMaster's Centre for Software Certification (McSCert) May 2023 – Aug 2023

Compiler Optimization Research Intern *Hamilton, ON*

- Developed a **pass microscope tool** to analyze LLVM optimization pass interactions, reducing Angha Project benchmark size by **99.6%** (from 1M to 3,600 C programs), enabling **efficient and scalable analysis**.
- **Generated** transition diagrams using NetworkX and Matplotlib to **identify optimization patterns** and provide actionable insights into improving the **code optimization stage** of the compilation process.
- **Presented** research findings at the McMaster Undergraduate Research Fair, showcasing **practical solutions** for visualizing and understanding **complex compilation processes** to academic and industry professionals.

Projects

AI-Driven Lab Extraction API | *Python, FastAPI, Docker, OpenAI, LlamaParse* Nov 2024

- Built a **RESTful API** to automate data extraction from scanned lab result PDFs for **healthcare providers**, reducing manual entry time by **90-95%** and processing documents in seconds.
- Engineered robust text parsing with the **LlamaParse API** to handle complex, scanned PDFs for **high accuracy**, even with noisy input, ensuring **reliable results** for healthcare applications.
- Designed for scalability and extensibility, enabling **seamless integration of new models (e.g., LayoutLM)** and additional document types to meet evolving needs in healthcare data management.
- Delivers up to **70% cost savings**, cutting costs from **$500,000** to **$150,000** per month for 1M lab results.

Rescue Mission | *Java, Apache Maven, JUnit, JSON, PlantUML, GitHub* Jan 2024 – Mar 2024

- Designed and implemented a **rescue drone control program** to locate stranded individuals and identify optimal rescue points, integrating efficient battery management algorithms to maximize operation time.
- Applied **SOLID principles** and **GoF design patterns** to build a scalable, maintainable system, leveraging object-oriented design and robust unit testing with **JUnit** to ensure functionality and reliability.
- Used Agile methodologies, delivering an MVP within **2 weeks** and iteratively improving based on feedback.

Technical Skills

Languages: Python, Java, JavaScript, C, Swift, SQL, HTML/CSS, Matlab, Verilog
Developer Tools and Frameworks: Git, GitHub, Unix, React, Next.js, Vue.js, Tailwind CSS, Figma, SwiftUI, FastAPI, Apache Maven, Docker, JUnit, Jupyter Notebook, Google Colab, R, Visual Studio Code, IntelliJ, PyCharm
Libraries: Pandas, NumPy, Matplotlib, NetworkX, HuggingFace Transformers, TensorFlow, scikit-learn, OpenAI