Mohammad Mahfooz

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Education

York University, Lassonde School of Engineering — Expected Apr 2025
Spec. Hons. Bachelor of Engineering, *Software Engineering* — *Toronto, ON*

- **Relevant Coursework:** Data Structures & Algorithms, Object-Oriented Programming, Unix/C
- **Overall GPA:** 3.8/4.0

Experience

Software Engineer Intern — May 2023 - Present
Ontario Teachers' Pension Plan — *Toronto, ON*

- Successfully migrated internal chatbot from using **Azure Cognitive Services** to Azure OpenAI **GPT-4**, improving response times by up to **200%** and response quality by up to **300%** (MBPP) for over 1300 employees.
- Developed backend **HTTP/1.1** endpoints with **Flask**, **Redis** (vector DB), and data stores (**Snowflake**, **Azure Blob Storage**).
- Leveraged Azure Kubernetes Service (**AKS**) for scalable container orchestration and implemented a streamlined CI/CD pipeline with **GitHub Actions**, **Jenkins**, and **K8s** for seamless deployment and management of the chatbot application.

Software Engineer Intern — Oct 2022 - Jan 2023
YURide — *Toronto, ON*

- Implemented app front-end using **SwiftUI**, utilizing features such as custom gestures and animations.
- Developed app back-end using **Swift**, implementing custom data models and using **Core Data** for persistent storage.
- Built scalable server-side infrastructure using **JavaScript** and **Node.js**, and utilized **MongoDB** for efficient storage and retrieval of large volumes of data. Created custom **RESTful** APIs for seamless communication with the front-end.

Individual Contributor
Open Source Software

- Contributed patches to various **Linux** kernel drivers, improving stability with different hardware configurations. Reviewed and updated legacy code to incorporate modern coding best practices and to make the code more efficient and maintainable.
- Aided in porting **Solaar** (an open source device manager for Logitech devices) from Linux to macOS and Windows.

Projects

Cobra | *Rust*, *LLVM*, *Cargo*

- Developed **Cobra**, a robust and expressive statically typed programming language with a syntax inspired by **Python**.
- Implemented **LLVM** frontend compiler components including the lexer, parser, IR builder, JIT compiler, and driver in **Rust**.

CoverGPT | *Python*, *LaTeX*, *GPT-3.5*

- Developed an application that uses **GPT-3.5** to generate personalized cover letters for job applications.
- Implemented **TKinter** to design a user-friendly interface, and **LaTeX** to format and compile the cover letter into a PDF.
- Received **8000+** downloads on PyPi, a Python package repository.

YorkURMP | *JavaScript*, *Node.js*, *GraphQL*

- Developed a browser extension using **JavaScript** and **Node.js** to grab professor info (difficulty, rating, etc.) from RateMyProfessors and display it on VSB (Visual Schedule Builder) and the YorkU course portal.
- Implemented custom **GraphQL** schemas to pull professor data from the RateMyProfessors **API**.
- Received **1000+** downloads across GitHub and the Chrome/Firefox Web Store.

Volunteer Experience

Team Lead — Sep 2017 – Jun 2021
VEX/FIRST Robotics #6977 — *Toronto, ON*

- Oversaw controls development of the robot for the **Infinite Recharge** competition, using **C/C++**.
- Lead team to provincial semi-finals by developing a strategy to help compensate for a low budget.

Technical Skills

Languages: Python, Rust, Go, C, C++, Java, C#, JavaScript, TypeScript, Bash, SQL
Tools and Frameworks: Linux, Podman, Azure, Databricks, K8s, Git, Flask, Node.js, PyTorch, Transformers, Snowflake, Redis, MySQL