

Ahmed Zafar

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EDUCATION

McMaster University

Hamilton, On

Major: Software Engineering; GPA: 3.97

Projected Graduation Date: April 2027

- Relevant Courses: Health Solutions Design Projects (Intro to Programming in Python), Object Oriented Programming in Java, Data Structures & Algorithms, Large System Design and Infrastructure

EXPERIENCE

Software Engineering Intern

Hamilton, On

Arche Biotechnologies

April 2024 - Present

- Built and improved infrastructure of a **web-app prototype** and interfaced with the hardware team's sensor components to design a medical management device.
- Replaced inefficient HTTP requests with **Web-Sockets**, reducing data transfer latency by **94%**
- Designed **NOSQL** database architecture using **MongoDB** allowing clients store and securely retrieve **thousands** of patients information.

Teaching Assistant

Hamilton, On

McMaster University

September 2024 - Present

- Teach a section of **30+** first-year students the engineering design process as they built multi-week projects.
- Help students with the basics of **python programming** by teaching the logic and syntax of conditional statements, loops, **file I/O**, and **OOP**.
- Led **6+ design/code reviews** to ensure projects are well integrated and code is optimized and documented.

AI/ML Researcher and Fullstack Developer Intern

Hamilton, On

Biomedic.Ai Labs

May 2024 - August 2024

- Awarded National Sciences and Engineering Research Council's Undergraduate Student Research Award to research **Adaptive Cyber-Physical Systems** for **Human-AI partnership** within a surgical setting
- Delivered several **machine learning models** (**neural networks**, **random forest**, **SVM**) **from scratch** with a **average prediction accuracy of 92%** by processing data using **NumPy**, **Pandas**, and **TensorFlow**
- Contributed **1500+** lines of code to the front-end and back-end of a fullstack project assessing the quality of machine learning being leveraged using the **MERN** stack, in **8 weeks**, ensuring maintainability and scalability.
- Implemented **PDF storage/viewing** functionality by developing **REST API** endpoints, and conducting **back-end analytics** of user interaction covering **100%** of client core functionality pre-release.
- Wrote **4 pages of documentation and justification** of my technical contributions.

PROJECTS

HackMe | Python, JavaScript, React, Paramiko, nmap, Flask, OpenAI API

- **WINNER @ McMaster Engineering Competition** (**500+** participants), allowing us to compete in the Ontario Engineering Competition.
- Developed a **B2B cybersecurity service** to find vulnerabilities in emerging start-ups and small businesses.
- Automated cyber-attacks such as **port scanning servers**, and **brute-force SSH testing** with **100%** coverage and potential to expand to more tests like **SQL Injections**.
- Leveraged OpenAI's API and **trained a custom GPT** to generate a report with **5 expert-supported suggestions** based on the results of the tests.

Dash-Tab | JavaScript, React, CSS, Figma, Firebase, Github Actions

- Utilizes **Firebase Authentication**, and **Firestore** to create a user-friendly new-tab dashboard with focus mode, and a noteboard with **CRUD** operation functionality.
- Developed scalable architecture that handles **29 000+** reads from the database per month.
- Used Github Actions to create a **continuous integration pipeline** automate building and testing, catching **10+** errors and improving debugging efficiency.
- Incorporated **user feedback** to refine **12+ features** and ensure a user-centered software engineering process.

TECHNICAL SKILLS

Languages: Python, HTML, CSS, Javascript, Java, C, C++, Verilog

Skills/Technologies: TensorFlow, Matplotlib, NumPy, Pandas, ReactJS, React Native, Linux, Git, GitHub, ExpressJS, NodeJS, MongoDB, Flask, FastAPI, Firebase, Socket-io, Figma