

# Mahad Hassan

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## EDUCATION

### McMaster University

Honours Software Engineering Co-op, B.Eng (3.9 GPA)

May 2027

Hamilton, ON, CA

- Achievements: Entrance scholarship for exceptional performance | 2<sup>nd</sup> Place at MacEngComp 24' | Finalist at MacEngComp 23'
- Courses: Data Structures & Algorithms | OOP (Java) | Development Basics (C, Git, Bash) | Math in Python | Linear Algebra
- Leadership: Events VP at MacPSA | VP of Operations at Voices at Mac | Attendee Relations Exec DeltaHacks

## TECHNICAL SKILLS

**Languages:** Python, Java, C/C++, JavaScript, TypeScript, SQL, MATLAB, Bash, Verilog, Latex, Markdown, YAML, UML

**Web Dev:** HTML, CSS, React.js, React Native, Tailwind CSS, Node.js, Django

**Technologies & Tools:** Visual Studio Code, PyCharm, Jupyter, GitHub, Firebase, Maven, Vim, NoSQL, GIT, Anaconda, Putty, AWS

**Libraries:** TensorFlow, Matplotlib, NumPy, Pygame, Pandas

**Other Skills:** AutoCAD, MS Office, Quanser, Social Media Marketing, Computer Assembly, Management, Data Analysis

## EXPERIENCE

### Software Developer

McMaster iBioMed Society

January 2025 – Present

Remote

- Developing a **mobile app** with **React Native** and **Firebase** to centralize **mental, physical, and financial support** for patients.
- Implementing **encrypted features**, including a patient **chat function** and a secure medical resume section.
- Designing an **accessible**, user-focused interface to **ensure privacy** and enhance patient interaction.

### Cybersecurity Engineering Intern

Ras Laffan Power Company

July 2023 – August 2023

Ras Laffan Industrial City, Qatar

- Designed and implemented **DCS logics** and **graphics**, improving system efficiency by **15%**
- **Updated Anti-Virus definitions**, increasing threat detection rates by **20%**, and completed **switch configurations** via **Putty**
- Completed engineering configurations for **controllers, I/Os, HMIs, and Historians** using Developer Studio
- Gained practical experience with **OT/ICS protocols** such as OPA UA, Modbus, and Profibus

## PROJECTS

### Cybersecurity System | Python (OpenCV, Flask, Cryptography), SQL, Git

2<sup>nd</sup> Place @ MacEngComp 24'

- Designed a comprehensive system integrating **facial recognition**, a **password manager**, and **file encryption** capabilities
- Leveraged technologies including **Python (Flask, OpenCV, Cryptography)**, and **SQL** to ensure robust functionality
- Engineered and delivered a fully functional prototype within an intensive **7-hour** coding sprint
- Achieved **2<sup>nd</sup> place** among **30+ teams**, recognized for technical innovation and practical execution
- Emphasized accessibility to create a solution applicable across diverse industries and user groups

### Digit Recognizer AI | Python (TensorFlow, Matplotlib)

- Assembled an AI that can accurately **identify hand-drawn digits** ranging from 0 – 9 with **99.3% accuracy**
- Implemented a total of **8 layers** within the **Convolutional Neural Network (CNN)**
- Utilized **Matplotlib** to display bar graphs with the model's predictions and respective confidence levels per class
- Trained the AI on **60,000** images and tested it on **10,000** images from the **MNIST dataset**

### C-View | C, Bash, Git

- Developed a versatile **C-based utility** to enhance images with filters like **grayscale, reflection, rotation, edge detection**, and **blur**
- Optimized for performance with a **Bash** script for automated testing, **reducing testing times** by nearly **70%**
- Designed for low-resource environments, processing images up to **30% faster** than comparable tools

### Tic-Tac-Toe AI | Python (PyGame)

- Compiled an **unbeatable Tic-Tac-Toe AI** by implementing the **Minimax Function** using **Object-Oriented Programming**
- Shaped the user interface using **PyGame**, allowing the user to pick between **PVP, PVE (AI mode)** and to be **X or O**

### Portfolio | JavaScript (React, Node, Tailwind CSS)

- Developed a **full-stack** portfolio website with **React** and **Tailwind CSS** for the frontend showcasing skills and personal info
- Implemented a **Node.js backend** to handle server-side functionality and support dynamic content features