Mahad Hassan

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EDUCATION

McMaster University 🔗   May 2027
Honours Software Engineering Co-op Level III, B.Eng (3.9 GPA)   *Hamilton, ON*
- **Achievements**: $3k scholarship | 2nd Place at MacEngComp 24' | Finalist at MacEngComp 23' | Dean's List
- **Courses**: Data Structures & Algorithms | OOP (Java) | Development (C, Git, Bash) | Math in Python | Databases
- **Leadership**: Events VP, MacPSA | VP Operations, Voices@Mac | Attendee Relations, DeltaHacks

TECHNICAL SKILLS

Languages: Python, Java, C/C++, JavaScript, TypeScript, SQL, MATLAB, Bash, Verilog, LaTeX, Markdown, YAML, UML
Web & App Development: HTML, CSS, React.js, Astro, React Native, Tailwind CSS, Node.js, Django, Spring, Vercel, Netlify
Cloud & DevOps: AWS, Azure, Terraform, GitHub Actions, CI/CD, Apache Kafka, DataDog, KPOW
Tools & Databases: Git/GitHub, VS Code, PyCharm, Jupyter, Vim, Anaconda, Maven, Firebase, NoSQL, Confluence, Jira
AI & Data Science: TensorFlow, Pandas, NumPy, Matplotlib, Pygame, Simulation & Modeling, Data Analysis

EXPERIENCE

Software Engineer Intern 🔗   May 2025 – August 2025
TD Bank   *Toronto, ON*
- Developed **FRAM**, a microservice implementation in Java/Spring on Azure using Kafka for data transfer and async design
- Migrated API client processing to non-blocking calls, improving efficiency and delivering ∼**$1M** in annual cost savings
- Improved **CI/CD** by configuring GitHub Actions for **20%** faster deployments of **7 microservices** to the **PAT** region
- Updated **Terraform** configurations to support infrastructure **failover testing** in secondary environments

Software Developer 🔗   January 2025 – Present
McMaster iBioMed Society   *Remote*
- Developing an **app** with **React Native** and **Firebase** to centralize **mental**, **physical**, & **financial** support for patients
- Implementing end-to-end **encryption**, including a **secure medical resume** section and **protected data storage**
- Designing an **accessible**, user-focused interface to **ensure privacy**, **data security**, and **seamless patient interaction**

Controls Subteam Member 🔗   September 2025 – Present
McMaster Rocketry   *Hamilton, ON*
- Developing control systems in **MATLAB/Simulink** for rockets targeting altitudes up to ∼**3,000 m**
- Using **Git-based** firmware and **KiCad** circuit designs to enable communication, triggering, and safety protocols
- Coordinating subsystem integration in **Onshape** to support high-altitude launches approaching **supersonic speeds**

Website Developer 🔗   July 2025 – Present
McMaster Software Engineering Society   *Remote*
- Building the **SES website** using **Astro**, enhancing navigation and discoverability for **500+ students**
- Developing features such as merch listings while collaborating on PRs, boosting delivery speed by **30%**

Cybersecurity Engineering Intern 🔗   July 2023 – August 2023
Ras Laffan Power Company   *Ras Laffan Industrial City, Qatar*
- Designed and developed **DCS logics/graphics**, **controllers**, **I/Os**, **HMIs**, and **Historians** improving efficiency by **15%**
- **Updated Anti-Virus definitions**, increasing threat detection rates by **20%**, and **configured switches** via **Putty**

PROJECTS

SecureVault 🔗 | *Python (OpenCV, Flask, Cryptography), SQL, Git*   **2nd Place** @ MacEngComp 24'
- Designed a system combining **facial recognition**, **password manager**, and **file encryption** to enhance data protection
- Leveraged Python and SQL to develop a solution within a **7-hour coding sprint**, securing **2nd place** among 30+ teams

Digit Recognizer AI 🔗 | *Typescript (React, Tailwind CSS), Python (TensorFlow, Matplotlib)*
- Built an **8-layer CNN** with **99.3%** accuracy on MNIST, trained on **60,000** grayscale digit images, and tested on **10,000**
- Utilized **Matplotlib** to visualize model predictions with confidence levels for each digit class, including probabilities

Tic-Tac-Toe AI 🔗 | *Python (PyGame)*
- Compiled an **unbeatable Tic-Tac-Toe AI** using the **Minimax** function via **Object-Oriented Programming**
- Used **PyGame** to enable gameplay against either a human or the AI through a selectable **GUI**

C-View 🔗 | *C, Bash, Git*
- Developed a **C-based utility** to apply filters like **grayscale**, **reflection**, **rotation**, **edge detection**, and **blur**
- Designed to process images up to **30% faster** than comparable tools with reduced memory use