Ahmed Khaleel

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Education

McMaster University **Sep. 2022 - Apr. 2026**

B.Eng in Computer Engineering with CO-OP *Hamilton, ON*

- GPA: 3.80
- Relevant Coursework: Data Structures and Algorithms, Software Design, Microprocessor Systems, Logic Design

Experience

McMaster Artificial Intelligence Society **Jan. 2024 - Present**

Workshop Developer *Hamilton, ON*

- Developed technical workshops on core **Machine Learning** concepts using **Python** for **100+** students.
- Wrote a reusable template with **TensorFlow** teaching students how to build Convolutional Neural Networks (**CNN's**).
- Instructed students on **data handling** tasks like cleaning, preprocessing, and feature selection using **Pandas**, followed by model architecture and training on the **MNIST** dataset achieving a **90%** attendee satisfaction rate.
- Conducted live coding demonstrations on Google Colab enabling **30+** attendees to follow along in real time.

HOSA Canada **Sep. 2018 - May 2022**

Club President and Competitor *Toronto, ON*

- Managed a club of **50+** students by organizing medical study sessions, fostering high standards and a positive culture.
- Launched a digital document repository for **15** competitive events, achieving **3 national placements** from my cohort.
- Collaborated with club executives to create seminars and leverage social media content for a **25%** increase in student outreach per year.

Projects

DeepEnd | *Source Code* **Next.js | React | TypeScript | Python | Firebase | OpenAI**

- Developed a **GPT-4** powered technical project copilot winning **First Place** at McMaster's **Google Solution Challenge** which provides users with tailored project ideas and integrated coding timelines.
- Rendered plain text into formatted and syntax-highlighted code blocks using **React** and markdown parsing, while implementing **memoization** techniques to prevent unnecessary component re-renders for efficiency and code readability.
- Deployed server-side protected **REST API** routes on **Vercel** to handle user data from **Firebase**, prompting the OpenAI API to generate 5 recommended projects in **JSON** format given the user's experience and goals.
- Refactored client authentication flow and **state management** by writing a custom **React Hook** to improve developer experience and velocity, reducing codebase size by up to **20%**, and accelerating feature integration by more than **50%**.
- Built a dataset of over **2000+** developer portfolios by writing a custom **Python** script and **CLI** to send user authenticated HTTP requests to the **GitHub API**, enhancing the model's project matching accuracy.

Intellex | *Source Code* **Next.js | React | TypeScript | Tailwind CSS | Node.js**

- Built a direct peer-to-peer (**P2P**) decentralized skill sharing platform, a **winner** for **DeltaHacks X**, which enables users to teach each other in-depth skills over video chat to earn **NFT's**.
- Leveraged Server Side Rendering (**SSR**) to optimize page performance by maximizing use of React Server Components (**RSC**), decreasing client JS bundle size by **60%**, and further minimizing unused styles using **Tailwind CSS**.
- Achieved a **Lighthouse** score of **95**, with page load times being as low as **0.45s**, and perfect **SEO** for site visibility.
- Engineered a lightweight animated component library using **Framer Motion** and **ShadCN** including modals, containers, and cards, which streamlined UI development and visuals, resulting in over a **30%** increase in developer productivity.
- Implemented a **Node.js** API route to reward top weekly users with an NFT minted using the **Verbwire API**.

Dexterity Dash | *Breakdown* **Python | Pygame | Raspberry Pi | Git**

- Innovated a physical therapy for MS patients using programmable 2-Axis Joysticks in a 3D printed controller paired with a game in **Python** which improved hand mobility, and was showcased at McMaster's **iBioMed** design expo.
- Developed a hardware interfacing library integrating Joystick ADC inputs into **Pygame** saving **5+** hours per prototype.
- Collaborated with 3D modelling teams to continuously integrate software features and meet design requirements.
- Applied **Agile** development practices with user feedback to rapidly prototype the game utilizing Git for version control.

Technical Skills

Languages: Python, JavaScript / TypeScript, C / C++, MySQL, MATLAB, R, Assembly
Web Development: Next.js, React, Node.js, Prisma, tRPC, Tailwind CSS, Vite, Django, Flask, FastAPI, HTML / CSS
Machine Learning: TensorFlow, Pandas, Sci-Kit Learn, OpenCV, NumPy, Matplotlib
Tools: Vercel, AWS, Google Cloud Platform (GCP), Firebase, PlanetScale, Docker, Selenium