Asher Khan

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Education

McMaster University **Sep. 2021 – Apr 2026**
*Bachelor of Engineering in Software Engineering - **GPA: 3.9*** *Hamilton, ON*

- **Achievements**: McMaster Engineering Award of Excellence, Dean's Honour List
- **Coursework:** Data Structures & Algorithms, Databases, Probability & Statistics, Linear Algebra, Calculus I-III

Experience

Ericsson **September 2023 – August 2024**
Software Developer Intern *Ottawa, ON*

- Contributed to developing an internal AI chatbot using **Hugging Face**, by tokenizing/normalizing **10,000+** internal documents, improving data quality by **30%**.
- Pioneered an AI-powered internal search engine, replacing a legacy system. Processed and transformed data using Python/SQL, boosting search relevance by **27%**.
- Automated data migration from MySQL to a new LLM-compatible database using OOP in Python, reducing manual processing time by **40%**

Blue Guardian **May 2023 – August 2023**
Machine Learning Engineer Intern *Remote, London, ON*

- Optimized a PyTorch tonal analysis model for mental health detection, increasing accuracy by **8%**
- Integrated **OpenAI Whisper API** to enable Speech-to-Text (STT) and Text-to-Speech (TTS), enhancing accessibility for **20%** more users.

Projects

NeuroViT: Vision Transformers for Brain Tumors | *PyTorch, Pandas, Scikit-Learn*

- Reimplemented the paper *"An Image is Worth 16x16 Words"*, achieving **99% accuracy** on classifying tumours.
- Integrated the **Gemma 2B IT** model served via vLLM, enhanced with a LangChain **RAG** retrieving medical publications from PubMed stored inside a FAISS vector database.
- Optimized model inference with **ONNX**, containerized the application using Docker, & deployed on **AWS EC2**.

Neural Network from Scratch | *Python, Numpy*

- Built a simplified ResNet from scratch, modeled after the paper*"Deep Residual Learning for Image Recognition"*. Created without high-level frameworks to deepen understanding of core ML principles.
- Implemented forward/backward propagation, activation functions, loss, optimizers, and residual connections manually using NumPy.

EthniVision | *Tensorflow, OpenCV, Docker, React, MongoDB*

- Built a multi-class Convolutional Neural Network using ResNet blocks trained from scratch on the FairFace dataset, achieving **87%** gender and **72%** ethnicity.
- Preprocessed **108,000+** images using dlib for face detection, performed EDA, and **deployed** the model via TensorFlow.js in a Dockerized Node.js app.

Artifact Identifier | *OpenAI/Gemini APIs, Repository & Blackboard Architecture*

- Developed an AI-powered Android app that identifies objects via image/text input, leveraging **Gemini** (vision) and **OpenAI** (text) with confidence scoring.
- Implemented user authentication + history tracking and architected the system using design patterns (Repository, Blackboard) for modularity and scalability.

Technical Skills

Languages: Python, R, MATLAB, C++, JavaScript, Java, Bash, HTML, CSS
Libraries: Tensorflow, PyTorch, Sci-kit Learn, Huggingface, SciPy, Pandas, NumPy, Matplotlib, Seaborn
Other Tools: Azure, MySQL, MongoDB, Docker, Kubernetes Django, React, Jira, Git, Linux