

# 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
- **Relevant Coursework:** Data Structures & Algorithms, Databases, Probability & Statistics, Linear Algebra

## 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

### Convolutional Neural Network from Scratch | *Python, Numpy*

- Built a simplified ResNet from scratch, modeled after "*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.
- Designed a custom training/evaluation pipeline, including data loading, batch processing, and gradient descent optimization.

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

- Built a multi-class Convolutional Neural Network using ResNet blocks trained on the FairFace dataset, achieving **87%** gender, **72%** ethnicity, and 56% age accuracy.
- Preprocessed **108,000+** images using dlib for face detection, performed EDA, and deployed the model via TensorFlow.js in a Dockerized Node.js app.

### NFL Record Predictor | *Sci-kit Learn, Flask, SQLite*

- Developed a full-stack web app with a Decision Tree Regression model (**86%** accuracy, **1.12-win** margin of error). Scraped/cleaned NFL stats using BeautifulSoup.
- Reduced MAE by **15%** through model comparison and hyperparameter tuning.

### House Price Prediction (Kaggle Top 25%) | *Python, LightGBM, XGBoost, Sci-kit learn*

- Engineered 79+ real estate features, handling missing data, outliers, and skewness, then applied feature stacking to optimize model inputs.
- Achieved **RMSE 0.13295 (top 25%)** by tuning LightGBM/XGBoost via GridSearchCV and **7-fold** cross-validation, outperforming 75% of competitors.

## 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