

Shadman Kaif

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EDUCATION

University of Toronto

Sept. 2018 – Apr. 2023

BASc in Computer Engineering, Minor in Artificial Intelligence

Toronto, ON

- Relevant coursework: Data Structures & Algorithms, Operating Systems, AI Fundamentals, Computer Security, Machine Learning, C++ Fundamentals, Computer Networks, Databases, Control Systems, Digital Electronics
- University of Toronto Scholars Award (Feb. 2018): \$7,500 & Edward S. Rogers Scholarship (May 2018): \$7,500

TECHNICAL SKILLS

Languages: C, C++, Python, SQL (Postgres), Bash, JavaScript, HTML/CSS, MatLab, Verilog, ARM Assembly

Tools & Frameworks: Git, Linux, VS Code, Kubernetes, Selenium, Scrapy, Bootstrap, Node.js, Eclipse, Jira, DB2

Libraries: C++ STL, NumPy, Pandas, TensorFlow, Keras, PyTorch, Scikit-Learn, Matplotlib, Plotly, OpenCV

Microcontrollers: Arduino, DE1-SoC, Raspberry Pi, PYNQ-Z1/Z2

PROFESSIONAL EXPERIENCE

IBM

May 2023 – Present

Software Engineer

Markham, ON

- Enhanced query processing speed on Power10 systems by optimizing **PyTorch multithreading** in large language models, resulting in a **42% increase** in inferencing throughput and achieving **sub-second** inferencing latency.
- Developed and migrated foundation models from Python Anaconda environments to Cloud Pak for Data, leading to **65% reduction** in ETL requests and **8x faster** access to distributed data across cloud.
- Contributed to the optimization of **NLP-based PrimeQA** and **OpenCV-based Geospatial foundation models**.

IBM

May 2021 – Aug. 2022

Back End Developer Intern

Markham, ON

- Developed **99% accurate LSTM** models using **TensorFlow**, validating the cross-platform portability between x86 and Power10 systems, yielding a **58% lower cost solution** and a **2.4x per-core** performance advantage.
- Designed and implemented **Bash** scripts to assess the performance of concurrent **SQL** queries that use **Python User Defined Functions** which execute machine learning workloads within the **Linux DB2** environment.
- Performed polkit, samba and various other security updates as the team's focal for over a **dozen** OS instances.

Ontario Treasury Board Secretariat

May 2020 – Aug. 2020

Software Engineer Intern

Toronto, ON (Remote)

- Spearheaded the division's data modernization initiative, migrating from a restricted MS Access platform to **Azure Cloud** using **Python** and **Pandas** to optimize digital data infrastructure, resulting in **90%** improvement.
- Constructed and executed test cases that decreased fatal crashes by **85%** for the collective agreement costing tool.
- Built web scrapers using **Scrapy**, **Selenium** and **REST APIs** and analyzed the data using **NLP** and **PowerBI**.

PROJECTS

Ensemble ML Fraud Detection 🐙 | Jupyter Notebook, TensorFlow, NumPy, Pandas

Aug. 2022 – Apr. 2023

- Leveraged the **AdaBoost ensemble ML algorithm** with **decision tree classifiers** as base learners to minimize false positives from **60%** to **4.1%** on a credit card fraud analytics workload with over **24 million** transactions.

AlexNet Waste Classification CNN 🐙 | Jupyter Notebook, PyTorch, NumPy, Matplotlib

Oct. 2022 – Dec. 2022

- Created a transfer learning model based on **AlexNet**, achieving an accuracy rate of **94.1%**, marking an **8.6%** enhancement over a conventional **CNN** when applied to a waste segregation image dataset sourced from Kaggle.
- Accelerated the training process by a factor of **6x** through the utilization of transfer learning techniques.

PYNQ Eye 🐙 | Jupyter Notebook, OpenCV, Python Productivity on Zynq (MakeUofT 2020 Winner) 🏆

Feb. 2020

- Developed a facial and optical recognition program using **Jupyter Notebook** and **Haar cascade classifier** detection within **OpenCV**, accelerated by **Xilinx's PYNQ-Z1 board** by **10x** that of a dual core.

Geographical Information System 🗺️ | C++, OpenStreetMap API, EZGL Graphics

Jan. 2020 – Apr. 2020

- Designed **APIs, data structures and algorithms** to sort and search through over **20 million data points**.
- Implemented **Dijkstra** and **A*'s algorithm** to solve the travelling salesman problem with **98%** accuracy.