

Osman Sultan

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EDUCATION

University of Toronto

Toronto, ON

BASc in Industrial Engineering, Minor in Artificial Intelligence

2020 - 2025

- **Relevant Coursework:** Operations Research, OOP, DSA, Stats/Probability, Big Data Mining, Deep Learning, Recommender Systems, Information Retrieval, Databases, Reinforcement Learning, Optimization in ML

TECHNICAL SKILLS

Languages: Python, Javascript/TypeScript, Java, SQL

Frameworks & Libraries: React.js, Node.js/Express, Spring Boot, PyTorch, Scikit-learn, PySpark, Pandas, Numpy

Cloud & Developer Tools: AWS (S3, Lambda, EC2), Azure (Graph API, Logic Apps, Functions), Docker, Git

EXPERIENCE

Data Engineering Contractor

April 2025 - Present

Munero Global Loyalty

Remote

- Designing an **AWS QuickSight** dashboard for order, operational, catalog, and stock forecasts
- Developing ETL pipelines for **DynamoDB (NoSQL)** data into a scalable **AWS** workflow

Machine Learning Engineer

Sept. 2024 – April 2025

Ploopy Corporation

Toronto, ON

- Engineered a **FastAPI** backend and PostgreSQL vector database for an embedding-based email matching engine using **Azure OpenAI's text-embedding-3-small** and **cosine similarity**, achieving 80% match accuracy.
- Automated end-to-end email replies via **Azure App Service**, **Logic Apps**, and the **Microsoft Graph API**, reducing response time from days to under 32 seconds.

Full Stack Engineering Intern

Sept. 2023 – Sept. 2024

Doctalk Inc.

Toronto, ON

- Migrated data models from **RedisGraph** to **PostgreSQL**, designing relational schemas allowing for easier querying and detailed logging resulting in increased data integrity.
- Built **type-safe REST APIs with role-based authentication** using **React.js (Next.js)**, **Node.js**, and **TypeScript**, powering backend services for pivotal features in *PGYPal*, the company's flagship app.
- Spearheaded a **real-time** notifications and messaging system with **Redis** and **Supabase** via the pub-sub pattern, increasing daily active users by 50%, allowing medical students to gain access to tailored content.

Software Developer Intern

Jun. 2022 – Sept. 2022

Molex LLC

Waterloo, ON

- Transformed a legacy embedded CLI into a web app using **Python**, **FastAPI**, and **Jinja**, reducing testing times by 50%.
- Leveraged **Python's asyncio** to allow for multi-user testing, enhancing performance and developer experience.

LEADERSHIP

Data Lead

Apr. 2024 – Apr. 2025

You're Next Career Network, yourenext.ca

Toronto, ON

- Built a centralized data warehouse and ETL pipelines **using SQL (PostgreSQL)** and **Python** to consolidate historical data and structure future data collection.
- Developed an AI recommender system leveraging **OpenAI embeddings** and similarity search to match 2,000+ career fair signees with relevant companies based on their profiles and resumes.

Project Lead

Jan. 2024 – March 2025

Machine Intelligence Student Team, utmist.gitlab.io

Toronto, ON

- Lead development of a conversational recommender system for ML education using **Python**, **LlamaIndex**, **HuggingFace**, **ChromaDB**, and the **Discord API**, building on Prof. Scott Sanner's [research](#).

PROJECTS

Lion Optimizer Paper Recreation | *Python, PyTorch, Hugging Face*

- Recreated the Lion optimizer paper under constrained resources, comparing against Adam optimizer across image classification (MNIST, Kaggle Cards) and NLP tasks (MRPC from GLUE).
- Performed extensive analysis using **PyTorch**, Lion-optimizer library, and **Hugging Face** transformers to evaluate optimizer performance.
- Report: github.com/osman-sultan/lion-optimizer

Underlying Factors in Soccer Injuries | *Python, Scikit-learn, TensorFlow*

- Investigated soccer injuries' impact on club success through data-driven analysis using **Python**, **Scikit-learn**, and **TensorFlow**.
- Enhanced predictive accuracy via EDA, feature engineering, and model tuning of **Random Forest**, **Logistic Regression**, and **ANN** models.
- Report: github.com/osman-sultan/Underlying-Factors-in-Soccer-Injuries