Arman Zaher

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Education

University of Toronto Sep. 2023 – Apr. 2028
BASc in Industrial (Systems) Engineering *Toronto, ON*

- **Minors**: Artificial Intelligence and Business — **Awards**: Johannes Michael Holmboe Research Fellowship

Experience

Data Science Intern Jul. 2025 – Present
University Health Network (UHN) *Toronto, ON*

- Performed **on-site process mapping** using **MS Visio** to build a Python-based discrete-event simulation of the referral-to-surgery pathway, identifying bottlenecks and **reducing simulated wait times by 13%**
- Built **ML/LLM pipelines** to extract simulation parameters and applied **statistical calibration & validation** methods to ensure the simulation model reproduced historical patient flow and wait time patterns
- Built **real-time Dash/Plotly dashboards** to track and communicate simulation **KPIs** (wait times, queue lengths, delays, fairness) to clinical stakeholders

Program Management Analyst Intern May 2025 – Sep. 2025
Bombardier Aerospace *Toronto, ON*

- Authored comprehensive **business cases and reports** for program changes informed by **financial analysis and risk assessment** in **Power BI**, securing stakeholder approval and guiding strategic decision-making
- Optimized information flow by creating a standardized **1,000+ item** functional requirements library in **MS Excel**, improving supplier and vendor negotiation processes and **shortening cycle times by 33%**
- Conducted schedule optimization using scenario modeling and critical path analysis in **MS Project**, reviewing **50+ program tasks** with mitigation strategies later adopted by program leadership

Machine Learning Engineer Sep. 2024 – May 2025
University of Toronto Aerospace Team *Toronto, ON*

- Built **anomaly detection** pipelines in **PyTorch** and **scikit-learn**, achieving **92% accuracy** on simulated UAV failure signals for predictive maintenance
- Developed **preprocessing pipelines** for UAV telemetry, including noise filtering, signal normalization, and feature extraction, improving downstream model stability and training efficiency
- Benchmarked machine learning algorithms (**XGBoost, LSTM, Transformers**) on simulated UAV failure data, with recurrent architectures achieving the highest AUC scores in exploratory evaluations

Projects

Toronto Homeless Shelter Accessibility Optimization | *Python (pandas, GeoPandas), Gurobi, scikit-learn*

- Engineered a **geospatial ETL pipeline** to derive demand from **socioeconomic poverty indicators**
- Built a **two-stage optimization model (MILP)** in **Gurobi** to prioritize service coverage and travel distance
- Conducted spatial analysis to quantify structural inequities to inform **infrastructure investment strategies**

Brainy Binder | *Python (LangChain, sentence-transformers), ChromaDB, Mistral 7B, SQLite*

- Built a privacy-first AI assistant enabling semantic search across **1,000+ documents** using local LLMs for Q&A
- Engineered ingestion and retrieval pipelines, indexing **10,000+ vectors** for efficient RAG
- Deployed **Mistral 7B** as the core inference engine to drive contextual answering and automated semantic tagging

WARP Shoes Production Scheduling Optimization | *Python (pyodbc, pandas), SQL, AMPL, Gurobi, MS Access*

- Built an **ETL pipeline** to load demand, supply, production, and warehouse data from **MS Access** databases
- Integrated AMPL files into a **Gurobi-powered MILP model**, optimizing production schedules
- Performed **sensitivity analysis** using shadow prices and constraint slacks to improve schedule robustness

Technical Skills

Languages: Python, Java, SQL, R, C/C++, AMPL
Libraries: scikit-learn, pandas, NumPy, LangChain, PyTorch, Matplotlib, Gurobi, SimPy, Plotly, Dash
Tools: ROS, Git, Linux, MS (Excel, Visio, Project, Access, Power BI, Power Apps, Power Automate)