Arman Zaher

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Education

University of Toronto Toronto, ON
BASc in Industrial (Systems) Engineering *Sept. 2023 – Apr. 2027*
- Minors: Artificial Intelligence and Business — Awards: Johannes Michael Holmboe Research Fellowship

Experience

Systems Optimization Engineer May 2025 – Sep. 2025
University Health Network (UHN) *Intern - Toronto, ON*
- Optimized hospital operations using a MIP model to improve patient flow, resource allocation, and scheduling.
- Developed ML models to forecast patient demand, predict wait times, and enhance real-time decision-making.
- Collaborated with the team to refine simulation models and integrate data-driven insights into hospital workflows.

Program Management Analyst May 2025 – Sep. 2025
Bombardier Aerospace *Intern - Toronto, ON*
- Tracked and analyzed KPIs for senior management, ensuring data accuracy, alignment, and actionable insights.
- Developed detailed business cases, optimized schedules, and conducted risk assessments to support project changes.
- Designed a generic requirements library, streamlining program management and accelerating supplier negotiations.

Machine Learning Engineer Nov. 2024 – Present
University of Toronto Aerospace Team (UTAT) *Intern - Toronto, ON*
- Leading a research project on predictive maintenance and risk assessment for unmanned aerial systems.
- Reviewed state-of-the-art methods and evaluated machine learning approaches for system failure prediction.
- Collected and analyzed flight data to inform selection and implementation of predictive algorithms.

Project Manager Sep. 2023 – Dec. 2023
Hart House *Intern - Toronto, ON*
- Led a cross-functional team using Agile methodologies, managing Gantt charts to track progress against deadlines.
- Delivered weekly status reports to stakeholders, ensuring alignment with project milestones and expectations.
- Evaluated wayfinding solutions for Hart House using morphological and Pugh charts to finalize a design.

Projects

Data-Driven Optimization and Forecasting | *Python (NumPy, pandas) SQL, AMPL* 2024
- Built ETL pipelines using Python, pyodbc, and pandas to load demand data from Access (.mdb) databases.
- Integrated AMPL files into a Gurobi-powered MIP model for automated schedule optimization.
- Conducted sensitivity analysis using shadow prices and constraint slacks for robust decision-making.

Metaheuristic TSP Solver | *Python (NumPy, pandas, Folium)* 2024
- Transformed raw coordinates and distance matrices into model-ready formats using a custom ETL process.
- Reduced route length by over 50% in a 40-city TSP using a metaheuristic ensemble approach.
- Visualized routing results on a Folium map with interactive overlays for step-by-step analysis.

Drone Pathfinding Simulation | *Python, ROS, PX4, Gazebo, Linux* 2024
- Developed a ROS/Gazebo simulation in Python on Linux for IR emitter-based drone proximity tracking.
- Designed and integrated real-time drone proximity data publication, enhancing simulation accuracy.
- Simulated and benchmarked wayfinding algorithms (e.g., Dijkstra's, A*) in drone navigation scenarios.

Gradient Descent Visualizer | *Java, Python (NumPy, Matplotlib, Plotly)* 2024
- Developed a visualization pipeline for interpreting 2D and 3D loss landscapes in gradient descent scenarios.
- Created an interactive dashboard for exploring optimization trajectories across different learning rates.

Technical Skills

Languages: Python, SQL, Java, MATLAB, C/C++, AMPL, R, HTML/CSS, JavaScript
Libraries: NumPy, pandas, Matplotlib, SimPy, PyTorch, SciPy, sklearn, Plotly, Dash, GPyTorch, Gurobi
Tools: Git, GitHub, Linux, VS Code, Microsoft Office Suite (Excel, Access, PowerBI, Power Apps)