Sahil Bhatt

Toronto, ON | sahil.bhatt@torontomu.ca | 647-884-4257 | Google Scholar | LinkedIn | Github

Education

Toronto Metropolitan University *Sep 2022 – Oct 2024*
Master of Applied Science (MASc), Mechanical & Industrial Engineering (GPA: 4.28/4.33)

- Specialized in Operations Research, Mathematical Optimization, and Reinforcement Learning.
- Awarded Queen Elizabeth II Graduate Scholarship in Science & Technology ($15,000) — merit-based award recognizing Ontario's top-performing graduate students, and Graduate Fellowship ($12,000).
- Named finalist for the Gilbert Laporte Award by the Canadian Operational Research Society (CORS) for exceptional scientific contributions to Operational Research (OR) in Transportation and Logistics.

Experience

Research Collaborator – Cyber Physical Security *Nov 2025 – Present*
Toronto Metropolitan University — Rogers Cybersecure Catalyst

- Co-authoring a conference paper with Dr. Jordan Melzer, Chief Technology Officer at TELUS Communications, on behavioral safety limits for IoT systems (under review at CCECE 2026).
- Designing algorithmic safeguards to enforce physical safety constraints in smart devices.

Applied Scientist - Optimization and Algorithms *Sep 2024 – Nov 2025*
Toronto Metropolitan University

- Developed a two-stage reinforcement learning framework combining tactical planning and operational decision-making in crowdsourced delivery, achieving 98% service level and 93% driver utilization.
- Published research in *Omega* on fleet size planning in crowdsourced delivery.
- Led laboratory sessions for 20–40 students on optimization, machine learning, and data analysis.

Data Scientist - Mitacs Accelerate Program *Sep 2024 – Aug 2025*
Mitacs

- Delivered technical reports and presentations to stakeholders, contributing to 3 feature recommendations.
- Evaluated NLP-based document similarity, text classification, and clustering models for patent analysis, resulting in a 40% improvement in processing efficiency and a 60% reduction in manual review time.

Cybersecurity Analyst *Sep 2024 – Jan 2025*
Rogers Cybersecure Catalyst

- Conducted extensive literature review on model-driven security approaches for IoT cyber-physical systems.
- Designed prototype security testing framework achieving 85% accuracy in automated threat detection.

Selected Publications

Fleet Size Planning in Crowdsourced Delivery: Balancing Service Level and Driver Utilization. Omega.
Cyber-Physical Security: Behaviour Limits for the Internet of Things. Under review, Canadian Conference on Electrical and Computer Engineering (CCECE) 2026.
Optimizing Fleet Size Management in Crowdsourced Delivery.

Selected Projects

GPT 2 Built From Scratch

- Built a GPT-style text generation model from scratch, processing 1M+ characters of text, reducing training loss by over 50%, and producing readable text in minutes on a single GPU.

Human-Level Control Through Deep Reinforcement Learning

- Implemented the Deep Q-Network algorithm, training agents on Atari environments using 1M+ steps.

Technical Skills

Optimization and Algorithms: Mathematical optimization (Gurobi, CPLEX), dynamic programming, Markov decision processes, real-time resource allocation, sequential decision making, reinforcement learning
Machine Learning: Reinforcement learning, PyTorch, TensorFlow, Generative AI
Cybersecurity & IoT: Cyber-physical security, IoT protocols (Matter), data-model security, threat detection