

Khashayar Azad

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EXPERIENCE

Research Assistant

Jan 2021 – Present

McGill University – Cardille Lab (Remote)

Montreal, Canada

- Developed a benchmark dataset and framework to assess the geospatial reasoning capabilities of Large Language Models.
- Implemented a probabilistic time-series model that integrates noisy land-cover classifications into a temporally consistent posterior estimate with quantified uncertainty.
- Designed and optimized an Extended Kalman Filter for spatiotemporal modeling of satellite imagery, using gradient-based parameter optimization to improve generalization across diverse geographies.
- Built a large-scale data processing pipeline, enabling the extraction and spatial aggregation of lake carbon content and related environmental variables at a global scale.

Teaching Assistant

Sep 2025 – Present

University of Toronto

Toronto, Canada

- Teaching Assistant for CSC309H1 (Programming on the Web): lead tutorial sessions and office hours, teach web development concepts, and assist students with their assignments and projects.

Full-Stack Software Developer Intern

Sep 2022 – Apr 2024

Genetec

Montreal, Canada

- Contributed to the development of a cloud-based SaaS platform using Microsoft's technology stack, implementing front-end features in Angular and back-end microservices with .NET Core.
- Led the migration of an active microservice database to MongoDB, optimizing indexing to improve performance.

EDUCATION

University of Toronto

Expected Dec 2026

Master of Science in Applied Computing – AI Concentration

Toronto, Canada

- **Courses (ongoing):** Neural Networks and Deep Learning, Causal and Moral Reasoning with LLMs, Vector Databases and Unstructured Data Query Processing, Deep Learning: Theory and Data Science.

Concordia University

Sep 2021 - Jun 2025

Bachelor of Engineering, Software Engineering | GPA: 4.18/4.3

Montreal, Canada

- **Courses:** Machine Learning, Data Structures and Algorithms, Computer Networks.

PROJECTS

Episodic Memory for LLM Agent

- Multimodal episodic memory system for LLM-based Minecraft agent reasoning from human demonstrations.
- Context-aware action retrieval combining HNSW vector search with BERT-based reranking.

Transferability Analysis of CNN Encoders

- Trained ResNet-34 on colorectal cancer pathology images to examine feature transferability across visual domains.
- Evaluated representation shift to natural domains using a soft-margin SVM classifier and t-SNE for visualization.

PUBLICATIONS

The Cloud-Based Geospatial Benchmark: Challenges and LLM Evaluation

TerraBytes – ICML Workshop, 2025

Spatial and Temporal Availability of Cloud-free Optical Observations in the Tropics

Scientific Data, 2023

SKILLS

Programming Languages: Python, TypeScript, C++, SQL, C#

Frameworks & Tools: PyTorch, JAX, Google Earth Engine, CUDA, FastAPI, React/Next.js, Node.js

Data & Systems: PostgreSQL, MongoDB, Docker, Git, Linux, Cloud Deployment

Core Expertise: Deep Learning, Model Optimization, Algorithm Design, Full-Stack Development

Spoken Languages: English (Fluent), Persian (Native), French (Intermediate)