

Mohamed Deraz Nasr

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Education

Georgia Institute of Technology <i>MSc Computer Science (Machine Learning Track)</i>	Jan 2026 – May 2027
Coursework (ongoing): Computer Vision, Deep Learning, Graphical/Generative Modeling, Reinforcement Learning	Atlanta, Georgia
University of Ottawa 3.5 GPA <i>BSc Software Engineering</i>	Sept 2020 – May 2025
	Ottawa, Canada

Experience

Georgia Institute of Technology <i>Machine Learning Researcher</i>	Remote Jan 2026 – Ongoing
– Researching neural decision trees for multimodal medical AI, producing concept-level reasoning on patient data (MIMIC-IV).	
Shopify <i>Machine Learning Engineer Intern</i>	Ottawa, Canada Jan 2025 – Apr 2025
– Prototyped PyTorch LLM to convert natural language to SQL , reducing querying time by 80% across 1M+ merchant data.	
– Built ML pipelines (Python, SARIMA, Airflow, SQL) to forecast business metrics, improving accuracy by 7% across 5+ teams.	
– Reduced model response time by 35% (Redis, Docker) to optimize real-time XGBoost predictions for merchant dashboards.	
– Presented product to 20+ senior/staff engineers and team leads at cross-team review, earning highest performance grade.	
University of Ottawa <i>Research Engineer Intern (Supervised by Prof. Kalonji)</i>	Ottawa, Canada Sept 2024 – Dec 2024
– Researched distributed & reinforcement learning to accelerate solar energy forecasting and enable adaptive model updates.	
– Engineered data pipelines (Python/Go) to process 200K+ solar readings daily with 80% accuracy via Redis caching.	
– Deployed Next.js/GraphQL real-time dashboard with XGBoost forecasts to monitor model accuracy at <200 ms latency.	
University of Ottawa <i>Full Stack Developer Intern</i>	Ottawa, Canada Sept 2023 – Dec 2023
– Delivered data validation pipelines (Node.js/React Native) for 20K+ students, cutting form submission errors by 30% .	
– Redesigned 50K+ record PostgreSQL database pipeline, reducing query latency by 40% under high concurrency.	
March Networks <i>Systems Engineer Intern</i>	Ottawa, Canada Jan 2023 – Apr 2023
– Built C/C++ debugging tool (Python/Docker) for RTSP/WebSocket on Linux , boosting model resilience by 25% .	
– Developed Node.js/PostgreSQL dashboard to track packet loss and performance across 200+ deployed camera networks.	

Projects

Affinity Map – Python, PyTorch, Biopython, NumPy, scikit-learn, UMAP, Matplotlib	Sep 2025 – Nov 2025
– Trained a few-shot protein embedding model with UMAP visualization to explore functional similarities across protein families.	
Reinforcement Learning Race Simulator – Python, PyTorch, TypeScript	Aug 2025 – Oct 2025
– Designed multi-threaded race sim running 10K+ epochs, outperforming baseline strategies with 4x faster training throughput.	
Protein Diffusion – Python, PyTorch, C++, CUDA, Transformers, OpenFold API, RDKit	October 2025 – Present
– Built diffusion-driven protein generator enabling fast 3D structure generation, conditioning, and biological plausibility scoring.	

Extracurriculars

UOBionics – Allonstride	Ottawa, Canada Jan 2024 – Dec 2024
– Engineered embedded C/C++ firmware (STM32/FreeRTOS) for exoskeleton motor & biosensor control (I2C/SPI/UART).	
– Built (AWS/Python/WebSockets) pipelines with FastAPI/React dashboard for live anomaly detection on 100K+ signals.	

Technical Skills

Programming Languages: Python, Go, SQL, TypeScript, Java, JavaScript, C/C++
Web/Backend Frameworks: Next.js, Node.js, React, FastAPI, Flask, Django, Spring Boot
Cloud/Databases: AWS (EC2, Lambda), Kubernetes, Docker, BigQuery, Vertex AI, PostgreSQL, Redis, MongoDB
ML/Data Frameworks: PyTorch, XGBoost, scikit-learn, RAG, GenAI, SARIMA, dbt, Airflow, MLflow, Pandas