Mohammed Junaid Anwar Qader

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Education

University of Toronto Sept. 2025 – Dec. 2026 (expected)
M.Sc. in Applied Computing (MScAC), Concentration: Artificial Intelligence *GPA: 4.0/4.0*

National Institute of Technology, Warangal Aug. 2021 – May 2025
B.Tech., Computer Science and Engineering *GPA: 9.0/10*

Experience

Unilever — Horizon3 AI Labs May 2026 – Present
Applied Research Intern (MScAC), Agentic AI Infrastructure *Toronto, ON*

- Building a governed **Skills Registry** that converts enterprise documents and expert guidance into reusable domain expertise and procedural knowledge. An agentic generation workflow extracts, synthesizes and validates skills while preserving span-level provenance, human approval, version history and rollback.
- Engineering the end-to-end knowledge delivery pipeline with **FastAPI**, **SQLAlchemy**, REST and **MCP**: retrieval selects the right skill for each task, deterministic context assembly fits it to the agent's token budget, and a security-first memory lifecycle quarantines writes, enforces user/project scope and supports audited approval and forgetting.
- Developing collective-intelligence infrastructure that captures agent interactions across Google ADK, LangChain and OpenAI/Anthropic clients, then mines cited transcripts for recurring knowledge gaps, successful procedures and evidence-backed insights that improve future skills and workflows.

The Hospital for Sick Children (SickKids) Jan. 2026 – Apr. 2026
Machine Learning Researcher — supervised by Dr. Asad Siddiqui *Toronto, ON*

- Led an ambitious feasibility study predicting pediatric ICU length of stay from only the first six hours of ECG, PPG and ABP waveforms plus EHR data for **142 liver-transplant patients**; built leakage-safe preprocessing and Windkessel-based hemodynamic feature extraction.
- Evaluated tabular, ensemble and **Bi-LSTM–Transformer** models under nested cross-validation. The best waveform model improved macro-F1 from **0.553 to 0.573** and macro-AUPRC from **0.633 to 0.674**; overlapping confidence intervals showed that a larger cohort, longer observation window and stronger temporal representation learning are needed for conclusive clinical value.

Wells Fargo May 2024 – July 2024
Software Development Engineer Intern *Chennai, India*

- Built a secure in-IDE developer tool that answered engineering questions using an **NLP retrieval pipeline** over Confluence and surfaced Harness build logs and pipeline state directly in **VS Code** and **IntelliJ IDEA**. **C/C++**, Java, JavaScript, NLTK, spaCy; cleared through internal security review.

National Institute of Technology, Warangal Jan. 2024 – Apr. 2025
Undergraduate Researcher — Deep Learning *Warangal, India*

- **CathepsinDL**: 1D CNNs with SMOTE over BindingDB/ChEMBL descriptors predicting Cathepsin inhibitor potency by IC_{50} range, at 97% accuracy. **Acoustic mosquito detection**: log-mel + PCEN preprocessing and a custom CNN–TCN with attention for real-time edge inference, at over 90% accuracy. *Two first- and third-author journal publications (see below).*

Selected Projects

Frequency-Aware Knowledge Distillation for UDC Restoration | *PyTorch, Computer Vision, Mamba, FFT* Oct. 2025

- Distilled a MambaIR teacher into a lightweight U-Net using FFT-domain amplitude and multi-scale phase losses; preserved teacher-level perceptual quality on real-world UDC-SIT images at roughly **40× faster inference**, enabling edge and mobile deployment.

SurgiSync — Voice-Driven Emergency Care Assistant | *LLM agents, speech, tool calling* Nov. 2025

- Built a voice-first clinical workflow agent that transcribes requests, extracts structured intent and entities, invokes patient-management tools, and returns grounded answers for ER admission, discharge, transfer and lookup tasks.

Publications

Qader, M.J.A., Sah, C.M., Sahoo, T.K., Majhi, S.K., Mishra, K. (2025). CathepsinDL: Deep Learning-Driven Model for Cathepsin Inhibitor Screening and Drug Target Identification. *IEEE Access*.

Seervi, A., Mulani, N., **Anwar, M.J.**, Venkanna, U. (2025). IoT-Enabled Intelligent Framework for Real-Time Mosquito Detection and Monitoring. *SN Computer Science*, 6(5), 484.

Technical Skills

Languages: Python, C++, Java, SQL, JavaScript, Bash
AI, ML & Agents: PyTorch, scikit-learn, XGBoost, Transformers, CNNs, LSTMs, knowledge distillation, time-series ML, LangChain, LangGraph, Google ADK, MCP, RAG, embeddings, prompt engineering, LLM evaluation
AI Infrastructure & MLOps: FastAPI, REST APIs, Docker, AWS (SageMaker), MLflow, GitHub Actions, SQLAlchemy, Alembic, vector search, pytest

Coursework

Neural Networks & Deep Learning, Computational Imaging, Visual & Mobile Computing Systems, Medicine for AI Experts