MIKIYAS ASSEFA

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Education

Carnegie Mellon University — Doha, Qatar
B.S. in Computer Science, Minor in Tech Entrepreneurship — Expected May 2028

- Honors: Dean's List (2024), All-Star Student Merit Scholarship, SURA Apprenticeship, QSIURP Grant
- Coursework: Introduction to Computer Systems (current), Data Structures & Algorithms, Functional Programming, Imperative Computation, Probability Theory

Experience

PRONTO — Doha, Qatar
Applied AI Engineer Intern — May 2025 – Aug 2025

- Shipped a conversational AI shopping assistant into Pronto's production marketplace (60+ designers, 2,000+ products), integrating the live Firestore catalog, Algolia search, and production APIs.
- Built the agent backend in Python and LangChain with a FastMCP tool server, using structured-output routing, RAG, and complete-look graph retrieval to turn natural-language requests into filtered searches.
- Developed frontend features and enriched catalog metadata with LLMs (41 tags per product) to improve retrieval; built a synthetic-user tester scoring the agent across 10 goals × 3 dialogue styles.

Nestlé — Doha, Qatar
Digital Strategy & Analytics Intern — Aug 2026

- Led a Qatar-wide shopper insights study, surveying 105 shoppers and building a Python pipeline and interactive dashboard to quantify buying habits, channel preferences, and conversion barriers.
- Presented data-driven recommendations on visibility, conversion, and in-store execution to the Country Manager and leadership board, drawing on field visits across logistics, retail, and B2B operations.

Carnegie Mellon University — Doha, Qatar
Computing Services Assistant & 15-110 Course Assistant — Aug 2025 – Present

- Tested CMU's campus LLM gateway (LiteLLM, vLLM) across 3 models, tracing tool-calling failures to missing vLLM parser configuration; support campus infrastructure across software and hardware.
- Held office hours, led Python review sessions and recitations, and graded assignments and exams for 15-110 Principles of Computing.

Research & Publications

TRAP-QA: Benchmarking LLM Robustness Against Subtle Traps — Under review, ACM KDD 2027
Equal-contribution co-author · Datasets & Benchmarks Track · QSIURP-funded · Code — May 2026 – Present

- Built a 294-item benchmark of deceptive common-sense questions, curating it from ~6,500 multilingual candidates under strict interpretability, deceptiveness, and indisputability criteria.
- Engineered a parallel, resumable evaluation pipeline in Python (~12,000 LLM calls per run across 10 frontier and open models), graded by a 3-judge LLM panel with Decider arbitration.
- Built a React/Firebase annotation platform for human graders to measure human-vs-LLM judge agreement and score stability.

LLM-Based Post-ASR Error Correction for Disordered Speech — Published, IEEE ICASSP 2026
Equal-contribution co-author · Presented in Barcelona · Paper · Code — May 2025 – Jan 2026

- Developed LLM-based post-ASR error correction for aphasic speech through a SURA apprenticeship, building evaluation pipelines across 10 ASR systems (Whisper, AWS, Azure, GCP).
- Reduced word error rate to 14% using LLM fusion (GPT-4.1, Gemini 2.5 Pro, DeepSeek R1), a 46% relative reduction, and achieved a 53.8% reduction with phoneme-matched few-shot retrieval; fine-tuned Qwen2.5-14B with LoRA on 2× A100 GPUs.

Awards

2nd Place, UN Reboot the Earth Hackathon — Oct 2025
IRRISmart | Python, scikit-learn, Next.js, Mapbox, MongoDB

- Built a smart-irrigation platform in 48 hours, training a scikit-learn Random Forest to forecast soil moisture, temperature, and salinity 72 hours ahead, served through a Next.js/Mapbox web app and MongoDB API.

Skills

Languages: Python, TypeScript, JavaScript, C, SQL, SML, x86-64 Assembly, HTML/CSS, Bash, LaTeX
Frameworks & Tools: React, Next.js, Node.js, FastAPI, Firestore, MongoDB, PostgreSQL, Algolia, Docker, AWS, GCP, Vercel, Git, Linux, GDB
AI & Data: PyTorch, Hugging Face Transformers, PEFT/LoRA, vLLM, LangChain, FastMCP, RAG, LLM-as-judge evaluation, OpenAI/Claude/Gemini APIs, ASR, scikit-learn, Pandas, NumPy, Matplotlib
Spoken Languages: English (Fluent), Amharic (Native), Arabic (Beginner)