

Tollan Berhanu

Machine Learning Engineer | Graduate Student

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EDUCATION

MSc. Computer Science

University of Idaho [🔗](#)

Aug 2024 – Dec 2026

Idaho Falls, ID, USA

GPA: 4.00 / 4.00

Expected Graduation: December 2026

- **Relevant Coursework:** Data Science, Natural Language Processing, Deep Learning, Advanced Networking & Security, Computer Science Research Methods.

BSc. Software Engineering

Jimma University [🔗](#)

Oct 2018 – Aug 2022

Jimma, Ethiopia

GPA: 3.97 / 4.00

- **Relevant Coursework:** Data Structures & Algorithms, System Design, Object-Oriented Programming, Simulation & Modeling, Distributed Systems, Artificial Intelligence.
- **Senior Capstone Project:** Automated Exam Scoring using Optical Character Recognition (OCR)
- **Honors:** Awarded a **Gold Medal** for achieving the highest GPA from my department.

WORK EXPERIENCE

Graduate Research Assistant

University of Idaho [🔗](#)

Aug 2024 – present

Idaho Falls, ID, USA

- Building an **Agentic AI** tool for translating natural-language **prompts** to **network simulations** inside GNS3 and ContainerLab using **MCP servers** and open-source networking components.
- Conducting a review of over **100** research papers to assess strategies for improving security, privacy, and resilience in **deep learning models** deployed in **distributed systems**.

Machine Learning Engineer

SingularityNET [🔗](#)

May 2023 – Aug 2024

Amsterdam, Netherlands

- Led a team of **five** to develop a chatbot integrating **Llama 2** with a custom **Neo4j** Knowledge Graph as long-term memory, increasing user engagement by **60%** over the legacy version.
- Created a tool for mapping open-source biomedical datasets into **Knowledge Graphs** using **LLMs** to automatically define logical graph structures.
- Built an open-source **RAG**-based **semantic search** plugin for the Mattermost messaging platform. Improved search relevance by **30%** and supported **10,000+** monthly queries.

Software Engineer

SingularityNET [🔗](#)

Feb 2023 – May 2023

Amsterdam, Netherlands

- Contributed in developing and launching the **Cogito stablecoin**, which achieved a market cap of **\$2.96 million** in 2023. Created smart contracts for minting new stablecoins, updating the oracle and trading stablecoins with ADA token on the **Cardano blockchain**.

Machine Learning Intern

iCog Labs [🔗](#)

Oct 2022 – Jan 2023

Addis Ababa, Ethiopia

- Analyzed gene expression datasets from leukemia patients to train a **machine learning** classification model, achieving over **90%** accuracy in identifying different types of leukemia.

SELECTED PROJECTS

Agentic AI for Intent-Based Networking [🔗](#)

Aug 2025 – Present

Master's Thesis - University of Idaho

- An **Agentic AI** tool for autonomously creating network simulations inside GNS3 and ContainerLab. Integrated different **LLMs** with custom **MCP servers** built for **Software-Defined Networking (SDN)** components including IDS, Firewalls, Routers, Switches & DHCP Servers.
- **Tools Used:** MCP Python SDK, GNS3, ContainerLab, Docker

Automated Machine Learning for Data Science [🔗](#)

Aug 2024 – Dec 2024

Research Assistantship - National Science Foundation

- A web application that enables researchers to train machine learning models without writing code. Created modules for automating **data analysis**, **data pre-processing**, and **deep learning** workflows, including building, training, and evaluating **neural networks**.
- **Tools Used:** React, FastAPI, MySQL, Scikit-Learn, TensorFlow

TECHNICAL SKILLS

Generative AI — Model Context Protocol, Parameter Efficient Fine-Tuning, Retrieval-Augmented Generation • **ML Tools** — Keras, TensorFlow, PyTorch, Scikit-Learn, Matplotlib • **Databases** — MySQL, PostgreSQL, Neo4j, MongoDB, ChromaDB • **Programming Languages** — Python, JavaScript, Java, Haskell • **DevOps** — Google Cloud Platform, AWS, CI/CD, Docker, Git