Abreham Tadesse

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Education

- **University of Nevada, Las Vegas** — Las Vegas, NV
  Master of Science in Computer Science — *Jan. 2026 – Present*
- **University of Nevada, Las Vegas** — Las Vegas, NV
  Bachelor of Science in Computer Science — *Aug. 2021 – Dec. 2025*

Languages, Tools & Frameworks

- C/C++, Python, Typescript, Matlab —— Linux, SLURM, HPC workflows —— PyTorch, NumPy, SciPy

Research & SWE Experience

- **Software Engineer Intern —— Embedded & Scientific programming** — Las Vegas, NV
  Nautilus X-Ray — *May - Aug 2025*
  - **Developed custom non-linear optimization algorithms**: (Levenberg–Marquardt, gradient-based) to calibrate source and detector positions in a novel CT scanner, improving accuracy of motion capture systems.
  - **Modeled**: CT imaging calibration as a non-linear system, reducing model residual error by 30%, improving calibration stability under noise.
  - **Transformed spatial model parameters into frequency domain**: accelerating convergence of numeric optimization and cutting compute time by over 50%.
  - **Developed C++ drivers & control interfaces** : for real-time motion control of an 800lbs. plate spinning at over 200 RPM. Ensured motor control safety, latency constraints, and synchronized motion / imaging capture.
- **Software Engineer —— AI/ML & Cloud Systems** — Las Vegas, NV
  Haig's Quality Printing — *May 2024 - May 2025*
  - **Developed & Deployed**: a full-stack application leveraging Generative AI to automate quote generation for large-scale manufacturing jobs, reducing quote turnaround time by **50%**.
  - **Achieved ≈90% classification accuracy**: by fine-tuning LLMs on company and public data for automated quote generations.
  - **Deployed**: LLM Agents using Model Context Protocol (MCP) on AWS ECS to simplify the user onboarding process.
  - **Architected**: CI/CD pipelines using Docker, Github Actions, and AWS ECS - enabling rapid and reliable production deployments.
- **Undergraduate Researcher — Applied AI for Biomedical Systems** — Las Vegas, NV
  University of Nevada, Las Vegas — *Aug 2024 - present*
  - **Contributed to a $3.2M federally funded Biomarker Observatory**: by developing scalable data analysis pipelines and tools, supporting interdisciplinary research into Alzheimer's biomarkers.
  - **Engineered data-generation pipelines**: utilizing retrieval-augmented generation (RAG) and weak-supervision to curate a large set of annotated data for model training. Resulting in a 50% drop in the time required for manual data-labeling.
  - **Achieved ≈90% classification accuracy**: on 10,000+ research papers from Pubmed Central by fine-tuning Large Language Models for domain adaptation.

Clubs and Projects

- **Physics Informed Neural Network for solving PDE's**: Implemented a transformer-driven PINN to model unsteady and turbulent fluid flow over a cylinder object utilizing **auto differentiation** on the **Navier Stokes PDE**. Targeting *Reynold's number* R_e within range $30 \leq R_e \leq 4000$.
- ***SEDS UNLV***: Active member of SEDS (Students for the Exploration and Development of Space) Club at UNLV, contributing to projects involving liquid engine design and testing, electropump development, and collegiate rocketry competitions. — *C, Matlab/Simulink, Python*
- **F1Tenth Autonomous Racing**: Program RC-scale autonomous race car to compete against other vehicles in real-time racing environments, integrating SLAM and LiDAR-based perception, planning, PID & MPC based control pipelines. — *ROS2, Python, C++*