Amey Malhotra

+1 305 636 8542 | axm8832@miami.edu | https://ameymalhotra.github.io/

EDUCATION

University of Miami || Coral Gables, Florida — May 2028
B.S. Computer Science; B.S. Data Science and Artificial Intelligence; Minor: Mathematics — ***GPA: 4.0***
Honors: Isaac Bashevis Singer Scholar, Dean's List, President's & Provost's Honor Rolls

SKILLS

- Languages – Java, Python, R, C, SQL, JavaScript, TypeScript
- Frameworks & Databases – Spring Boot, PyTorch, TensorFlow, React, Streamlit, PostgreSQL
- Cloud & Devops – AWS (VPC, EC2), Docker, Git

WORK & LEADERSHIP EXPERIENCE

Data Science and Computational Biology Lab, *Undergraduate Research Assistant* — September 2025 - Present

- Engineered a Python ML preprocessing pipeline using OpenSlide, Pandas, and NumPy to transform multi-gigabyte SVS pathology slides into image patch datasets for transformer-based malignant cell classification.
- Reduced data preprocessing latency by 33% by optimizing image tiling, normalization, and quality filtering workflows, accelerating model training across multiple deep learning architectures.
- Standardized dataset generation pipelines to improve reproducibility and scalability of histopathology ML experiments.

SCALE-R Lab, Department of Geography, *Software Engineering Research Assistant* — September 2025 - Present

- Developed an interactive geospatial decision-support dashboard using React, Mapbox, and GIS frameworks to visualize 4000+ coastal resilience indicators for public stakeholders and policy planners.
- Engineered scalable Python ETL pipelines integrating multi-source spatial and socioeconomic datasets and implemented a Supabase-backed PostGIS layer to enable indexed geospatial queries and scenario analysis.
- Designing and prototyping ML-driven coastal vulnerability simulation workflows supporting predictive scenario modeling for long-term climate resilience planning.

Unlock AI, *Project Lead* — May 2025 - Present

- Leading the design of a privacy-focused academic advising assistant leveraging small language models to generate personalized semester schedules under academic and prerequisite constraints.
- Researching and evaluating NLP model architectures, recommendation strategies, and constraint-based scheduling approaches to balance recommendation accuracy, inference latency, and data privacy requirements.

Department of Computer Science, *Teaching Assistant* — August 2025 – December 2025

- Mentored 65+ students in Python programming through labs and office hours, increasing independent debugging and code optimization success rates to 90%.
- Analyzed grading performance data and partnered with faculty to redesign practice materials, increasing student comprehension scores by 70% across core programming assignments.

PROJECTS

SideFlow – *Cross-Platform LLM Context Management System* — January 2026 – Present

- Built a local-first LLM context system in TypeScript that captures and structures multi-turn conversations (ChatGPT, Gemini, Claude), enabling in-context follow-up reasoning without disrupting primary threads.
- Developed a resilient TypeScript extraction engine using MutationObserver and site-specific heuristics to reconstruct message hierarchies from dynamic DOM interfaces, preserving conversational state across platforms.
- Engineered a stateful Node.js context pipeline using WebSockets to stream and persist per-conversation JSON state, integrating embeddings for local RAG to retrieve top-k segments and reduce token usage.
- Designing an Electron overlay interface integrated with the Node.js pipeline to enable real-time contextual queries powered by cloud (OpenAI, Anthropic) or local models (Ollama) under a unified message-building architecture.

News2sentiment – *Python, Streamlit, yfinance, Gemini API, FinBERT* — July 2025 - September 2025

- Built and deployed a full stack AI-driven financial intelligence dashboard integrating real-time market data and financial news using Streamlit and REST APIs.
- Engineered a fault-tolerant news ingestion pipeline combining NewsAPI integration with RSS scraping fallback mechanisms, improving reliability and continuity of stock-specific financial data streams.
- Developed NLP-driven sentiment analysis workflows using FinBERT and integrated Gemini API to generate market summaries and correlate news sentiment with stock performance trends.