OMAR HAMMAMI

614-446-8257 | hhammamiomar@gmail.com | hammamiomar.xyz | linkedin.com/in/hhammamiomar | github.com/hammamiomar

Education

New York University — **New York, NY**
M.S., Computer Science — Sep 2022 – May 2024

New York University — **New York, NY**
B.S., Computer Science, Minor in Math — Sep 2018 – May 2022

Experience

Software Engineering Fellow — **Feb 2025 – Present**
The Recurse Center — *New York, NY*

- Completed self-directed programming retreat to expand from ML into systems programming and full-stack dev
- Built applications in Rust, including real-time music visualizer integrating computer vision and audio processing
- Practiced "learning generously" through daily pair programming and code reviews, working at edge of abilities with senior engineers

Software Engineer (Contract) — **Mar 2025 – Apr 2025**
The Sentience Company — *New York, NY*

- Built production voice fingerprinting system in 4 weeks: iOS app (Swift), voice embedding API, PostgreSQL
- Learned 3 new technologies from zero to deliver complete automatic speaker identification solution

Machine Learning Engineer — **Aug 2023 – Dec 2023**
NDA Early-Stage Stealth Startup — *Washington, DC*

- Led end-to-end ML development as sole engineer, designing and deploying multimodal computer vision system
- Revamped failing ML pipeline through dataset augmentation and new architecture, achieving first usable predictions
- Deployed system using pose detection and CNNs on Google Cloud Platform

Machine Learning Intern — **Jul 2023 – Sep 2023**
The New School — *New York, NY*

- Developed privacy-preserving LLM assistant using RAG, vector database, and chain-of-thought prompting
- Secured additional funding through demonstrated accuracy and data security

Machine Learning Student Researcher — **Sep 2020 – Jan 2023**
C2SMART Center — *New York, NY*

- Co-authored 2 peer-reviewed publications on traffic prediction and computer vision applications
- Researched and implemented predictive models using boosted trees for traffic intersection activity estimation
- Built computer vision systems for vehicle tracking and detection using YOLO and Kalman filters
- Managed dataset curation project for NYC traffic cameras, leading annotation team

Projects

SAM_CAM_BAM: Real-time Video Segmentation Music Visualizer (Rust, ONNX, Computer Vision)

- Developed interactive visualizer combining webcam segmentation (ONNX FastSAM) with real-time audio analysis
- Implemented frequency band processing (bass/mids/highs) for dynamic visual effects synchronized to music
- Built with focus on performance and low-level systems programming in Rust

Betterd Spotify: Full-stack Web Application (Rust, Axum, Dioxus)

- Built web app solving Spotify's biased shuffle algorithm by implementing true random playlist shuffling
- Developed complete OAuth 2.0 flow, real-time progress tracking, and responsive UI ready for production deployment

hambaJubaTuba: Diffusion-Based Music Visualizer (Python, PyTorch)

- Created beat-synchronized animations using Stable Diffusion and advanced DSP (chroma CQT, onset detection)
- Built Gradio interface supporting custom models and ControlNet integration with optimized inference

A Careful Look into Graph Contrastive Learning (Python, PyTorch) - Masters Research

- Validated claims in You et al.(2020), discovering negative sampling drives GCL performance, not data augmentation
- Developed importance-weighted negative sampling achieving 2% improvement on COLLAB dataset

Technical Skills

Languages: Python, Rust, JavaScript/TypeScript, SQL, R, C++, Swift, Go, Java
Machine Learning & AI: PyTorch, TensorFlow, Computer Vision, Transformers, LLMs, RAG, ONNX
Data Science & Analytics: pandas, NumPy, scikit-learn, R, D3.js, Plotly, Tableau, A/B Testing, Spark, Dask
Full-Stack Development: React, Node.js, Flask, Axum, Dioxus, SwiftUI, PostgreSQL, REST APIs, TailwindCSS
Systems & Infrastructure: Performance Optimization, Real-time Processing, Docker, GCP, AWS, Linux, CI/CD