

Sam O’Nuallain

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Education

University of Massachusetts Amherst

BS in Computer Science, Double Major in Economics - 3.9 GPA

Expected Graduation: December 2024

MS in Computer Science (starting in February 2025)

Expected Graduation: May 2026

Relevant Coursework: Algorithms, Intro to AI, Intro to Deep Learning, Machine Learning, Probability and Statistics, Calculus I-III, Linear Algebra, Text Mining for AI, Financial Intermediaries, Macroeconomics I-II, Microeconomics I-II

Skills: Python, C/C++, Javascript, React, SQL, PyTorch, Hugging Face API, Sklearn, LangChain, CI/CD, Flask

Work Experience

Center for Intelligent Information Retrieval *Researcher*

September 2024 - Present

- Researching how retrieval models can enhance and adapt to LLMs, as part of an NSF-funded REU
- Running experiments on LLMs using Python, HuggingFace API, and open-source text data

X-Camp Academy *Software Engineering Intern*

June 2024 - August 2024

- Built an LLM-powered coding tutor for 2,000+ students across the US and China
- Collaborated with the CEO and IT team to deploy the chatbot using LangChain, React, and OpenAI API
- Overhauled the chatbot prototype by adding multi-threading and session-based concurrency across Flask and React, enabling multi-user functionality and scalable message storage
- Automated the conversion of 90,000+ student submissions into an embedding index using SQL and integrated it into a dense retrieval system, boosting debugger accuracy by 40%

Lockheed Martin Space *Software Engineering Intern*

June 2023 - August 2023

- Promoted to a larger satellite project, focusing on the data subsystem in Agile sprints
- Designed and implemented object-oriented subsystem interfaces using C++, Docker, and Google Test while coordinating across multiple different teams
- Developed a server in Python to replicate an unbuilt payload, streamlining the testing process and reducing development time

Lockheed Martin Space *Junior Software Engineering Intern*

June 2022 - August 2022

- Designed, tested, and launched components for a large C++ codebase in a Cubesat mission
- Collaborated in a large Agile team, developing with CI/CD pipelines in GitLab
- Accelerated inter-application messaging by 100% by enhancing the existing TCP service with multi-threading

Leadership

X-Camp Academy *Teacher*

June 2024 - Present

- Teaching multiple classes of 20+ middle schoolers foundational Python skills at the top feeder program for the USA Computing Olympiad
- Preparing engaging activities and class structure, communicating with parents, and teaching weekly remote classes

UMass Learning Resource Center *Peer Tutor*

September 2023 - Present

- Tutoring students in computer science and economics courses
- Facilitating sessions and empathetically communicating with students looking for extra help

BUILD UMass *Project Lead*

February 2023 - February 2024

- Led a team of 7 to build a full stack React website for a pro-bono tech consulting project
- Coordinated with the client, ran weekly standup meetings, and assigned tasks for frontend and backend

Projects

Face-to-Sketch Conditional GAN (Python, Pytorch, Cuda)

- Built a generative image model based on a research paper, improving sketch quality by pretraining on a larger face image dataset

Reducing Echo Chambers in Collaborative Filtering Models (Python, Pandas, Networkx)

- Preprocessed user ratings of books and used graph algorithms to create a prototype model for reducing echo chambers.

Fine-Tuning LLMs for System Initiative Prediction (Python, Pandas, HuggingFace API)

- Quantized and fine-tuned Llama-7b on tens of thousands of MSDialog conversations, presenting findings at a final poster session