

RISHIK MUTHYALA

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Education

University of Massachusetts Amherst

Sep 2023 – May 2027

Honors Bachelor of Science in Computer Science & Mathematics, Minor in Business — GPA: 3.6/4.0

Amherst, Massachusetts

Experience

Handshake AI Solutions, LLC

Oct 2025 – Present

AI Engineering Intern

San Francisco, California

- Fine-tuning open-source LLMs on **domain-specific datasets** using **Hugging Face** and **PyTorch**, improving model accuracy by **15-20%** over baseline through systematic hyperparameter optimization and evaluation.
- Engineered **advanced LLM prompting strategies** including prompt optimization, few-shot learning, and chain-of-thought techniques, boosting task accuracy from **72% to 89%** against GPT-4 baseline performance.

MITRE Corporation

Jun 2025 – Aug 2025

Network Engineering Intern

Bedford, Massachusetts

- Developed Python-based **V&V automation systems** to secure mission-critical **DoD satellite communications**, validating **200+ transmission windows per orbit** across space-to-space and space-to-ground links using **AFSIM simulation frameworks**.
- Engineered scalable **orbit propagation and testing pipelines** with Python/Orekit and Cesium 3D, supporting **15+ concurrent satellite missions** and increasing computation throughput by **35%** via optimized concurrency.
- Delivered **95% automated test coverage** for space network protocols through containerized workflows on **GCP Compute Engine**, enhancing reliability and enabling repeatable validation across distributed satellite systems.

Treevah

Dec 2024 – May 2025

Full Stack Cloud Engineering Intern

Chicago, Illinois

- Engineered an **enterprise cloud infrastructure** using a hybrid **Azure + GCP** deployment supporting **500K+ documents** and **10K+ daily users**.
- Implemented **Redis caching** and **Elasticsearch indexing** to reduce **P95 query latency by 40%** (e.g., from 500ms to 300ms) across document services, yielding projected annual savings of **\$50K** in Azure compute costs.
- Developed **RESTful microservices** in Node.js/Express, deployed on **Google Kubernetes Engine (GKE)** for scalable, high-availability environments.
- Prototyped an **AI-based file classifier** using GPT-4 and Cloud Vision API, cutting manual categorization by **60%**.

SelfServe

Jan 2025 – Apr 2025

Founding IOS Developer

Boston, Massachusetts

- Built a **0→1 iOS hospitality platform** from the ground up serving **50+ hotel properties** and **25K+ guests**, leveraging **SwiftUI/Combine** with **MVVM architecture** and CoreData persistence to reduce development cycles by **40%** while maintaining modular scalability.

Columbia University

May 2023 – Sep 2023

Software Engineering Intern

New York, New York

- Developed an **autonomous drone prototype** for emergency response using PyTorch and MAVLink, improving real-time object detection accuracy by **30%**.

Projects

Intelligent Course Companion | *FastAPI, React, LangChain, GPT-4, ChromaDB*

Nov 2025

- AI-powered lecture summarization & Q&A platform. Built **end-to-end AI learning system** automating **Canvas LMS sync**, lecture scraping via Selenium, and **RAG-powered Q&A**, processing **50+ lecture transcripts** with semantic search achieving **94% accuracy**, enabling **10x faster** lecture review

AI-Powered Phishing Detection | *Python, XGBoost, LightGBM, Scikit-learn*

Jun 2025

- Malicious URL classification with gradient boosting. Developed **ensemble ML model** using XGBoost/LightGBM with **hyperparameter tuning**, achieving **0.07 log-loss score** in competitive Kaggle with **95%+ accuracy**

FoundU (Hackathon Award Winner) | *React Native, Node.js, Google Vision API*

Nov 2024

- Lost ID recovery platform(incorporated as LLC). Built **ID recovery system** for **30K+ students** in **36 hours** using Google Vision API and Puppeteer automation, **currently in pilot deployment** with campus administration, projecting **500+ monthly recoveries**

Campus Chirp | *React.js, Node.js, MongoDB, JWT*

Sep 2024

- Full-stack social network for campus community. Developed **social platform** with **2K+ registered students**, React frontend, Node.js **RESTful API**, and MongoDB backend processing **500+ daily posts** and interactions

Technical Skills

Languages: Python, TypeScript, Java, C++

AI/ML: LLM Fine-tuning, RAG, PyTorch, Hugging Face, LangChain, TensorFlow, XGBoost

Backend: FastAPI, Node.js/Express, RESTful APIs, Microservices, WebSockets

Frontend: React, React Native, SwiftUI, Next.js

Cloud & Infrastructure: GCP (Vertex AI, Cloud Run, GKE, BigQuery), AWS, Docker, Kubernetes, CI/CD, Terraform