

Narasimha Karthik J

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EDUCATION

Northwestern University, Master of Science in Artificial Intelligence

Expected Graduation: Dec 2025

PES University, BTech in Electronics and Communication Eng

Graduated: Sept 2022

SKILLS

Tech Stack: PyTorch, Tensorflow, Transformers, LangChain, FastAPI, ChromaDB, Weights & Biases, Azure, MLFlow

Core Expertise: LLM Training & Inference, LLM Evals, Agentic workflows, RAG Systems, Reinforcement Learning

EXPERIENCE

CCL Lab - Northwestern University

Evanston, Illinois

Research Assistant

Sept 2024 – Present

- Developed a framework integrating **genetic programming** with **LLMs** via **LangGraph**
- Engineered verification and performance tracking systems that reduced error rates in LLM-generated models by **25%**
- Developed a Scala 3-based NetLogo extension providing unified multi-provider LLM integration with per-agent conversation management, async request handling, and YAML template system

Relativity

Chicago, Illinois

Applied Science Intern

June 2025 – Aug 2025

- **Collaborated cross-functional initiative with Product, UX, and Engineering** through 10+ customer interviews to define 6 AI-powered insights, transforming manual document review into automated triage with 60% time reduction.
- **Built insights extraction pipeline via systematic prompt engineering** with LLM-as-Judge validation, eliminating 100% hallucinations through structured outputs
- **Created 600+ document evaluation dataset** combining real legal corpus (200 samples) with synthetic generation (400+ documents), improving model coverage from 60% to 95% for underrepresented categories.
- **Implemented a scalable labeling system with Databricks and Mlflow** with 95% inter-rater agreement, delivering reusable YAML configuration framework and evaluation rubrics adopted by 3 subsequent Applied Science projects.

The Boeing Company

Bengaluru, India

SDE-2 & Data Scientist

July 2022 – Aug 2024

- Fine-tuned foundation models (Llama, Mistral) using **LoRA** and **RLHF** techniques on domain-specific data with A100 GPUs
- Implemented a **RAG** system with **ChromaDB**, enabling real-time document creation and reducing manual drafting by **80%**.
- Secured **\$200k** in funding by demonstrating the business value of AI-driven automation, processing over **20,000+ PDFs**.
- Led **3 technical sessions** for the NLP-LLM community and managed hiring to onboard **6 ML Engineers** from a pool of **50**.

Invento Robotics - Startup

Bengaluru, India

Software Engineering Intern

July 2021 – June 2022

- Developed **Invento Fleet** iOS app using **SwiftUI**; shipped **10+ core features**
- Engineered API-based video calling and Socket-based command systems, reducing reliance on web portals by **90%**.

ACHIEVEMENTS

- Published **LEAR: LLM-Driven Evolution of Agent-Based Rules** in ACM GECCO '25 Companion Proceedings
- Accepted **QD-LEAR: Quality-Diversity Tradeoffs in LLM-Evolved Agent Rules** as poster at ALife 2025, Kyoto
- Published 50+ blogs related to RL, LLMs and ML on my newsletter: **NeuraForge**

PROJECTS

- **Medhastra AI:** Architected HIPAA-compliant medical training platform with FastAPI + LangGraph agents, supporting multi-model LLMs (OpenAI, Anthropic, Gemini) for adaptive patient simulations
- **Mechanistic Interpretability in Finance:** Implemented attention visualization on Qwen LLMs to identify critical financial features driving earnings predictions with 95% accuracy
- **Agentic Blogging Assistant:** Built LangGraph-based system generating SEO-optimized blog posts and multi-platform social content from technical notebooks
- **FaceSwap Diffusion Model:** Designed Denoising Diffusion Probabilistic Model with face recognition embeddings for realistic identity-preserving face swaps
- **AdVocate - CMU Hackathon:** Engineered GPT-4o + Stable Diffusion pipeline reducing campaign creation by 90%, generating 25+ campaigns in 24 hours