

Aryasomayajula Ram Bharadwaj

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ABOUT

Versatile ML Engineer and Backend Developer with expertise in deep learning and strong DevOps knowledge. Skilled in multiple programming languages and refactoring legacy codebases, passionate about AI research.

EDUCATION

B.Tech Electronics and Communications

2015 - 2019

GMR Institute of Technology, Andhra Pradesh

PROFESSIONAL EXPERIENCE

Senior Developer at Innovation & Development Labs

2019 - Present

Musigma Business Solutions, Bengaluru

- Led development of multiple high-impact projects in LLM operationalization, automated trading, and MLOps.
- Specialized in backend development, DevOps, and ML engineering across various domains.
- Received multiple recognitions including Impact Awards and Star Performer of the Team.

KEY PROJECTS

LLM Agent Platform

Dec 2023 - Present

Team Lead, ML Engineer, Backend Developer

- Designed and implemented a semi-autonomous data analysis platform powered by LLM Agents.
- Developed training strategies for LLM Agents via automatic prompt optimization and integrated Retrieval-Augmented Generation (RAG) support.
- Implemented evaluation for LLM Agent's results using ensemble of locally hosted LLMs.
- Maintained a customized fork of Microsoft's Autogen framework.
- Successfully deployed for two major clients, assisted client teams in creating usecases.

Understanding Hidden Computations in Transformer Language Models

August 2024

Independent Researcher

- Conducted research to decode the "hidden" computations in transformer models during Chain of Thought (COT) reasoning.
- Investigated methods to enhance the faithfulness and internal mechanics of chain-of-thought reasoning in LLMs.

Investigating the Platonic Representation Hypothesis

August 2024

Independent Researcher

- Evaluated representational convergence across in-distribution, out-of-distribution (ImageNet-O), and random noise data, identifying limits of the Platonic Representation Hypothesis.
- Conducted noise injection experiments on Vision Transformer models, tracked alignment across LLM training stages, showing phases of similarity that indicate convergence toward a shared structure.

Synthetic debate data generation

Feb 2024

Individual Contributor

- Implemented a LLM Agent system for generating debates using openai's gpt-4 model.
- Finetuned pythia and mistral models on the synthetically generated debates using LoRA and KTO methods
- Conducted experiments to understand emergence of deceptive behavior in LLM generated debates

High Velocity Trading Platform

2021 - Dec 2023

Team Lead, Backend Developer, DevOps

- Refactored backend code and migrated deployment from bare-metal to Kubernetes.
- Implemented automated hyperparameter search for ARIMA models.
- Rewrote legacy trade-signal generation from R to Scala using Akka framework.
- Enabled near real-time metric calculation and portfolio visualization.

Next-Gen Model Operationalization Platform

2019 - 2021

Backend Developer

- Developed automatic retraining pipelines for image classification models.
- Designed and implemented Java microservices for creating and serving Jupyter notebooks.
- Engineered a microservice for deploying ML models in a DAG structure with canary and blue-green deployment strategies.
- Created dashboards for monitoring model and resource usage metrics.

Open Source Contributions

Ongoing

Individual Contributor

- Developed a framework for evaluating LLM-generated code in a sandboxed environment.
- Extended lm-eval-harness (LLM Evaluation framework) to support benchmarking of mathematical and arithmetic reasoning tasks.

SKILLS

Languages	Scala, Python, Java, R
Deep learning Frameworks	PyTorch (Expert level proficiency), JAX
DevOps	Kubernetes, Docker-swarm
Frameworks	Akka, Spring-boot
AI/ML	LLM Fine-tuning, Neural Network Architecture Implementation

AWARDS & RECOGNITIONS

AI Alignment Awards

July 2023

www.alignmentawards.com

Winning entry for the "goal misgeneralization" track research proposal, 5 out of 118 entries were selected in this research competition

Honorable Mention

Mar 2022

Alignment Research Center

"Eliciting Latent Knowledge" is a open research problem in AI Safety, My proposal was one of the honorable mentions in the ELK (Eliciting Latent Knowledge) research competition.

Impact Award

October 2022, December 2023

Musigma Business Solutions

Recognized for self-engagement, DevOps skills, and designing the LLM-Agent conversation platform.

Star Performer of the Team

2019 to 2023

Musigma Business Solutions

Received the SPOT award six times for exceptional contributions.

Bronze Position

Feb 2021

Build-on-Redis Hackathon

Winning entry in Build-on-redis hackathon, implemented a text2code search tool entirely on redis stack using codeBERT model's embeddings for a private coderepo