

# Aryasomayajula Ram Bharadwaj

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## ABOUT

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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

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### B.Tech Electronics and Communications

2015 - 2019

GMR Institute of Technology, Andhra Pradesh

## PROFESSIONAL EXPERIENCE

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### Senior Developer at Innovation & Development Labs

June 2019 - Nov 2024

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

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### LLM Agent Platform

Dec 2023 - Nov 2024

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 Agents' results using an 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 use cases.

### 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.

## RESEARCH PAPERS

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### 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

October 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.

## PERSONAL PROJECTS

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### AdvisorMatch

Nov 2024

*Creator, Developer*

- Built 'AdvisorMatch' a PhD advisor-matching tool, to help candidates find faculty advisors aligned with their research interests.
- Designed a similarity search mechanism that matches the user's research interests with the latest work of over 23,000 global faculty to recommend suitable matches.

## SKILLS

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**Programming Languages:** Scala, Python, Java, R

**Machine Learning Frameworks:** PyTorch, JAX

**DevOps Tools:** Kubernetes, Docker Swarm

## AWARDS & RECOGNITIONS

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### AI Alignment Awards

July 2023

[www.alignmentawards.com](http://www.alignmentawards.com)

Winning entry for the "goal misgeneralization" track research proposal, selected among 118 entries in this research competition.

### Honorable Mention

Mar 2022

*Alignment Research Center*

"Eliciting Latent Knowledge" is an 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 the Build-on-Redis hackathon. Implemented a text2code search tool entirely on Redis Stack using CodeBERT model's embeddings for a private code repository.