ADITYA PAKALA

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EXPERIENCE

Amazon, New York, NY — Aug 2025 – Present
Applied Scientist

- Built a guardrail for a production multi-agent root-cause analysis (RCA) system on AWS Bedrock that grounds agents in 70+ passing checks, reducing false-positive escalations by 72%
- Designed a reference-based evaluation framework that grades agent diagnoses against 6k+ expert-resolved tickets using a panel of 3 LLM judges, improving diagnosis accuracy by 80% across model updates
- Developed the evaluation and observability layer, spanning 8+ services, for an Amazon Robotics RFID system that detects dangerous goods ($70M+ annual savings), reducing debugging time by 40%

Walmart Global Tech, Bentonville, AR — Jun 2025 – Aug 2025
Data Scientist III, Applied AI

- Built an agentic RAG assistant that enabled merchandising teams to query retail data in natural language, evaluated offline for relevance and groundedness, reducing manual SQL work by 40%
- Fine-tuned LLMs and benchmarked them against base models across prompt and retrieval variants for answer quality and latency, selecting the production model for multiple shopping use cases
- Created Spark and BigQuery pipelines processing 5+ TB/day of training and evaluation data, improving downstream model accuracy by 30% and serving predictions to 200+ analysts via FastAPI services

ZeoAuto (Y Combinator), Mountain View, CA — Aug 2023 – Jul 2024
Software Engineer (Backend & ML Systems)

- Deployed serverless Python services on AWS Lambda that ran ML routing models in real time, handling 15K+ daily requests at 99.9% uptime with logging to monitor model behavior in production
- Integrated ML routing models into the Zeo Fleet platform, reducing delivery times by 20%, and optimized FastAPI and Docker inference APIs to lower end-to-end latency by 30%

AI Institute, University of South Carolina (AIISC), Columbia, SC — Sep 2022 – Jul 2023
AI Researcher

- Built multimodal data pipelines for FACTIFY 3M, the largest multimodal fact-verification benchmark, combining around 1M+ claims from 8 sources with 3.5M+ LLM paraphrases and 3.3M+ generated images
- Benchmarked text-only and multimodal models with the team, finding multimodal models 2.4x stronger in F1 and more robust to 135K adversarial stories, resulting in an ***EMNLP 2023 Main Conference Publication***

Indian Institute of Technology Delhi, New Delhi, India — May 2022 – Jul 2023
ML Researcher

- Trained and tuned 5 ML models, including gradient boosting, random forest and KNN, with cross-validation and grid search to predict the remaining useful life of NASA turbofan jet engines with 83% accuracy
- Reduced the feature set from 27 to 10 sensor signals using SHAP and partial dependence analysis to identify failure drivers, resulting in a ***Springer International Conference Publication*** at IISc Bangalore

PUBLICATIONS

FACTIFY 3M, Main Paper at *Empirical Methods in Natural Language Processing (EMNLP), Dec 2023.*
Equipment Failure Prediction, First Author, *Industry 4.0 and Advanced Manufacturing Conference*, Feb 2025.
Drug Discovery Using AI, *International Journal of All Research Education & Scientific Methods*, Mar 2023.
Disease Prediction Using ML, *International Journal of All Research Education & Scientific Methods*, Jan 2023.
Mathematical Modeling of Bio Systems, *National Conference on Sustainable Technologies (STCBS)*, Mar 2023.

SKILLS

Languages: Python, TypeScript, Java, C/C++, SQL, Bash
AI & ML: Multi-Agent Systems, LLM Evaluation & Benchmarking, LLM-as-Judge, Fine-tuning, RAG, NLP
Frameworks: PyTorch, HuggingFace, Scikit-learn, LangChain, Strands Agents, Pandas, NumPy, FastAPI
ML Systems: Training & Eval Pipelines, Distributed Training (PyTorch DDP), Vector Search, Spark, BigQuery
Cloud & Tools: AWS (Bedrock, AgentCore, SageMaker, Lambda, S3, CloudWatch), Docker, Git, Linux, CI/CD

EDUCATION

The University of Texas at Dallas – M.S. Computer Science (Applied Machine Learning) — Richardson, TX
Birla Institute of Technology and Science (BITS), Pilani – Dual Degree: M.Sc. + B.E. — Pilani, India