Abhishek Mohandas

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WORK EXPERIENCE

Ernst and Young **July 2023 – December 2024**
Advanced Data Analyst/Engineer

- Developed RAG based payroll reporting system, by fine-tuning GPT models through Azure Open AI, achieving 94% factual accuracy, reduction in reporting cycle time from 3days of manual work to <4hrs, onboarding 5 additional clients in Quarter3.
- Built a LightGBM based liquidity risk predictor, with 87% explanatory power and a 4.2% error margin, validated with paired t-tests, reducing auditor's workload by 4 days, additionally onboarded 10 entities.
- Deployed Isolation Forest for automated anomaly detection with 95% risk capturing capacity, while reducing false alarms by 93%, validated with bootstrap confidence intervals reducing 7 hrs of manual review to<6 mins, deployed with Azure ADLS Gen2.
- Developed trade payables and receivables ETL pipelines using medallion architecture, ingested data via Azure Data Factory, stored raw/curated layers in ADLS Gen2, transformed in Databricks, and loaded the data into Snowflake/Azure Synapse for analysis.

Agappe Diagnostics **October 2022 – April 2023**
Data Science Intern

- Developed a CNN-based vein localization model with Gabor and Gaussian preprocessing on NIR frames, with improved vein detection in scarred/hairy skin cases by 35% over prior models, reaching 93%-pixel accuracy, lowering clinical failure rates by 40%.
- Fine-tuned HuggingFace RoBERTa on 48k product reviews for weekly automated analysis, reducing R&D workload by ~70%; achieved 92% accuracy (±1.3% CI) via 5-fold cross-validation and deployed as a Dockerized REST API on AWS.
- Performed EDA on 42M+ sales transactions using AWS Databricks with Delta Lake, conducting trend analysis(month/week/day), RFM segmentations, and regional heatmaps. Reduced runtime from 50 min to <12 min on a 6-node clusters.

PROJECTS

Medical Assistant | *LangChain, HuggingFace, Mistral, RAG, FAISS, Jenkins, Docker, Aqua Trivy, AWS (ECR & Runner), FLASK, HTML, and CSS*

- Built a Medical Assistant RAG pipeline using HuggingFace Mistral, transforming unstructured PDFs with sentence transformer into a searchable knowledge base indexed by FAISS, enabling semantic Q&A.
- Deployed the solution on AWS(ECR & Runner) with automated CI/CD pipeline using Jenkins, containerization, and security scans via Aqua Trivy, ensuring scalable and secure delivery of medical insights.

Multi Agent System | *LangChain, LangGraph, LLaMA-3, Gemma-2, Phidata, yFinance API, Tavily, FastAPI, SonarQube, AWS (ECR & Fargate)*

- Developed a multi-agent system powered by Gemma-2 and LLaMA-3, enabling users to analyze stock metrics (P/E ratios, moving averages, volatility) and interpret medical references from The Gale Encyclopedia of Medicine with reasoning chains for context-aware decision support.
- Built with LangChain and LangGraph for agent orchestration, FastAPI as backend, deployed using Jenkins CI/CD pipelines with GitHub as SCM, SonarQube for code quality checks, AWS ECR and Fargate with load balancing for static URL.

Recommendation System | *LangChain, LLaMA-3 (70B), RAG, ChromaDB, GCP VM, Grafana Cloud, Minikube, Docker, GitHub (SCM), Streamlit*

- Developed a RAG-based recommendation system using HuggingFace LLaMA-3, transforming data with a sentence transformer and indexing it in ChromaDB to create a searchable knowledge base
- Deployed the system on GCP VM, containerized with Docker and orchestrated through Kubernetes, integrated with GitHub for source control, and monitored via Grafana Cloud to ensure scalable, and reliable workloads.

SKILLS

Frameworks& Orchestration: HuggingFace, PyTorch, Keras, LangChain, PySpark, FastAPI, and Jenkins.
Large Language Models: LLaMA, Mistral, GPT (Azure OpenAI), Gemma-2, RoBERTa, and Flan-T5.
Languages: Python, SQL, Java, R, and Scala.
Tools: Azure Databricks, Data Lake, Data Factory (ADF), Snowflake, AWS S3, ECR, Fargate Grafana Cloud, GitHub, PostgreSQL, MongoDB, FAISS, ChromaDB and Sentence Transformers.

EDUCATION

University Of Arizona **Expected Graduation Date: December 2026**
MS in Data Science (GPA: 4/4)

- Relevant Coursework: Applied NLP, Neural Networks, Machine learning, Data Mining, and SQL/NoSQL Databases.

Rajagiri School of Engineering and Technology **Graduation Date: June 2023**
Bachelor of Technology in Electronics and Communication Engineering

- Relevant Coursework: Speech and Audio Processing, Machine learning, Computer Vision, Information Theory and Coding.