JACOB BINU MANCHERIKALAM

MLOPS & AI ENGINEER

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PROFILE

MLOps & AI Engineer specializing in the complete lifecycle of scalable intelligent systems. Combines expertise in development and deployment of robust production ready Machine Learning ,LLM and Agentic models on AWS and Azure and GCP using Docker, Kubernetes, and CI/CD. Proficient in bridging the gap between data science and application deployment by architecting full-stack interfaces (React, Flask) and optimized RESTful APIs. Skilled in transforming experimental ML models into consumer-facing applications using React, Django, and FastAPI. My Expertise ranges from training deep learning models to orchestrating production deployments on Cloud environments . Passionate about building automated, scalable pipelines that deliver high-performance AI solutions with seamless user experiences.

WORK EXPERIENCE

January 2025 - Present

Coventry Building Society l Coventry CV3 2TQ

MLOps Engineer

- **Establish comprehensive MLOps best practices**, creating automated workflows for model versioning, reproducibility, and CI/CD deployment across development and production environments.
- **Deploy critical Credit Risk models (IRB & IFRS9)** within the analytics platform using Python, ensuring high-performance execution of regulatory financial standards.
- **Engineer serverless ETL pipelines using AWS Glue**, automating complex data manipulation and loading into Amazon Redshift to support high-throughput analytics.
- **Architect and maintain scalable data frameworks using Python**, PySpark, and SAS, optimizing data flow between Data Science and Engineering teams.
- **Spearhead Proof-of-Value initiatives for emerging ML platforms**, evaluating technical capabilities and integration potential to drive the adoption of modern AI infrastructure.

August 2022 - August 2023

Tata Motors Design Tech Centre l Coventry CV4 7AL

IT Engineer

- **Engineered an autonomous OS deployment pipeline** for Windows 11, automating software provisioning and configuration. This reduced manual intervention by 80% and saved 30 man-hours per deployment cycle.
- **Developed robust automation scripts** using PowerShell and Bash to streamline automation and resolve Active Directory anomalies, significantly reducing repetitive manual administrative tasks.
- **Optimized IT incident response workflows**, driving the ticket closure rate from 50% to 100% within six months through improved system configuration and quality controls.

EDUCATION

2021 - 2024 (Bachelor's Degree)

COVENTRY UNIVERSITY, COVENTRY

- **BSc Computer Science with AI Coventry University** (2021 – 2024)
- Grade: **First Class Honors**
- **Key Modules**:
  - Artificial Neural Networks & Intelligent Agents
  - Machine Learning and Related Applications
  - Advanced Algorithms & Mathematics for CS

LEADERSHIP & COMMUNITY

- Currently leading the implementation of the MLOps pipeline for machine learning models at Coventry Building Society and delivering Proof of Value for projects within the Data Intelligence Platform.
- Led and programmed projects in Python and C++, mentoring a team of 5 members, and delivering projects 15% ahead of schedule.
- Liaised as a member of the Formula Student AI (FSAI) team, assisting with AI Formula 1 coding, documentation, racing simulations, and track testing.
- Served as Lead Team Member in the Google Student Developer Club, organizing 3 technical workshops attended by over 100 students.

SKILLS

- **Languages**: Python, C++, Java, C, SQL, Bash/Shell, MATLAB.
- **AI & GenA**I: PyTorch, TensorFlow, Keras, Scikit-learn, OpenCV, Hugging Face Transformers, LangChain, LangGraph, RAG Architectures, LLMs (OpenAI GPT, Llama).
- **Deep Learning** : CNNs, RNNs, LSTMs, CUDA/cuDNN, Transformers and other architectures
- **MLOps & Cloud**: AWS, Azure, GCP, Docker, Kubernetes, Azure DevOps, CI/CD Pipelines, Databricks, MLflow, Git.
- **Data Engineering**: PySpark, Pandas, NumPy, Kafka, Redis, MongoDB, MySQL, SQLite, AWS Glue.
- **Full Stack Development**: React, Flask, Django, HTML5, CSS3, JavaScript, RESTful APIs.
- **Operating Systems**: Linux (Ubuntu/CentOS), Windows, macOS.

CERTIFICATIONS

- **CCNA: Enterprise Networking, Security, and Automation**: Expertise in managing and automating enterprise networks with a focus on security and modern technologies.
- **CCNA: Switching, Routing, and Wireless Essentials:** Foundational skills in configuring, managing, and troubleshooting switched, routed, and wireless networks.
- **Introduction to LangGraph:** AI Agentic workflow with LangGraph
- **Introduction to Prompt Engineering for Generative AI (2023)**
- **Learning Kubernetes:** Kubernetes for container autoscaling
- **Learning Docke**r: Docker for containerization
- **Generative AI: Introduction to Large Language Models**
- **Generative AI:** Working with Large Language Models

PROJECTS

- **Knowledge Graph RAG System**(GITHUB_LINK)**:** Implementation of a GraphRAG system using a Flask application with the Ollama API and locally built models, leveraging graph-based structures for advanced query retrieval.

- **End-to-end MLOps with Databricks**(GITHUB_LINK): This Project delivers a complete, end-to-end MLOps architecture built on the Databricks platform. It features a minimal yet functional machine learning project demonstrating core MLOps lifecycle stages, including data preparation, model training and tracking with MLflow, model registration, and batch inference or model serving.

- **Context-Aware Chatbot Using RAG Framework**(GITHUB_LINK)**:** A context-aware chatbot built using a Retrieval-Augmented Generation (RAG) framework, leveraging state-of-the-art large language models such as OpenAI's GPT and Meta's Llama.

- **Productionized ML Pipeline: Toxicity Classification**(GITHUB_LINK)**:** This Project contains a complete Python solution for classifying mushrooms as edible or poisonous using various ML algorithms and transform an experimental ML model into a reliable, production-ready system through the adoption of MLOps principles.

- **CNN for Plant Disease Classification**(GITHUB_LINK)**:** A production-ready MLOps system for classifying plant diseases (Healthy, Powdery, Rust) using Convolutional Neural Networks (CNNs). This project transforms a research notebook into a scalable, reproducible, and automated machine learning pipeline.

- **Twitter Sentiment Analysis for Financial Markets**(GITHUB_LINK)**:**A production-ready Flask application that analyses real-time tweets from top financial influencers and institutions using advanced NLP sentiment analysis. Track market sentiment, identify trends, and visualize financial opinions with an interactive dashboard.