# **Mohammad Afzal**

Python Developer | Data Science Specialist | Full-Stack Engineer  
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## Summary

Machine Learning Engineer with 9+ years of experience building scalable, production-ready AI systems using LangChain, LangGraph, and FastAPI, with a strong focus on orchestrating multi-agent LLM workflows and retrieval-augmented generation (RAG) pipelines. Adept in full-spectrum MLOps, leveraging MLflow for experiment tracking and model lifecycle management, Kedro for pipeline modularization, and AWS SageMaker for robust model training and deployment. Skilled in deploying containerized solutions with Docker and Kubernetes, and optimizing performance across distributed architectures. Combines deep backend expertise in Python, Java, and SQL with hands-on experience in cloud platforms (AWS, Azure) and modern data tooling (PostgreSQL, MongoDB, Snowflake), delivering intelligent solutions that align with real-world business goals and scale efficiently.

## Technical Proficiencies

**Programming Languages**: Python, Java, JavaScript, SQL, Bash

**Machine Learning & MLOps**: LangChain, LangGraph, MLflow, AWS SageMaker, Kedro, Scikit-learn, TensorFlow, Hugging Face Transformers, PyTorch (basic), JupyterLab, XGBoost, LightGBM

**Data Engineering & Processing**: Pandas, NumPy, Apache Kafka, Airflow, Snowflake, PostgreSQL, MongoDB, Redis, S3

**Backend Development**: FastAPI, Flask, Spring Boot, Node.js, SQLAlchemy, REST APIs

**Frontend Technologies**: ReactJS, AngularJS, Bootstrap

**Cloud Platforms**: AWS (EC2, Lambda, RDS, SageMaker, S3, CloudWatch), Azure (AD, App Services), Databricks

**DevOps & Deployment**: Docker, Kubernetes, Jenkins, GitHub Actions, Terraform (intro), CI/CD Pipelines

**Testing & Automation**: PyTest, JUnit, Selenium, BDD (Behave, Cucumber)

**Tools & Utilities**: VS Code, Postman, Git, Linux CLI, Streamlit, ELK Stack, SQLite

## Experience

Full Stack Developer, Technumen | 2024 - Present

* Led the development of a production-grade, voice-enabled AI assistant, integrating **OpenAI's Whisper** for real-time speech-to-text transcription, **LangChain** and **LangGraph** for orchestrating stateful, multi-agent workflows, and **ElevenLabs** for high-fidelity text-to-speech synthesis.
* Designed and implemented complex agent workflows using LangGraph, facilitating dynamic context management, intent recognition, and seamless transitions across tasks such as FAQs, scheduling, and document summarization.
* Developed a robust **Retrieval-Augmented Generation (RAG)** system utilizing **FAISS** for vector similarity search, enabling the assistant to provide accurate, context-aware responses grounded in enterprise knowledge bases.
* Ensured scalability and low-latency performance by deploying the solution using **Docker** containers on **AWS Lambda**, with content delivery optimized through **CloudFront**.
* Collaborated with cross-functional teams to refine user experience, focusing on natural language understanding and conversational flow to enhance user engagement.
* Engineered an LLM-powered resume screening system employing LangGraph and LangChain, automating the evaluation process by dynamically retrieving and analyzing resumes against job descriptions using RAG techniques.
* Implemented a multi-agent orchestration framework to assess candidate profiles, providing a scoring mechanism and actionable feedback, thereby streamlining the recruitment pipeline.

Product Development Engineer, Calibo | 2020 - Present

* Designed and deployed scalable, data-driven microservices using **Python (FastAPI)** and **SQLAlchemy**, focusing on ML model lifecycle, real-time analytics, and inference delivery.
* Engineered **streaming data pipelines** using **Apache Kafka** and **Spark Structured Streaming** to support low-latency event ingestion, feature generation, and model serving at scale.
* Implemented modular ML workflows using **Kedro**, enabling reproducibility and collaboration across cross-functional teams.
* Managed end-to-end MLOps pipelines with **MLflow** for tracking experiments, managing model versions, and deploying to **AWS SageMaker** for training and batch/real-time inference.
* Developed automated model retraining jobs triggered by data drift signals, and integrated performance monitoring dashboards using ELK Stack.
* Leveraged **Snowflake** for scalable analytics and feature storage, ensuring efficient retrieval and transformation of large datasets in production environments.
* Led deployment automation using **Docker**, **Kubernetes**, and **Jenkins**, orchestrating CI/CD pipelines and environment provisioning across staging and production clusters.

Senior Associate, Nagarro | 2019 - 2020

* Led the digital transformation of project development by developing web applications using FastAPI, RabbitMQ, Angular 8, and Postgresql.
* Built microservices using **Spring Boot**, **RabbitMQ**, and **Angular 8** for scalable, event-driven applications.
* Optimized PostgreSQL queries and backend performance for real-time dashboards.
* Contributed to Agile delivery, TDD with JUnit, and API integration across distributed systems.
* Gained foundational experience in backend systems and asynchronous workflows, later extended into ML and data engineering roles.

Senior Software Engineer, Enbraun | 2015 - 2019

* Developed multi-user scheduling and resource management software using **JavaEE**, **REST APIs**, and **AngularJS**.
* Designed custom integrations and feature modules for enterprise clients, including **OAuth2**, reporting dashboards, and timesheet workflows.
* Led migration of legacy systems to modern web stacks, improving performance and maintainability.
* Built robust backend services and UI components, laying strong foundations in API-first design and client collaboration.

Freelancer | Before 2015

* Successfully completed various freelance projects, including web application development and customization based on client requirements.
* Collaborated closely with clients to understand their needs and deliver tailored solutions within agreed timelines.

## Project Profile

### LAZSA

Industry-first Product Platform-as-a-Service (pPaaS) to redefine digital innovation and drive competitive advantage through digital business. The platform provides a comprehensive set of tools and technology stack to efficiently manage, define, design, develop, and deploy phases of product development.

Key Contributions:

* Led a team in the development and implementation of core features, ensuring successful delivery to the production environment.
* Collaborated with stakeholders to understand requirements and made architectural decisions to ensure the platform's scalability and performance.
* Implemented Java8, Spring Boot, AWS services, Kafka, ReactJS, Docker, Kubernetes, Jenkins, Sagemaker, MLFlow, Kedro, and ELK for seamless development and deployment.

DiPEC (Digitalized Project Execution)

Web application created to digitalize project development, utilized by engineers of Siemens. The project involved team leadership and development from the initial stages. The application was developed in a microservices architecture, ensuring scalability.

Key Contributions:

* Led a team in the development of features and functionality, meeting project deadlines and ensuring high code quality.
* Leveraged Spring Boot, RabbitMQ, Angular 8, Postgresql, and Material UI to deliver a robust and user-friendly application.

eResource Scheduler

Enbraun's eResource Scheduler is a multi-user feature-rich software for resource management and scheduling. The application enables organizations to efficiently schedule, plan, and manage employees, equipment, and other resources.

Key Contributions:

* Developed RESTful services, utilizing AngularJS, Bootstrap, OAuth2, and JavaEE to create a comprehensive resource management solution.
* Collaborated with clients to gather requirements, design customizations, and provide technical guidance.
* Implemented user-defined fields, booking charts, time sheets, and other advanced features to enhance resource management capabilities.

Abho Costing Sheet

Web application designed to manage costing in the fashion designing industry. The application enables management of clients, fabrics, labor costs, dyeing, overheads, and provides precise cost analysis.

Key Contributions:

* Developed RESTful services using AngularJS, Bootstrap, Servlets, Java EE, and Wildfly to create a user-friendly and efficient costing management application.
* Implemented role-based access control to ensure appropriate authorization for different application components.

## Education Detail

**Master of Science** in Data Science from Liverpool John Moores University

**Post Graduate Diploma** in Data Science from IIITB Bangalore

**Bachelor of Technology** in Computer Science from Uttarakhand Technical University

**Higher Secondary School** from Modern School Rishikesh (CISCE)

**High School** from Modern School Rishikesh (CISCE)

## Achievements

* Qualified GATE Examination in 2015
* Topped in an error rectification competition organized in RBMI college
* Secured Third position in a software development competition organized in RBMI college
* Designed theme for my college's website