# Ridwan Bello Salahuddeen, MS

Senior Machine Learning Engineer

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## Professional Summary


Senior Machine Learning Engineer with 10+ years building and productionizing **search, retrieval, and agentic AI systems** across document intelligence, healthcare, video analytics, and financial services. Treats **evaluation as a first-class part of the development process** — defining quality metrics, building benchmarks and regression suites, and running **offline and online evaluations** to guide product decisions. Deep hands-on work in **RAG**, **tool-using agents** (**LangGraph**, **MCP**), **embeddings**, and **LLM-as-a-judge** frameworks (RAGAS, DeepEval), with measured results: 98%+ extraction accuracy, 97.3% F1, and 46% fewer false negatives through error analysis. Expert in **Python** and **SQL**, with **Spark** and **AWS/Databricks** at scale. Co-author of published ML research on cost-aware Bayesian optimization; M.S. in Machine Learning and M.S. in Statistics & Computer Science.


## Professional Experience

**Senior AI Engineer – Document Intelligence**, Apple (Contractor) Feb 2025 – Aug 2026

- **Evaluation-Driven Development**: Achieved 98%+ accuracy on critical metadata extraction by defining **acceptance criteria** as Pydantic schemas — non-conforming output is rejected, making quality measurable rather than subjective
- **Agentic AI & RAG**: Designed first-of-its-kind AI intelligence layer for enterprise document analysis using Gemini 2.5 and multi-agent systems (LangGraph), blending agentic reasoning with retrieval
- **Tool Use & Orchestration**: Built multi-agent orchestration with Model Context Protocol (MCP) for tool-driven task execution across enterprise repositories
- **Technical Direction**: Partnered with product managers and domain stakeholders to translate ambiguous needs into designs; drove technical decisions through demos and iterative feedback

**Senior ML Engineer (Platform Lead)**, BeeKeeperAI & RigrAI Jan 2023 – Feb 2025

- **Model Evaluation & Quality Analysis**: Delivered BERT-based classification at 97.3% F1, with offline benchmarking and monitoring to detect quality regressions before release
- **Deployment, Scaling & Observability**: Engineered high-throughput serving with FastAPI, Docker, and Nvidia Triton across GCP and Azure, tuned for latency, throughput, and cost against global SLO/SLA targets
- **LLM Optimization**: Fine-tuned Llama models with LoRA and weight orthogonalization for domain-specific summarization; implemented prompt-injection defenses and validation guardrails
- **Mentoring & Best Practices**: Served as technical advisor to enterprise customers and guided engineers on architecture, evaluation, and production trade-offs

**Senior Data Engineering Lead**, Tribes.ai (B2B SaaS) Jan 2022 – Nov 2022

- **Online Evaluation & Experimentation**: Used A/B testing to analyze model behavior and refine behavioral analytics models, maximizing enterprise customer ROI
- **Regression Suites**: Implemented automated data quality checks on Kubernetes/GCP, catching regressions in pipeline output before they reached consumers
- **Data Pipelines at Scale**: Designed automated pipeline templates reducing time-to-market by 45% across enterprise data integrations

**Enterprise Data Science Engineer**, Sterling Bank PLC Sep 2021 – Jan 2022

- **Production ML Systems**: Designed end-to-end models integrating disparate enterprise data sources and APIs
- **Large-Scale Data Processing**: Architected workflows on Databricks and Azure Synapse; built services with Golang and Python

**Data Science Engineer**, Access Bank PLC Mar 2017 – Sep 2021

- **Error Analysis at Scale**: Reduced false-negative rate by 46% through systematic error analysis on real-time monitoring of millions of daily records with Spark Streaming and Kafka
- **Applied NLP**: Built and deployed sentiment analysis models over customer feedback, improving customer satisfaction metrics by 20%

## Technical Skills

- **Evaluation & Quality**: **Evaluation-Driven Development**, **Quality Metrics**, **Benchmarks**, **Regression Suites**, **Offline & Online Evaluation**, **LLM-as-a-Judge** (RAGAS, DeepEval), **Human Evaluation**, **Error Analysis**, Acceptance Criteria, Model Monitoring
- **Search, Retrieval & Agents**: **RAG**, **Embeddings**, **Semantic Retrieval**, Re-ranking, **Vector Databases** (ChromaDB, FAISS, Neo4j), **Tool-Using Agents**, **LangGraph**, **LangChain**, **MCP**, Function Calling, Knowledge Graphs, Prompt Engineering
- **ML & LLMs**: **PyTorch**, TensorFlow, scikit-learn, Hugging Face, **Fine-tuning** (LoRA, PEFT), LLM Optimization, Gemini, GPT-4, Claude, Llama, NLP, Deep Learning, Classical ML
- **ML Platform & Engineering**: **Model Serving** (Nvidia Triton, FastAPI), **Observability**, Docker, Kubernetes, CI/CD (GitHub Actions, Jenkins), Responsible AI, Data Pipelines, Airflow, Kafka
- **Languages, Data & Cloud**: **Python** (Expert), Go, TypeScript/JavaScript, **SQL** (Expert), **Spark** (PySpark, Spark Streaming), **AWS** (SageMaker, S3, EKS, Redshift), **Databricks**, GCP (Vertex AI), Azure (AI Foundry), PostgreSQL, Snowflake

## Publications

- A. Essofi, **R. Salahuddeen**, et al. "Reducing Hyperparameter Tuning Costs in ML, Vision and Language Model Training Pipelines via Memoization-Awareness." **arXiv:2411.03731** (2024)
- "Real-time Pothole Anomaly Detection: Toward Safer Roads in Developing Nations" (2024)
- "Deep Learning Model for Potholes Data Augmentation." **IEEE Conference** (2025)

## Education

**Mohamed bin Zayed University of AI (MBZUAI), Abu Dhabi, UAE** 2022 – 2024
Master of Science in Machine Learning (Full Scholarship)

**Georgia State University**, Atlanta, USA 2023 – 2025
Master of Science in Statistics and Computer Science

**Ladoke Akintola University of Technology** 2009 – 2014
Bachelor of Technology in Electrical and Electronics Engineering

## Certifications

- **Microsoft Certified: Azure AI Engineer Associate**
- Microsoft Certified: Azure Data Scientist Associate
- Microsoft Certified: Azure Data Engineer Associate
- Udacity: Deep Learning Nanodegree