Ray Mathew

*Python Developer*

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| +91-8086027316 — | [josephjiyamary@gmail.com](mailto:user@domain.tld) — | [linkedin](https://linkedin.com/in/jiya-mary-joseph-a3892a218/) — | [DataBirdSavvy](https://github.com/DataBird-Savvy) |
|  | [DataBird](https://github.com/jiyamaryjoseph) —  [LeetCode](https://leetcode.com/u/jiyamaryjoseph/) — | [kaggle](https://www.kaggle.com/jiya7316) |  |

— AI/ML enthusiast with hands-on experience in **Generative AI**, **NLP**, and **deep learning**. Skilled in building and deploying **end-to-end Generative AI solutions** and **machine learning** applications. Focused on creating scalable, data-driven systems using modern AI techniques.

# SKILLS

**Machine Learning / Deep Learning, Generative AI & Artificial Intelligence**: TensorFlow, Keras, PyTorch, Scikit-learn, Machine Learning Algorithms, Artificial Neural Networks, LSTM Networks, Recurrent Neural Networks, Fine-tuning, Inference, Retrieval-Augmented Generation, Prompt Engineering, LangChain, LangGraph, CrewAI, LlamaIndex.

**Computer Vision**: OpenCV, Image Classification, Object Detection, Transfer Learning, Convolutional Neural Networks(CNN), Image Augmentation.

**Statistics**: Probability Distributions, Hypothesis Testing, Regression Analysis, Statistical Inference, Time Series Analysis. **Data Science & Analytics**: Data Structures and Algorithms(DSA), Exploratory Data Analysis(EDA), Hypothesis Testing, Pandas, MLflow.

**Cloud & Machine Learning Operations**: Amazon Web Services Elastic Compute Cloud(EC2), AWS S3, AWS Bedrock, AWS ECR, AWS ECS, Machine Learning Operations, Apache Kafka.

**Development Tools**: Microsoft Visual Studio, Jupyter Notebook, Docker, Google Colab, GitHub, Git, Postman.

**Visualization Tools**: Microsoft Power BI, Tableau, Chart.js.

**Web & Frontend Development**: React.js, Next.js, Tailwind CSS, JavaScript, CSS, HTML, Bootstrap.

**Frameworks**: Streamlit, Flask, FastAPI, Django, Nginx.

**Cloud & Databases**: MySQL, MongoDB Atlas, SQL Server, Apache Cassandra, Pinecone, Facebook AI Similarity Search, SQLite, PostgreSQL, Weaviate.

**Programming Languages**: Python, C#, Visual Basic, C++, JavaScript.

# PROJECTS

## AI OET Mentor [www.oetmentor.xyz](https://oetmentor.xyz/) [GitHub](https://github.com/DataBird-Savvy/AI-OET-Mentor)

*AI-powered platform for Occupational English Test (OET) preparation, tailored for healthcare professionals.*

* Integrated **fine-tuned models** (OpenAI, Llama) with **RAG** using **LangChain** and **Pinecone** for domain-specific task generation.
* Developed a **context-aware retrieval pipeline** using **MongoDB Atlas** and **Pinecone** for efficient knowledge retrieval.
* Dockerized **Ollama inference pipelines** for seamless local execution of fine-tuned models.
* Backend deployed on **AWS EC2 (Ubuntu OS)** with **Nginx** for optimal HTTP handling.

**Tech Stack**: **LangChain**, **Ollama**, **Groq**, **MongoDB Atlas**, **Pinecone**, **Unsloth**, **Gemini**, **AWS EC2**, **Docker**, **OpenAI**. **Impact**: Personalized and adaptive OET learning solutions for healthcare professionals.

## APS Failure Prediction [GitHub](https://github.com/jiyamaryjoseph/sensor-fault-detection)

*Predictive maintenance model for Air Pressure Systems in heavy-duty vehicles.*

* Tackled a **binary classification problem** to detect failures in **Air Pressure Systems (APS)** for heavy vehicles.

## Built a real-time data pipeline using Kafka Producer-Consumer architecture.

* Utilized **FastAPI** to serve predictions and **MongoDB Atlas** for data persistence.
* Deployed model using **Docker** on **AWS EC2 (Ubuntu)** for real-time prediction serving.
* Utilized **AWS S3** for scalable storage and **AWS ECR** for container image management.
* Utilized **GitHub Actions** for CI/CD automation.

**Tech Stack**: **Python**, **FastAPI**, **Apache Kafka**, **MongoDB Atlas**, **Docker**, **AWS EC2**, **AWS S3**, **AWS ECR**, **GitHub Actions**. **Impact**: Reduced repair costs through accurate fault detection; improved vehicle safety via predictive analytics.

## AI-Driven E-Commerce Assistant [GitHub](https://github.com/DataBird-Savvy/AIEcommerceAssistant)

*AI-powered chatbot for intelligent product recommendations and real-time negotiations.*

* Implemented a recommendation system using **Sentence-Transformers** and **FAISS** for similarity-based searches.
* Developed an AI negotiation chatbot with **GPT-4** and a **Random Forest model** (91% accuracy) for discount prediction.
* Designed a retrieval-based chatbot leveraging web scraping (**BeautifulSoup**) and **RAG** for product information queries.

**Tech Stack**: **Streamlit**, **OpenAI**, **FAISS**, **Hugging Face**, **LangChain**, **BeautifulSoup**, **Scikit-learn**. **Impact**: Enhanced e-commerce UX with intelligent product discovery and dynamic negotiation.

# MINI PROJECTS

**AI-Powered HR Chatbot** — HR support with LLM fine-tuning & conversational memory. [HrChatbot](https://huggingface.co/spaces/jiya2/HRChatbotFinetuned)

**Skills:** LLM fine-tuning (Unsloth, BERT), multi-model integration, Streamlit deployment.

**Patient Health Monitoring** — Real-time LSTM predictions from wearable data. [Demo](https://healthmonitoring-4jubvmjtm7gw2wfabmqvvd.streamlit.app/) — [GitHub](https://github.com/DataBird-Savvy/HealthMonitoring)

**Skills:** Time-series modeling, real-time ingestion, automated health alerts.

**Chat with PDF** — RAG-based PDF query assistant. [GitHub](https://github.com/DataBird-Savvy/ChatWithPDF)

**Skills:** RAG pipeline, embeddings, enterprise knowledge assistant.

**Chest Cancer Detection** — CNN + MLOps deployment. [GitHub](https://github.com/jiyamaryjoseph/ChestCancerPredictionENDtoENDprojectMlops_DL_DVC)

**Skills:** VGG16, MLflow, DVC, CI/CD with Docker & AWS.

**Face Recognition** — Celebrity classification (98% accuracy). [GitHub](https://github.com/jiyamaryjoseph/FaceRecognition_IMGclassification)

**Skills:** Wavelet features, SVM, Flask deployment.

**Laptop Price Prediction** — Random Forest regression API. [GitHub](https://github.com/jiyamaryjoseph/Laptop-Price-Prediction)

**Skills:** Regression (88%), Flask API, AWS hosting.

**Web Designing** — Static site cloning & UI customization. [GitHub](https://github.com/jiyamaryjoseph/WebDesigning)

**Skills:** Responsive UI/UX, Bootstrap, modern web design.

**Sales Dashboard** — BI dashboards for sales insights. [Tableau](https://public.tableau.com/app/profile/jiya.joseph2295/vizzes) — [Power BI](https://github.com/jiyamaryjoseph/PowerBI-project-sales-analysis2)

**Skills:** Data visualization, forecasting, segmentation.

# EXPERIENCE

## Baby Memorial Hospital, Calicut 18/03/2020 – 23/12/2020

*HR Associate*

* + Facilitated seamless **onboarding processes**, ensuring new hires quickly integrated into the **company culture**.
  + Actively contributed to **training initiatives** for onboarding and ongoing **professional development**.
  + Played a key role in **recruitment activities**, especially in **training**.

## Advait Trade and Consultancy Pvt. Ltd., Cochin 27/03/2008 – 30/11/2011

*Programmer*

* + Implemented **web** and **Windows applications** using **.NET** and **VB**, delivering robust and scalable solutions.
  + Developed **user-friendly interfaces** using **HTML**, **CSS**, and **JavaScript**.
  + Worked extensively with **SQL Server** for backend data management and query optimization.
  + Managed **file deployments** for the **Waterflow application** using **WinSCP** to transfer and deploy files across servers.
  + Conducted thorough **testing** and managed **deployment** of applications across platforms.

## Key Projects:

**– Infobeats** — Developed Windows app with SMS-based enquiry and reservation features, providing instant

consumer responses.

*Tech:* ASP.Net, VB, SQL Server, XML, JavaScript.

*Role:* Coding, SQL queries, data validation, functional spec updates, deployment support.

**– AyurRekha** — Developed web app for modular hospital management including health info, resources, and patient services.

*Tech:* ASP.Net, VB, SQL Server, JavaScript.

*Role:* Coding, data validation, form testing/upload, SQL queries.

# EDUCATION

**ABC University, Calicut**

*Master of Technology (M.Tech)* 2008

**M. G University, Kottayam**

*Bachelor of Technology (B.Tech) in Electronics and Communication Engineering (ECE)* 2007

## Balikamotom H.S.S, Pathanamthitta

*Higher Secondary Examination (XII)* 2003