Ajay R

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Education

Sri Krishna College of Engineering and Technology TamilNadu, India
Master of Technology(Integrated 5 years) in Computer Science; CGPA: 8.73 *2023 – 2028(Expected)*

Experience

AI Engineer Intern Aug 2025 – Jan 2026
Emergexians Infotech Pvt Ltd *New Delhi, India*

- Developed **Retrieval-Augmented Generation (RAG)** chatbots using **LLMs**, embeddings, and **vector databases** to deliver context-aware, domain-specific responses
- Built end-to-end **document ingestion pipelines** with chunking, **semantic search**, and **Chroma**, improving retrieval accuracy and response relevance
- Engineered an **AI-powered Plant Disease Recognition** system using **CNN** and **computer vision** for automated image-based disease classification

Projects

SKCET Knowledge Assistant | *RAG, LangChain, ChromaDB, Groq, Streamlit* | Live Demo Dec 2025 – Jan 2026

- Designed and developed a **Retrieval-Augmented Generation (RAG)** system to answer college-specific queries by grounding LLM responses with context retrieved from vector embeddings
- Built a **semantic search pipeline** using **FastEmbed + ChromaDB** with Top-K similarity retrieval to enable accurate question answering over unstructured institutional data
- Implemented **prompt engineering and context management** to reduce hallucinations and improve factual correctness of LLaMA-3.1 responses
- Deployed the solution on **Streamlit Cloud** with a secure **vector-only architecture**, enabling real-time conversational Q&A without exposing raw documents

AI-Powered Plant Disease Recognition | *Python, TensorFlow/Keras, OpenCV* July 2025 – Aug 2025

- Developed and optimized **deep learning models** for **plant disease recognition** using **transfer learning** with CNNs (**MobileNetV2, VGG16, ResNet50, InceptionV3, DenseNet121**).
- Implemented advanced **image preprocessing** and **augmentation** (rotation, zoom, brightness, flipping, normalization) to improve **model robustness** and **generalization**.
- Enhanced training using **EarlyStopping**, **ReduceLROnPlateau**, and **fine-tuning**, boosting **accuracy** and **training stability**.
- Achieved high **classification accuracy** and **macro F1-score** in **multi-class plant disease detection**, enabling scalable **AI-powered crop health monitoring**.

Achievements

- Published patent on **"Context-Aware AI IoT System for Predictive Wildlife Detection and Human–Animal Conflict Prevention"**, utilizing multimodal AI, edge computing, and IoT sensors to compute Elephant Risk Index, enable early warning alerts, and support drone-assisted monitoring with secure event logging
- Developed and published a **Python CLI tool** on **PyPI** that scaffolds complete RAG project structures in a single command, automating setup and reducing project initialization time.
- Secured **2nd Runner-Up** position in **ML Spark** competition (April 5, 2025) organized by the University of Hyderabad, for developing a machine learning model to predict customer responses in bank marketing campaigns

Technical Skills

Languages: Java, Python, JavaScript, HTML/CSS, SQL
AI/GenAI: LangChain, Unsloth, CrewAI, RAG, Prompt Engineering, Vector Databases (FAISS, ChromaDB)
Frameworks: React, Flask
Developer Tools: Git, GitHub, VS Code, Visual Studio, Jupyter Notebook
Libraries: Pandas, NumPy, Matplotlib, Seaborn, Scikit-learn, TensorFlow, Keras, OpenCV
Soft Skills: Communication, Problem-Solving, Team Collaboration, Analytical Thinking
Concepts: Data Structures & Algorithms, Machine Learning, Deep Learning, Data Preprocessing, Data Visualization