ARKAPRABHA BANERJEE

AI ENGINEER

CONTACT

8170839799

arkaofficial13@gmail.com

Arkaprabha13

arkaprabhabanerjee13

PROFILE SUMMARY

Aspiring Software Engineer (AI/ML focus) with expertise in Machine Learning, Deep Learning (Transformers), and Backend Development. Proven ability in software design and building scalable, distributed systems for AI-powered applications. Proficient in Python, C++, and C, with hands-on experience in model deployment, natural language processing, information retrieval, and data analysis. Actively developing projects using TensorFlow, PyTorch, Django, FastAPI, Flask, and SQL.

EDUCATION

2022-2026

HERITAGE INSTITUTE OF TECHNOLOGY

CSE(DATA SCIENCE)

- 1st Year : 8.53
- 2nd Year : 8.27
- 3rd Year : 8.93

Overall cgpa till 3rd year - 8.576 out of 10

10+2

D.A.V PUBLIC SCHOOL RNP

- 10TH : 89% (2020)
- 12TH : 91% (2022)

SKILLS

- Neural Networks
- Model Deployment
- Backend Engineering
- Transformer Models
- MLOps
- Model Optimization
- Data Pipeline
- DSA, RESTful APIs, System Design

Programming Languages

- C++
- Python
- C
- SQL

Experience

- NooBuild DSA Team(10months)

Mentored More than 400+ Students on Problem solving

PROJECTS

YOLO_END_TO_END - Object Detection with MLOps

- Developed an end-to-end object detection system using YOLOv5, covering all stages from data preprocessing to model training, evaluation, and deployment.
- Implemented MLOps practices with automated training pipelines, experiment tracking via MLflow, and a modular code structure for scalability and maintainability.
- Leveraged OpenCV for advanced image processing and Flask to deploy the model through a REST API for real-time inference.
- Tech Stack: Python, YOLOv5, OpenCV, Flask, MLflow.

RAG-Powered Multi-Agent Q&A Assistant

- Built a multi-agent system combining RAG and FAISS for efficient query routing, document retrieval, and response generation with Groq API and Llama 3 models.
- Created a Streamlit web interface for seamless user interaction, reducing response time by 30%.
- Implemented LangChain document loaders and E5 embeddings for efficient document processing and semantic search.
- Increased retrieval precision by 25% with chunking and FAISS vector storage.

KRISHAK

- Developed a production-grade Agricultural AI Recommendation System using FastAPI, RAG, and Twilio, integrating dual LLMs (Google Gemini Pro, Groq Qwen).
- Processed 10+ soil parameters across 36+ Indian states to generate personalized crop recommendations, leveraging large-scale data handling capabilities.
- Engineered a Retrieval-Augmented Generation (RAG) pipeline with Qdrant vector database and Sentence Transformers, achieving 85%+ recommendation accuracy.
- Reduced farmer decision-making time by 70% through efficient AI-driven recommendations.
- Built a cost-effective SMS gateway with Twilio webhook integration for keypad phones, reducing communication costs by 80% via an optimized coded input format with 3-second response time.
- Developed and enforced a robust data validation system using Pydantic models and geographic validation, achieving 99.5% uptime.
- Supported real-time NPK analysis and fertilizer planning, contributing to enhanced crop yield optimization.