ELANGO M

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PROFESSIONAL SUMMARY

AI/ML Engineer specializing in building scalable, production-ready intelligent systems that transform complex data into impactful solutions. Experienced in end-to-end machine learning pipelines, model deployment, and applied AI across computer vision, NLP, and generative AI domains.

EXPERIENCE

IIT Madras Dept. of Data Science & Artificial Intelligence Oct 2025 Present

AI/ML Systems Engineer (Project Associate) *Chennai, India*

- Architecting AI-driven screening and learning-support systems, translating research concepts into deployable ML applications.
- Designing end-to-end ML pipelines including preprocessing, feature engineering, training, and optimization.
- Building classification models using structured and behavioral datasets for screening support and learning guidance.
- Deploying models as FastAPI-based services for real-time inference and application integration.
- Performing model validation, hyperparameter tuning, and error analysis to improve prediction reliability.

Deloitte Touche Tohmatsu India LLP Sep 2024 Sep 2025

Product Development & Integration Analyst *Coimbatore, India*

- Promoted from intern to full-time role based on performance in enterprise cloud integrations.
- Designed Azure workflows using Function Apps, Logic Apps, and Data Factory for automated data movement.
- Developed internal automation tools using Spring Boot and React.js to streamline operational efficiency.
- Supported REST API integrations ensuring reliable service communication across enterprise environments.
- Worked with GitHub-based CI/CD workflows and professional enterprise deployment practices.

PROJECTS

GenAI Knowledge Assistant (RAG System) *Python LangChain ChromaDB OpenAI*

- Engineered a Retrieval-Augmented Generation (RAG) pipeline for semantic document search and intelligent Q&A.
- Implemented advanced document chunking strategies and vector embeddings to improve retrieval accuracy by 30%.
- Designed document ingestion, preprocessing, and embedding storage workflows for scalable knowledge indexing.
- Optimized prompt templates and response validation to minimize hallucinations and improve answer relevance.
- Built context-aware query handling to deliver consistent responses across diverse document types.

Real-Time Accident Detection System *Python TensorFlow OpenCV Deep Learning*

- Designed a CNN-based computer vision system to detect traffic accidents from live CCTV streams with low-latency inference.
- Developed custom preprocessing modules for motion analysis and temporal feature extraction in video frames.
- Tuned model architecture and hyperparameters to improve detection reliability under varying lighting and traffic conditions.
- Optimized inference pipeline for near real-time performance and deployment feasibility.
- Integrated an automated alert system for real-time emergency notifications via REST API triggers.

Scalable ML Model Inference API *FastAPI Docker Redis Scikit-learn*

- Built a production-ready API for serving multiple ML models with high concurrency support.
- Designed modular model loading and inference pipelines to support scalable prediction workflows.
- Standardized structured output formats and implemented data validation using Pydantic for robust client-side integration.
- Optimized request handling and caching strategies using Redis to reduce latency.
- Developed containerized deployment setup using Docker for consistent environment reproducibility.

TECHNICAL SKILLS

Programming: Python (NumPy, Pandas), Java, SQL, PySpark
Machine Learning: TensorFlow, PyTorch, Scikit-learn, Classification, Feature Engineering, CV, NLP
Generative AI: LLM APIs, LangChain, RAG, Embeddings, Vector Databases (ChromaDB, Pinecone)
Backend & Deployment: FastAPI, REST APIs, Model Serving, Docker, Redis, Inference Optimization
Cloud & Tools: Azure, Git, GitHub Actions, Linux, Jupyter, Postman

EDUCATION

KPR Institute of Engineering and Technology 2020 2024
B.Tech Artificial Intelligence and Data Science (CGPA: 8.34) *Coimbatore, India*