MAHESH KUMAR YARROJU

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https://maheshyarroju.github.io/my-portfolio/

Professional Summary

Data Scientist with 3+ years of experience building and deploying AI and machine learning solutions across computer vision, LLM-based applications, and data analytics. Skilled in Python, SQL, TensorFlow, Keras, Power BI, and modern AI frameworks including RAG and LangChain, LangGraph. Proven ability to deliver end-to-end projects, improve model accuracy and efficiency, and translate complex data into scalable, business-ready solutions.

Technical Skills

- **Data Visualization:** Power BI, Matplotlib, Seaborn
- **Machine Learning:** Supervised & Unsupervised Learning, Feature Engineering, Model Evaluation, Hyperparameter Tuning
- **Programming Languages:** Python
- **Generative AI & NLP:** Large Language Models (LLMs), Prompt Engineering, Agentic AI, RAG, LangChain, LangGraph
- **Tools & Platforms:** Jupyter Notebook, Google Colab, Git, N8N Workflow Automation
- **Libraries & Frameworks:** NumPy, Pandas, Scikit-learn, TensorFlow, Keras
- **Deep Learning:** ANN, CNNs, Image Segmentation, Object Detection (YOLO), Transfer Learning
- **Databases:** MySQL
- **Operating Systems:** Windows, Linux

Experience

Data Scientist 02/2023 to Current

Tata Consultancy Pvt. Ltd. – Hyderabad

- Designed, developed, and deployed machine learning and deep learning models for real-world business use cases, including computer vision, NLP, and sentiment analysis.
- Built and optimized image-processing solutions such as background removal and object detection using CNNs, YOLO, and segmentation models, improving model accuracy and efficiency.
- Developed LLM-based applications using fine-tuned GPT models, RAG frameworks, and LangChain to support intelligent content generation and adaptive learning systems.
- Performed end-to-end data science workflows including data collection, preprocessing, feature engineering, model training, validation, and hyperparameter tuning.
- Implemented real-time sentiment analysis systems for audio and text data, enabling actionable insights for customer experience and CRM integration.
- Conducted customer behavior segmentation and automated feature selection on large-scale transactional datasets to support marketing and business decision-making.
- Created insightful dashboards and visualizations using Power BI, Matplotlib, and Seaborn to communicate findings to stakeholders.
- Collaborated with cross-functional teams to integrate AI models into production environments and ensure scalable, maintainable solutions.
- Documented workflows, experiments, and results while following best practices in version control using Git.

Projects

Image Processing Project (Background Removal)

- Led an end-to-end deep learning project for automated image background removal using segmentation and CNN-based models.
- Optimized model performance and inference pipelines, improving precision and processing efficiency by **20%** and enabling smoother deployment into production systems.

LLM-Based Educational Platform (GenAI + RAG)

- Designed and built an LLM-powered learning assistant to improve student engagement, assessments, and interactive learning experiences.
- Fine-tuned GPT-based models for dynamic content generation and adaptive evaluation, supporting personalized learning workflows.

AI Intern - Object Detection Framework (Drone Imagery)

- Developed a foreign object debris (FOD) detection system for drone imagery using **YOLO** and **SAM-based segmentation** models.
- Enabled real-time object detection and localization, resulting in a **25% improvement in detection accuracy**.
- Built and trained deep learning models using **TensorFlow and Keras**, handling data preprocessing, model tuning, and performance optimization across diverse datasets.

Real-Time Audio Sentiment Analysis Automobile Industry

- Built a real-time sentiment analysis system to classify inbound and outbound customer calls as **positive, negative, or neutral** in both English and Hindi.
- Integrated sentiment insights into CRM systems, significantly improving feedback analysis and customer experience monitoring.

Feature Selection & Customer Behavior Segmentation

- Processed large-scale transactional data (1,000+ features) and developed automated feature selection pipelines using Python.
- Applied clustering techniques to segment customers for marketing teams, improving campaign targeting and decision-making accuracy.

Education

B.Tech: Computer Science&Engineering 05/2019
Chalapathi Institute of Technology - Guntur
GPA: 73%

Intermediate: MPC 04/2015
Santhinikethan Junior College
GPA: 94.4%

SSC 04/2013
S.R.K.H High School
GPA: 9.3 GPA

Certifications

Data Science Certification – Innomatics Research Labs