Sai Charan Doniparthi

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Education

George Mason University — Fairfax, Va
Master's in Data Analytics Engineering, CGPA: 4.0/4.0. — *Jan 2023 – May 2024*

Experience

Machine Learning Engineer — May 2024 – present
Indukuri Information Services — *Remote*

- Developed a **Generative AI system** to automate product description generation and customer support responses using **OpenAI GPT-4** and **LangChain**, increasing content output efficiency by 70%.
- Built a real-time data ingestion and processing pipeline with **Apache Kafka**, **Spark Structured Streaming**, and **Delta Lake** to feed product metadata, reviews, and policies into the model's knowledge base.
- Integrated a **RAG (Retrieval-Augmented Generation)** workflow using **FAISS** and vector embeddings to enable accurate, context-aware responses for dynamic product and order queries.
- Containerized the application using **Docker** and deployed via **Kubernetes** on **AWS EKS**, leveraging autoscaling for inference workloads to support thousands of concurrent users.

Machine Learning Engineer — Jan 2020 – Dec 2022
Tritech Software Solutions — *Hyderabad, TG*

- Designed and trained an object detection and tracking pipeline combining LiDAR, radar, and camera feeds using multi-sensor fusion and deep learning (**YOLOv7** + **Transformer**-based feature alignment).
- Developed real-time scene segmentation using **DeepLabV3+** with temporal consistency, optimized for edge inference using **TensorRT** on **NVIDIA Xavier**.
- Implemented a motion prediction module with a recurrent encoder-decoder architecture for predicting dynamic agents' paths in complex environments.
- Created a custom few-shot anomaly detection model using **Siamese Networks** to identify out-of-distribution road features and hazards.
- Integrated **ROS** nodes for real-time data streaming and visualized outputs in **Streamlit** for rapid prototyping and operator feedback.
- Developed a computer vision system for industrial machinery that detects visual anomalies (leaks, cracks, deformations) using a hybrid **CNN-Transformer** model trained with both supervised and few-shot learning techniques.
- Implemented few-shot meta-learning using **Prototypical Networks** to detect rare equipment failures with as few as 10 labeled samples per class.
- Fused **thermal** and **RGB** camera data for robust detection under variable lighting conditions using a **late-fusion neural architecture**.
- Built object detection and tracking pipelines using **Detectron2** and **SORT** to monitor component-level wear over time for predictive analysis.
- Deployed the solution with a **Streamlit** dashboard and **ONNX**-optimized inference pipeline, achieving 92% accuracy and reducing unplanned maintenance by 40% in a real-world pilot.

Technical Skills

Portfolio: Sai-Charan-Doniparthi-Portfolio

Languages: Python, R, SQL, TypeScript, JavaScript

AI/ML Techniques: Anomaly Detection, Few-Shot Learning, Multi-Sensor Fusion, Object Detection & Tracking, Scene Segmentation, Motion Planning & Prediction, Retrieval-Augmented Generation (RAG), Large Language Models (LLM), Meta-Learning, Model Alignment, Generative AI, Computer Vision, Natural Language Processing (NLP), Time-Series Forecasting

Developer Tools: Streamlit, ROS, ONNX, TensorRT, Git, Docker, NVIDIA Jetson/Xavier

Libraries/Frameworks: PyTorch, TensorFlow, Keras, Transformers HuggingFace, LangChain, Detectron2, YOLOv7, DeepLabV3+, Siamese Networks, Prototypical Networks, OpenCV, spaCy, NLTK, scikit-learn, NumPy, Pandas

Functional Skills: Model Training & Evaluation, Model Optimization, Fine-Tuning Foundation Models, Edge Deployment, Multi-Modal Learning, Real-Time Inference, Data Annotation, A/B Testing, Interactive Dashboarding, Unit Testing (JUnit)