






# Bharadwaja Edera

## Data Scientist

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## EXPERIENCE

### DAIMLER TRUCK INNOVATION CENTER INDIA | DATA SCIENTIST

July 2022 – Current | Bangalore, India

- Engineered an Internal Policy chatbot, deploying RAG pipeline, resulting in a 40% reduction in policy-related inquiries and saving 25 hours per week for the HR team.
- Initiated and executed a POC using CLIP-based models, resulting in a 15% improvement in quality assurance and reducing downtime by 10%.
- Implemented a Recommendation System for Predictive Quality, significantly enhancing failure prediction. Achieved a 30% reduction in rework.
- Volunteered to enhance the Lane Segmentation model, optimized performance for country road and rough road scenarios improving F-measure by 7%

### SUBEX AI LABS | RESEARCH INTERN

Sep 2021 – June 2022 | Bangalore, India

- Conducted research and developed an architecture for orientation-aware scene text detection, resulting in a patent and improving text detection F-measure to 93% from multiple orientations between 0 to 360.

### RCI - DRDO | JUNIOR RESEARCH FELLOW

Oct 2019 – Sep 2020 | Hyd, India

- Conducted data gathering and analysis from various tests to predict the acceptance of PCBs in servo controllers.
- Enhanced model recall by 6% through the development of various ML models and ensemble techniques

## PROJECTS

### RAG CHATBOT | OPENAI API, LANGCHAIN, VECTORDB, RAGAS, DJANGO REST FRAMEWORK,

UNSTRUCTURED, SEMANTIC CHUNKS

- Engineered a comprehensive data ingestion pipeline, including document parsing, metadata extraction, cleaning, chunking, embedding, and vector indexing
- Architected a Retrieval-Augmented Generation (RAG) pipeline with LangChain and GPT-4 Turbo for chat functionality, evaluated using RAGAS framework.

### CLIP FOR AUTOMOTIVE PARTS RECOGNITION | PYTORCH, HUGGING FACE,

TRANSFORMERS, ALBUMENTATIONS

- Collected and annotated a diverse dataset of automotive parts, utilizing data augmentation techniques.
- Adopted and fine-tuned the CLIP architecture for inventory management and quality control and established a system for continuous monitoring.

### PHI-2 FINE-TUNING | PYTORCH, HUGGING FACE, TRANSFORMERS, QLORA

- Enhanced small language models using QLoRA fine-tuning for various downstream tasks such as question answering, text classification, and sentiment analysis.

### LANE SEGMENTATION FOR COUNTRY ROAD SCENARIOS | TENSORFLOW

- Improved lane detection for country roads using ERFnet and PIDNet architectures, addressing challenges like sharp turns and adverse weather conditions.
- Fine-tuned the MAXIM model for low-light image enhancement and augmented data to balance uneven distribution.

## SKILLS

### PROGRAMMING

Python • Pyspark • SQL

### LIBRARIES/Frameworks

• LangChain • Llama Index • Vector Databases • MLOps • Docker • Pytorch • TensorFlow • Keras • git • Gradio • databricks

### API

RestAPI • FastAPI • Flask API

### DEPLOYMENT

Azure • AWS • GCP • Heroku

### TECHNICAL EXPERTISE

GenAI, NLP, Computer Vision, Deep Learning, Large Language Models (LLM), Prompt Templates, Sub-Query Engines, RAG evaluation, Stable Diffusion, Conditional Image Generation, Transformer Models, OCR, Regression Models, Time Series Analysis and Forecasting, Applied Mathematics, Statistics, Optimization Algorithms, Predictive Analytics and Modeling, Performance Tuning, Pre-Training and Fine-tuning, Object detection and Segmentation

## EDUCATION

### INDIAN INSTITUTE OF SPACE SCIENCE AND TECHNOLOGY

MASTER'S IN MACHINE LEARNING

Sep 2020 - May 2022 | Trivandrum, Kerala

### GPCET, JNTUA

BACHELOR'S IN ELECTRICAL & ELECTRONICS ENGG.

July 2014 - May 2018 | Kurnool, AP