Shaik Zaheer Hussain

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Technical Profile

Applied Machine Learning Engineer specializing in High-Performance Computer Vision and Advanced RAG Architectures. Expert in optimizing real-time detection pipelines (YOLOv11/RT-DETR) and bridging the gap between theoretical research (GANs/Transformers) and production-grade AI systems.

Education

B.Tech in CS (Data Science)	*Nov 2022 – Present*
C R Rao AIMSCS (JNTU), Hyderabad	*CGPA: 9.73 / 10*
Intermediate (IPE) — Sri Chaitanya	*92%*
Secondary School (SSC) — Narayana E Techno	*9.7 / 10*

Certifications

- IBM Machine Learning
- GDG Campus Lead (24-25)
- ML Workshop (IITH)
- R Programming (Udemy)

Professional Experience

Research Intern — DRDO (Directorate of AI & Drones)   *Sept 2024 – Present*

- Benchmarking **YOLOv11** and **RT-DETR** for real-time edge detection in degraded environments.
- Developed a modular deblurring-to-detection pipeline, increasing mAP in high-motion scenarios.
- Implementing **Explainable AI (XAI)** using Integrated Gradients to audit model decision boundaries.

Summer Research Intern — IIST (ISRO-linked)   *May 2024 – July 2024*

- Engineered a **DCGAN** framework for EEG signal synthesis, solving data scarcity for Telugu BCI.
- Achieved robust generalization using **Leave-One-Subject-Out (LOSO)** validation protocols.

LLM / AI Intern — SB Solutions   *Nov 2023 – April 2024*

- Fine-tuned LLMs for **Natural Language to SQL**, reaching **78% accuracy** on complex schema joins.
- Developed domain-specific fine-tuning pipelines for **BERT** (Translation), **T5**, and **CodeT5** (Automated Code Generation), optimizing for low-latency production environments.
- Leveraged **LSTMs** for sequential abnormality detection, utilizing temporal feature extraction to identify distribution shifts and outliers in real-world datasets.

Projects

Adaptive Multimodal RAG-Fusion System   ⚙

- Built an enterprise-grade RAG pipeline featuring **Semantic Chunking** and **Reciprocal Rank Fusion**.
- Optimized retrieval via query routing, reducing hallucinations by ∼25% in internal testing.

Campus Attendance & Management System   ⚙

- Architected a centralized university system with integrated **RAG-based** student/faculty assistants.
- Designed a complex relational schema to handle real-time scheduling, attendance, and faculty data.

Fortunix — Context-Aware Financial AI   ⚙

- Architected a high-faithfulness RAG system utilizing a corpus of **SEBI regulatory documents** to deliver grounded financial insights and literacy.
- Engineered custom retrieval logic to ensure AI-generated guidance remains strictly anchored in official compliance frameworks, minimizing hallucination risks.

Technical Mastery

Foundations: Python, PyTorch, Scikit-learn, GANs, Transformer Theory, XAI
Computer Vision: YOLOv8-v11, RT-DETR, OpenCV, Super-Resolution, Deblurring
Generative AI: RAG, LLM Fine-tuning, Prompt Engineering, Vector DBs (FAISS/Chroma)
Engineering: Docker, FastAPI, SQL, MongoDB, Git, GCP