

# Aakash Singh

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## EDUCATION

- IIT Bombay** Mumbai, India  
*B.Tech. in Metallurgical Engineering & Materials Science* March 2021

## COURSEWORK

- IIT Hyderabad** Hyderabad, India  
*Certification in Artificial Intelligence and Machine Learning (Gold Medallist)* May – June 2019

## WORK EXPERIENCE

- MarketStar (Nytro.ai)** Bangalore, India  
*Software Engineer (Applied AI/NLP)* May 2022 – Dec 2024
  - Domain Adapted LLMs for Sales Training:** Led LLM fine-tuning and token generations leveraging OpenAI's GPT models with programmable guardrails. Integrated GradSUM-based calibration to fine-tune behavioral accuracy. Enabled a 14% reduction in onboarding time and an 11% lift in win rates across sales cohorts.
  - Multi-turn conversation design for Call Simulations:** Deployed a Retrieval-Augmented Generation architecture using LlamaIndex, Langchain, and postgres for vector-search to anchor conversations in context. Enhanced topic coherence in AI-generated responses and reduced hallucination rates by 40% across 50+ scenarios
  - Sales Pitch Re-ranking and Generative Feedback System:** Built a semantic similarity engine combining BERT and OpenAI embedding models and contrastive learning to match sales rep pitches with expert baselines. Systematic deployment led to a 40% improvement in feedback precision and saved 625 hours of manual effort.
  - Evaluation Framework for Dialogue System:** Designed multi-metric pipelines using ROUGE, BERTScore, and task-specific coherence checks to benchmark response quality and ensure safety across services. This evaluation framework drove a 20% gain in dialogue clarity and contextual relevance through iterative improvements.
  - Language Modeling Pipeline for Call-Centre Workflows :** Implemented topic segmentation for multi-modal long-form conversations using DistilBERT and a sliding window mechanism. This reduced manual evaluation latency by 62%, accelerating batch feedback analysis from 4 minutes to 1.5 minutes on 100K+ dialogues.
  - Prompt Management & Optimization Frameworks:** Engineered an automated prompt testing suite incorporating zero-shot, few-shot, and reinforcement learning strategies. GradSUM-based reliability checks ensured response stability, achieving 98% fidelity across edge and fallback cases. Integrated human-in-the-loop strategies.
- Unacademy** Bangalore, India  
*Educational Content Manager* June 2021 – Feb 2022
  - Content Strategy for Learning Platform and YouTube:** Spearheaded curriculum development and optimization for K-12 STEM subjects. Used learner analytics to drive syllabus updates and content publishing, resulting in 20M+ cumulative watch hours and contributing to a 23% increase in platform revenue in 3 months.
  - User Behavior and Retention Analysis:** Conducted exploratory analysis on user behavior using NLTK. Built sentiment-driven models, leading to a 46% reduction in churn and a 60% increase in session-level engagement

## PROJECTS

- Real-Time Sign Language Detection | Guide: Ph.D. Manisha Dubey, IIT Hyderabad | Project Link:** Constructed a real-time gesture recognizer with 97% accuracy using **Deep CNNs** (VGG-16, VGG-19) trained on a dataset of 50K+ hand gesture images. Deployed using **TensorFlow** with transfer learning for 7 custom hand gestures.
- Measurement of Weld Quality | Guide: Prof. Satish Vitta, IIT Bombay:** Designed a supervised learning system to correlate arc sound features with weld quality using **decision tree** models (80% accuracy). Compiled a 25-page research report and demonstrated ML-based non-invasive weld quality assessment.
- Credit Card Fraud Detection | Self Project:** Built an anomaly detection model with **99% precision** over 250K transactions using resampling techniques. Visualized trends through correlation analysis and **Matplotlib** plots.
- RAG-based QA System | telegram-bot-akask:** Developed an reflexive agentic system using **OpenAI** and **FAISS**, deployed with **FastAPI** on **GCP**. Achieved an F1-score of 97% on student queries.