

Aakash Singh

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EDUCATION

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



RELATED COURSEWORK

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

RELEVANT WORK EXPERIENCE

- **MarketStar (Nytro.ai)** Bangalore, India
Software Engineer (Applied AI/NLP) May 2022 – Dec 2024
 - **Domain Adapted LLMs for Sales Training:** Architected persona-aligned simulations leveraging OpenAI's GPT models with layered prompt 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.
 - **Conversational Agent for Call Simulations:** Deployed a Retrieval-Augmented Generation architecture using LlamaIndex and ChromaDB to anchor conversations in relevant context. Enhanced topic coherence in AI-generated responses and reduced hallucination rates by 40% across 50,000+ global simulations.
 - **Sales Pitch Re-ranking and Generative Feedback System:** Built a semantic similarity engine combining BERT embeddings and contrastive learning to match sales rep pitches with expert baselines. Systematic deployment led to a 40% improvement in feedback precision and saved over 625 hours of manual trainer effort.
 - **Evaluation Framework for Dialogue System:** Designed multi-metric pipelines using ROUGE, BERTScore, and task-specific coherence checks to benchmark response quality. This evaluation framework drove a 20% gain in dialogue clarity and contextual relevance through iterative improvements.
 - **Language Modeling Pipeline for Call-Centre Workflows :** Implemented scalable topic segmentation for long-form conversations using DistilBERT and a sliding window mechanism. This reduced evaluation latency by 62%, accelerating batch feedback analysis from 4 minutes to 1.5 minutes on datasets of 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.
- **Unacademy** Bangalore, India
Educational Content Manager June 2021 – Feb 2022
 - **Content Strategy for Mobile App and YouTube:** Spearheaded curriculum development and optimization for K-12 STEM subjects. Used learner analytics to drive syllabus updates and content pacing, resulting in 20M+ cumulative watch hours and contributing to a 23% increase in platform revenue.
 - **User Behavior and Retention Analysis:** Conducted exploratory analysis on student behavior using Python and NLTK. Built sentiment-driven churn models that surfaced early dropout signals, 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.