Aakash Singh

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Education & Coursework

- **IIT Bombay** — Mumbai, India
  B.Tech. in Metallurgical Engineering & Materials Science — *March 2021*
- **IIT Hyderabad** — Hyderabad, India
  Certification in Artificial Intelligence and Machine Learning (Gold Medallist) — *June 2019*

Work Experience

- **Nytro.ai (acquired by MarketStar)** — San Francisco (Remote)/ Bangalore, India
  Founding Software Engineer (Applied AI/NLP) — *May 2022 – Dec 2024*
  - **Domain-Specific LLM Adaptation for Sales Enablement**: Fine-tuned GPT series with domain-specific corpora and programmable guardrails to align outputs with enterprise sales workflows. Achieved a 14% reduction in SDR onboarding time and an 11% uplift in close-win rates for 2,000+ agents across sales cohorts.
  - **Retrieval-Augmented Dialogue Agent for Multi-turn Sales Simulations**: Architected RAG-based memory to ground LLM outputs in vectorized domain knowledge using LlamaIndex, Langchain, and PostgreSQL. Enhanced coherence in AI-generated responses and reduced hallucination rates by 40% across 50+ sales simulation paths.
  - **Contrastive Feedback Engine for Semantic Pitch Re-ranking**: Built a semantic similarity engine combining BERT, OpenAI and Gemini embedding models with contrastive learning to match sales rep pitches with expert baselines. Deployment led to a 40% improvement in feedback precision and reclaimed 625 hours of manual effort.
  - **Multi-Metric Evaluation Suite for Dialogue Systems**: Built a systematic evaluation framework for AI-generated conversations using ROUGE, BERTScore, and task-specific coherence checks (topic derailment, redundancy loops) to benchmark response quality and ensure safety across services. This evaluation framework drove a 20% gain in dialogue clarity and contextual relevance through iterative model improvements.
  - **Scalable Topic Segmentation for Contact Center Transcripts** : 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+ calls.
  - **Prompt Optimization and Stability Testing Infrastructure**: Engineered an automated prompt testing suite incorporating zero-shot, few-shot, and policy-gradient 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.