Akarsh Upadhyay

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Education

Indian Institute of Technology (IIT) Jodhpur, Electrical Engineering — Jodhpur, India
Jan 2019 – Jan 2023

- Core Member of the Robotics Club
  - participated in AI/ML competitions and hackathons.
- Research on Document Layout Understanding under Dr. Santanu Chaudhary.
- Project on Medical Visual Question Answering using NLP + Computer Vision.

Experience

Microsoft (MSAN - Microsoft Audience Network), Applied Scientist — India
Sept 2024 – present
1 year 7 months

- Intent-Based Retrieval: Led development of next-generation encoder models for ad retrieval. Achieved +14.32 absolute precision points (P@100) over production baseline using 30x less training data.
- A/B Testing Impact: +0.61% CTR and +0.51% revenue lift in NA region. Methodology adopted as standard by US and India MSAN teams.
- Unified Evaluation Framework: Designed single source-of-truth evaluation framework across IDC, STCA, and US MSAN teams, supporting encoder-based, Single/Multi-Intent, Generative Retrieval, and ANN variants.
- High-Impact Index for Product Ads: ML-driven retrieval system identifying high-impact product offers; replaced legacy system, delivering 2.77% revenue lift.

Zomato, Machine Learning Engineer — India
Jan 2024 – Aug 2024
8 months

- Image Quality Score: Fine-tuned ResNet-50 for food image quality classification (F1: 90%). Now a critical component evaluating nearly every food image shown to users.
- Ads Creation: Designed automated ad creation system using generative models for background generation and brand-specific styling.
- Photo Cake: Built real-time image overlay system using OpenCV; launched on Mother's Day resulting in 3,000+ photo cake sales across India.

Enterpret, ML Research Intern — India
June 2023 – Dec 2023
7 months

- Text Similarity at Scale: Led project to assess semantic similarity between sentences based on business value. Scaled solution to 1M+ texts, achieving F1 Score of 85%.
- Explored prompt engineering, transformer fine-tuning, novel loss functions, and LLMs for optimal results.
- Created comprehensive data preparation guidelines (20+ pages) and supervised the annotation team.

Publications

GDP: Generic Document Pretraining to Improve Document Understanding
A generic document pretraining approach that improves document understanding across various downstream tasks.
Akkshita Trivedi, Akarsh Upadhyay, et al.

Projects

Document Layout Understanding — July 2021 – May 2022
Multi-modal transformer (DocFormer) for Visual Document Understanding (VDU) in English and multilingual settings. Guided by Dr. Santanu Chaudhary, IIT Jodhpur.

- Applied DocFormer architecture for document understanding tasks.
- Extended to multilingual document settings.

Medical Visual Question Answering Feb 2021 – May 2021

VQA system for X-ray/MRI scans (brain, kidney, lungs) using NLP and Computer Vision (TensorFlow). Achieved ~90% accuracy on the test set.

- Fused visual attention with NLP for multi-modal QA.
- Trained on medical imaging datasets achieving 90% test accuracy.

Skills

Machine Learning & AI

Computer Vision

Tools & Frameworks

Languages

English
Fluent

Hindi
Native

Interests

Research Interests