

SARRTHAK TRIPATHI

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EDUCATION

MS Data Science

INDIANA UNIVERSITY BLOOMINGTON

Coursework: Machine Learning, Deep Learning, Distributed Computing, Statistics

GPA: 4/4

INDIANA, US | Aug 2025 - 2027

B.Tech Electronics and Computer Science

VELLORE INSTITUTE OF TECHNOLOGY

Coursework: Statistics, Database Management, Data Structures, Data Visualization

GPA: 4/4

INDIA | Jul 2021

WORK EXPERIENCE

INDIANA UNIVERSITY BLOOMINGTON | DATA SCIENTIST

| AUG 2025 - PRESENT

- Engineered a multi-modal RAG architecture to enable natural language querying of complex Diver records, building a **Hadoop-backed pipeline to process** large-scale text and video data into vector embeddings; integrated **GLM-4.5 to synthesize context**, improving search retrieval accuracy by **40%** and **reducing manual data review time by 15 hours per week**.
- Fine-tuned a **LLaMA foundation model for domain-specific Olympic dive classification**, leveraging PyTorch and the Thinking Machine Labs API to execute a **LoRA training pipeline on a 10,000-record dataset**, improving **few-shot prediction accuracy by 60%** and reducing inference latency.
- Engineered an Olympic dive classification system by fine-tuning a SOTA Video Vision Transformer (**VideoMAE V2**) via PyTorch; adapted **3D spatio-temporal attention layers to evaluate human biomechanics across 1000 historical videos**, successfully mapping multi-frame sequences to an automated 'Golf Score' grading metric.

PROJECTS

NOVANEWZ – TACKLING FAKE NEWS PROBLEM

NEXT.JS + CLOUDFLARE AI STACK

- Built a full-stack, serverless news platform to reduce exposure to **skewed/polarized** and **unverified** reporting by promoting **neutral, evidence-backed** coverage; implemented UI in **Next.js 14 (React 18, TypeScript)** with a Cloudflare edge backend using **Workers + D1 (SQLite)**.
- Implemented **semantic search** over a **75k+ article** corpus by generating embeddings with **OpenAI text-embedding-3-small/large** orchestrated via **Cloudflare Agents** and indexing in **Cloudflare Vectorize**; added neutrality-aware re-ranking to increase **Neutral@10 to 90%** on a fixed human-evaluated query suite.
- Designed a measurable bias evaluation loop for **Left/Neutral/Right** classification by creating annotation guidelines, collecting multi-rater labels, and tracking **inter-annotator agreement (Cohen's κ / Krippendorff's α)**; improved model **Macro-F1** from **0.66 to 0.92** while monitoring per-class precision/recall.
- Developed citation-grounded **topic histories/timelines** using **RAG** (top-5 retrieval from Vectorize + synthesis with **Cloudflare Workers AI**); reduced **unsupported-claim rate by 95%** and increased human-rated **trust/neutrality** scores to **3/5** on sampled evaluations.

SKILLS

Programming & Frameworks: Python3, SQL, TensorFlow, PyTorch

LLMs: GLM 4.5, qwen3.5:122b, Llama 3.1, OpenAI GPT 5 Codex

ACHIEVEMENTS

AWARDED 2ND PRIZE INNOQUEST-2025 AT INDIANA UNIVERSITY BLOOMINGTON 

DECEMBER 2025