





Yuvraj Singh

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EXPERIENCE

IISER, Kolkata | *Summer Research intern*

May 2024 – Present

- Working under Prof. Kripabandhu Ghosh on exploring Fine-tuning LLMs and Using GenAI Models on Medical and Finance Data for QnA

AIISC | *Research intern*

March. 2024 – July 2024

- Worked with Prof. Amitava Das on Prevention of Hallucination in LLMs
- Part of the data collection team- Performed web scraping of news articles and posts. Generated synthetic data using various open-source LLMs.
- Tagged LLM-generated synthetic data with entities using GLiNER and other open-source models.

Clinical AI Assistance | *Research intern*

Dec. 2023 – March 2024

- Worked closely with the Research Team for the main project, building dataset and testing the model's generated output with other Text Generative tools like GPT etc.
- Used HuggingFace API to use various LLMs to test our generated response to the original ones
- Data Gathering and cleaning and performing Data Analysis on the generated output to view model's efficiency

SKILLS

Languages: C++, Python

Frameworks: Pytorch, Keras, Flutter, Flask

GenAI Tools Langchain, LlamaIndex, Chromadb, Pinecone, FAISS, HuggingFace

NLP: GRU, RNN, LSTM, Bi-LSTM, Transformers, LLMs

Computer Vision: CNN, OpenCV, YOLOv8, GANs, ViTs

Tools: Streamlit, Git, Github, Firebase, Docker, GCP

PROJECTS

PlogPayouts (Google Solution Challenge '24) | *AI-driven Plogging System*

2024

- * **Role:** Backend (AI/ML+Server)
- * **Vision/Goal:** To bring about an effective change in the garbage collection process and also tackle the social stigma regarding the position and work of garbage collectors to harbour a cleaner and greener environment, working together without any social differences.
- * **Solution:** Detection, classification and counting of garbage collected by the users for which redeemable coins are rewarded in exchange for their hard work, lowering the need for post-garbage processing while being the garbage collectors themselves doing a part of their daily activity-jogging.
- * **Tools:** Flutter, HTML, CSS JavaScript, Bootstrap, Flask, Python , Django , Keras, OpenCV, YOLOv8, Firebase Firestore, Realtime Database, Storage, GCP APIs, Mapbox, Render, Docker

Paper/Architecture Replication from Scratch using PyTorch | *GitHub Repository*

2024

- * **Tools:** Pytorch, HuggingFace Spaces (for deployment of smaller versions of replicated models), Git, Github

FarmGenie (GeoHack 2024) | *Empowering farmers with real-time insights and expert guidance via AI-driven space* 2024

- * **Role:** Backend (AI/ML Integration)
- * **Vision/Goal:** In the ever-evolving agricultural landscape, farmers often face challenges in accessing up-to-date knowledge and resources to improve their farming practices. To address this, we have developed a comprehensive product that leverages the power of LLMs as Experts and Agents to create an interactive platform for farmers.
- * **Solution:** Our platform utilizes LLMs and a Mixture of Expert (MoE) approaches to provide precise guidance on soil management, plant disease identification, and irrigation techniques. Built as a scalable web application with a Next.js frontend and backend, and supported by a Redis queue and multiple worker nodes, FarmGenie ensures robust performance. The system's multilingual support, interactive community forum, and up-to-date knowledge base facilitate seamless, expert-driven assistance for both new and experienced farmers.
- * **Tools:** Tailwind CSS, TypeScript, Next.js, Flask, Python, Langchain, GeminiPro API, peft , bitsandbytes, transformers, PostgreSQL, FAISS, Pinecone, MySQL, Unsloth, GCP, Docker, Vercel, DigitalOcean

Insight-Ed (HackNITR 5.0) | EdTech Platform for Student and Teacher
2024

- * **Role:** Backend (AI/ML+Server)
- * **Vision/Goal:** Our solution tries to bridge the knowledge gap between a teacher and a student in online classes by leveraging the power of AI to provide the teacher and student with insights to better prepare themselves for the course/lecture.
- * **Solution:** Implemented features such as- Detection of Emotion and Attentiveness of a Student for better understanding of student's understanding of a topic, Topic Modelling to know exactly where he/she lost attention, QnA with uploaded PDFs (Handwritten/Printed) along with any Videos/Tutorials and Reverse Video Search to quickly look for any concepts in the same.
- * **Tools:** Flask, Python, Gemini API, Whisper API, HuggingFace Open-Source Models (EmotionLLM), MTCNN, LangChain, Cloud Run, GCP(VM)

ACHIEVEMENTS

- 2nd place @GeoHack '24 Finale
2024

Secured 2nd position at finals of GeoHack 2024 with our project- [FarmGenie](#) organised by IEEE GRSS Kolkata and SAADRI.
- Finalist @YESIST12 '24- Special Track
2024

Led the winning project [PlogPayouts](#) at YESIST12 '24 under Special Track category
- Geek-o-thon (D3 @IIIT-BH)
2023

Led the winning project [MovieMania](#) at D3 2023, inter-college hackathon in AI/ML domain

EDUCATION

- International Institute of Information Technology Bhubaneswar
2023- 2027

BTech Computer Science Engineering
- Delhi Public School
2022-23

CBSE Grade 12
Percentage: 91
- Amity International School
2021-22

CBSE Grade 10
Percentage: 96