Pratham Batra

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Experience

Bynd, *Artificial Intelligence Intern* | Gurugram, Haryana *April 2024 - Present*

- Created an end-to-end **voice call RAG** system using **GPT-4o** as the model.
- Users could say a company's name and then ask for any information or metric from its 10-K report.
- Saying "add to workspace" displayed the source chunk on a connected **FastAPI** app.
- Extraction of text, tables and images along with chunking done using **Unstructured**.
- Trained a **MobileNet-v2** neural network to seperate random images from graphs, so that their data be included in the **Chroma** vector store.

Matrixly, *Artificial Intelligence Intern* | Remote *February 2024 - April 2024*

- Fine-tuned **Llama 2 (7B)** on a construction dataset using **Unsloth**.
- Set-up RAG system using **AWS Bedrock** and its AI Foundation Models to streamline the company's deployment process.

Ransh Innovations Private Limited, *Machine Learning Intern* | Remote *December 2023 - February 2024*

- Researched on **CLIP**, **CLIPSeg** and **YOLOv5** to develop a Computer Vision + NLP model that retrieves an object within a video using text prompts.
- Performed comparison research on open-source models like **Zephyr 7B Alpha** and **Mistral-7B-v0.1** to develop RAG pipelines for NCERT textbooks using **LangChain**.
- Built a news-aggregator app that utilizes **Chain-of-thought** prompting to perform various tasks including NER and sentence-similarity to finally aggregate same content and provide a summary for all news.

Geek Room, *Co-Founder* | Delhi, India *April 2023 - Present*

- Created one of the largest coding communities in Delhi for college students called Geek Room.
- Created technical societies in various colleges which improved their coding culture and helped students.
- Conducted Delhi NCR's largest hackathon - 'Code Kshetra' as its lead organizer.

Education

B.Tech in Information Technology, *Maharaja Surajmal Institute of Technology*

Research papers : Mining Frequent Itemsets with Fuzzy Taxonomic Structures for Cybercrime Investigations (Research and Applications Towards Mathematics and Computer Science Vol. 2)
Achievements: Mentor @ Avinya'24 NSUT hackathon, SRM Builds 4.0 | Winner @ HackMAIT, HackBPIT, PROJEXON BVCOE
Courses: Supervised Machine Learning: Regression and Classification | Neural Networks and Deep Learning | Deep Learning and Transformers | Working with LLMs | Generative AI with LLMs | Reinforement Learning using Unity-ML-Agents | Blockchain using Solidity and Ethereum
Positions of Responsibility: Beta Microsoft Learn Student Ambassador

Skills

Programming Python, Git, Scripting (Bash), HTML, CSS, Javascript, Solidity, C/C++ (DSA)
Software Tensorflow, Pytorch, Docker, OpenCV, Flask, FastAPI

Projects

Dish Knowledge Graph

A dish hierarchy knowledge graph for thousands of dishes, Company Assignment

- Created a **knowledge graph** depicting thousands of dishes along with their categorical hierarchy for **Zomato**.
- Prompted **Gemini Pro** and used IIIT Delhi's CulinaryDB dataset.
- **Cypher** queries and **Neo4j** were used to create the knowledge graph database.
- Users were allowed to add a new category and re-structure the graph through **function-calling**.

Summarizer Falcon

Large language model to summarize paragraphs, Personal Project

- Fine-tuned **Falcon (7B)** LLM from Hugging Face Hub using the **QLoRA** technique.
- Utilized various tools from **Transformers** such as AutoTokenizers and BitsandBytes to clean the data.
- **PEFT** tools were used to apply QLoRA.
- The fine-tuning was followed by Reinforcement Learning from Human Feedback (**RLHF**) using **PPO Trainer** so that the LLM only generates summaries in compliance with human's choices.
- Deployed the project both on **Streamlit** and **Chainlit** frameworks.

Assistive Vision CaptionBot

Model to make accessibility & communication easier, Course project

- Trained **LSTM** networks through **TensorFlow** and **Keras** tools on visual and caption data to create a model that generates captions for images and reads them out.
- Pre-processed the caption data using GloVe embeddings and AutoTokenizer.
- Used the gTTs library to read-out the captions as they get produced.
- Connected the captioning model to a front-end through use of **Flask** & Jinja text.