Abhay Thakur

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Summary

I am a dedicated and passionate professional with a strong background in natural language processing (NLP) and large language models (LLMs). My work encompasses extensive experience and research in retrieval-augmented generation (RAG), focusing on optimizing information retrieval and synthesis using advanced AI models. I have developed and implemented solutions that leverage LLMs to create sophisticated applications, enhancing user experiences and data interactions. My projects reflect my commitment to pushing the boundaries of generative AI and contributing to state-of-the-art advancements in the field.

Education

National Institute of Technology Hamirpur — Himachal Pradesh

Bachelor of Technology in Engineering Physics, Minor in Artificial Neural Networks — *Nov 2022 – July 2026*

Experience

Machine Learning Intern — April 2024 – May 2024

Prasunet Company — *Remote*

- Developed a linear regression model to predict house prices using advanced feature engineering, handling missing data and outliers, and evaluating performance using R^2 metrics.
- Implemented K-means clustering for customer segmentation based on age, gender, and income, deriving actionable insights for targeted strategies.
- Applied various machine learning techniques, including feature selection, data preprocessing, and dimensionality reduction (PCA), to improve model efficiency and interpretability.

Projects

Text to SQL | *Python, Google Gemini model, SQLite* — Oct 2024 – Nov 2024

- Developed an AI-powered tool to convert natural language into SQL queries, simplifying database access.
- Implemented the solution using the Google Gemini model, enabling non-technical users to retrieve data seamlessly.
- Built a user-friendly interface that generates SQL queries from plain English input and returns the data.
- Enhanced data accessibility and usability by applying advanced NLP techniques and ensuring robust performance.
- Deployed the model, showcasing intuitive database interaction without coding requirements. Future enhancements include refining query optimization and exploring further integration with other databases.

Research Paper Reading Tool | *Python, OpenAI, LangChain, Streamlit* — Sept 2024 – Oct 2024

- Developed an innovative tool for streamlined research paper analysis, aiding researchers, students, and professionals.
- Leveraged OpenAI, LangChain, tools, and agents to enable users to query academic papers from sources like Arxiv and Wikipedia.
- Provided concise, accurate answers in seconds and displayed results on an interactive Streamlit web interface.
- Optimized response time using agents and tools, enhancing the efficiency of academic content exploration..
- Eliminated the need for manual reading through extensive research papers, improving user productivity.

AI-Powered Chatbot System | *Python, OpenAI, LangChain, FastAPI, Uvicorn, Streamlit* — Aug 2024 – Sept 2024

- Developed an innovative AI-powered chatbot system capable of generating concise 100-word essays and kid-friendly poems based on user-provided topics
- Integrated OpenAI and LangChain for content generation, combined with FastAPI and Uvicorn for efficient backend processing.

Created an interactive and user-friendly webpage using Streamlit for seamless user interaction. Blended practical AI applications with creative content generation to cater to both academic and playful needs.

Enhanced project management and deployment skills by building an end-to-end solution that supports educational and creative content creation.

Plans for future iterations include expanding content capabilities and incorporating user customization features.

MCQ Generator | *Python, OpenAI, LangChain, Streamlit* Aug 2024 – Sept 2024

Successfully developed and deployed an end-to-end generative AI project that generates customized multiple-choice questions from user input in PDF or .txt formats.

Enabled users to specify parameters such as the number of questions, subject, and question complexity for tailored output

Gained valuable insights into the power of OpenAI's LLM and the flexibility of LangChain for creating dynamic AI solutions.

Implemented an intuitive user interface with Streamlit, ensuring a seamless transition from development to deployment.

Key takeaways include leveraging LLMs for educational content generation and building efficient, modular chains with LangChain

Certifications

Data Science and Ai certifications for Managers and Leaders, issued by IBM
Certificate ID: 4778946-64f3-4121-a6d5-4e8fd0f9e54e
Issued Date: 23/10/2024

Deep Learning Fundamentals, issued by IBM
Certificate ID: 550875fa65bf46bea3ac55b88a3ff6be
Issued Date: 20/9/2024

Machine Learning with Python, issued by IBM
Certificate ID: af93145bfde84335a22c4c76ea3de66e
Issued Date: 20/9/2024

Statistics and Machine Learning for Data Science, issued by LearnBay
Certificate ID: 245r0ny
Issued Date: 7/2/2024

Technical Skills

Languages: Python, C++, HTML/CSS
Tools: OpenAI API, Hugging Face, Flask, Gradio,Git, GitHub, Visual Studio Code, Google Colab, Anaconda, Jupyter Notebook,streamlit,FastAPI,Uvicorn
Frameworks: TensorFlow, PyTorch, Keras, Scikit-learn,Haystack,Llamaindex,Langchain
Libraries: pandas, NumPy, Matplotlib, Seaborn