Ashish Upadhyay

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EDUCATION

Graphic Era Deemed to be University Dehradun, UK
Bachelor of Technology 2020 - 2024
Computer Science and Technology (ML&AI)
CGPA: 8.88

EXPERIENCE

Research at Graphic Era Deemed to be University Dehradun, UK
Research Intern Jun 2023 – Aug 2023

- Worked on research for brain seizure detection using transformer learning on a time series data set for 21 patients.
- The data was segmented and fed to the transformer, which then performed with an accuracy of 98%.
- Gained knowledge about transformers and how to work with large time series data.

PROJECTS

Text-to-Image Generation with Multi-Model Analysis Oct 2024

- Implemented a pipeline using 3 different models, namely, stable diffusion, CLIP analysis, and SAM2 image segmentation. A flask backend and streamlit frontend were used to manage the logic and the output respectively.
- Stable Diffusion generates an image based on the prompt given by the user along with 4 additional parameters.
- Basic and advanced CLIP analysis are done on the generated image to provide confidence scores for the keywords.
- SAM2 is then used to segment the generated image with tuned hyperparameters to produce masks and extract Regions of Interest (ROI) from it along with their coordinates.
- Error handling with model-specific errors for all the 3 models is done to provide smooth termination.
- Test suites for 3 cases, i.e., core functionality, endpoint functionality, and suitable error generation, were developed.

LLM based query-response system Sept 2024

- Developed a full-stack web application using Flask and Streamlit to handle web scraping and query processing, integrating data from up to 50 websites.
- Advanced web scraping techniques were used to extract and process text content. Retrieval-Augmented Generation facilitate extraction of context relevant content. Managed upto 1500 text chunk embeddings.
- Utilized FAISS for efficient text embedding and retrieval, managing embeddings for 1000+ text chunks and enabling rapid retrieval of the most relevant content.
- Achieved a speedup of over 85% after the implementation of multithreading for concurrent scraping and embedding.
- Integrated Gemini API for context-aware responses, leveraging LLM capabilities to generate accurate and contextually relevant answers based on user queries and 20 most relevant scraped text chunks.
- Provided a seamless user experience with a Streamlit frontend and Flask backend, handling requests and responses in under 90 seconds for complex queries and multiple site extractions.

Handwritten character recognition using TensorFlow and tkinter Jul 2023

- Created a deep learning model using TensorFlow to predict handwritten alphabetical characters from EMNIST with an accuracy of 92%.
- The neural network consisted of 6 different layers. Successfully integrated the model with the image processing techniques using OpenCV and utilized TKinter for real-time user input.

ACHIEVEMENTS & CERTIFICATIONS

Achievements: Participated in Level 1 and Level 1.1: E. Commerce and Tech quiz of Flipkart GRiD 4.0 - Software Development Challenge organized by Flipkart.
Certifications: AI-900 Microsoft Azure AI Fundamentals, CLF-C01 AWS Cloud Practitioner

ADDITIONAL INFORMATION

Languages and frameworks: C, C++, Python, TensorFlow, Flask, Streamlit
Operating Systems: Windows, Linux
Software: MS-Office Suite, Adobe Photoshop, Sony Vegas Pro
Hobbies: Sketching, Solving Puzzles, Listening to music