Lakshya Paliwal

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Education

Manipal University Jaipur *Aug 2023 - Jun 2027 (Expected)*
B.Tech in Computer Science and Engineering CGPA: 8.90/10
Relevant Coursework: Machine Learning, Deep Learning, Data Structures and Algorithms, Data Science, Statistics and Probability, Computer Organization and Architecture, Operating System, Relational Database Management System, Object-Oriented Programming

Skills

Programming Languages: Python, C, C++, Java, JavaScript, SQL
Technologies/Frameworks: FastAPI, Flask, Docker, MLflow, ZenML, Tensorflow, Keras, Hugging Face Transformers, Scikit-learn, LangGraph, LangChain, Jupyter Notebook, Colab, Git, GitHub, VS Code
Domains & Expertise: Machine Learning (ML), Deep Learning (DL), Natural Language Processing (NLP), Computer Vision (CV), Data Analysis, Front-End Development

Experience

Chronocept *Feb 2025*
Annotator

- Contributed to **Chronocept**, an AI research initiative focused on enhancing machine temporal reasoning by integrating **temporal validity** into natural language processing (NLP) systems. This enables AI models to reason about time, track event timelines, and distinguish between past, present, and future occurrences with greater accuracy.
- **Annotated 250+ text samples** using a structured three-step process:
  - **Text Segmentation:** Extracted grammatically and semantically meaningful subtexts while preserving temporal integrity.
  - **Temporal Axis Classification:** Categorized subtexts into predefined temporal axes (e.g., *Main Axis, Intention Axis, Hypothetical Axis*) to structure event timelines.
  - **Temporal Validity Modeling:** Assigned probability distributions to capture the validity of events over time, aiding machine understanding of temporal sequences.
- Contributed to the development of the Chronocept Dataset, a benchmark dataset designed to improve AI-driven temporal reasoning in NLP models.

Projects

- **SignSync :** AI-powered learning application designed to bridge communication gaps for the Deaf and Mute community. Using gesture detection and NLP techniques to convert American Sign Language gestures into human-readable text.
  - Used OpenCV and Mediapipe with custom training to detect specific hand gestures.
  - Integrated a Large Language Model (LLM) to convert detected ASL gestures into meaningful, grammatically correct human language.
  - Developed a FastAPI backend to enable seamless interaction between gesture detection and text transformation.
  - SignSync.
  - **Technologies:** Mediapipe, OpenCV, FastAPI, Tensorflow, groqcloud
- **Woof:**
  - Users can report stray dogs with GPS auto-detection, photo uploads, and an AI model that assesses the dog's health condition (Healthy, Injured, Critical).
  - Implemented a DBSCAN algorithm with severity-based weighting and time decay to identify high-risk areas and display them using Folium Map.
  - Retrieval-Augmented Generation (RAG) model to provide accurate responses about adoption procedures and policies, available dogs, medical history, streamlining the adoption process.
  - Woof GitHub.
  - **Technologies:** Scikit-learn, Folium, FastAPI, groqcloud, LangChain
- **Car-Park-In-Go:**
  - Built a user-friendly web interface to display real-time parking availability, ensuring seamless user interaction. Utilized Python with Flask for backend development.
  - Each frame is processed to extract regions corresponding to predefined parking spaces. The CNN model classifies these regions as either "Occupied" or "Free".
  - Provides an API endpoint to get the current count of free and occupied spaces.
  - Car-Park-In-Go GitHub.
  - **Technologies:** Python, Tensorflow/Keras, Flask, OpenCV, Pickle, Numpy.
- **Wanderwise-AI-Travel-Planner :**
  - This application helps users generate personalized travel itineraries based on their city of choice, interests, and available time, while integrating real-time weather information and Google Maps links.
  - Multi-Agent AI System: Implemented multiple AI agents for different tasks, ensuring an efficient travel planning process.
  - State Graph Workflow: Designed a structured itinerary-building process using LangGraph and custom state management.
  - Wanderwise-AI-Travel-Planner GitHub.

- **Technologies:** LangChain, LangGraph, Python, Weather API, Gradio.

ACHIEVEMENTS AND CERTIFICATIONS

- **Dean's List:** Recognized on the Dean's List in the 2nd and 3rd semester for academic excellence.
- **Code-E-Manipal Hackathon:** Secured a Top 15 Position out of 250+ participating teams.
- **SIH 2024:** Internal Round Smart India Hackathon Qualifier.
- Deep learning Specialization: Deep Learning Specialization through DeepLearning.AI and Stanford University under the guidance of Andrew Ng.
- Machine Learning Specialization: Machine Learning Specialization through DeepLearning.AI and Stanford University under the guidance of Andrew Ng.