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 project enhancing machine **temporal reasoning** in NLP by integrating **temporal validity**, enabling models to better track events across time.
- **Annotated 250+ text samples** using a 3-step process:
  - **Text Segmentation**: Split inputs into grammatically and semantically valid subtexts while preserving temporal coherence.
  - **Temporal Axis Classification**: Assigned subtexts to axes like *Main, Intention*, or *Hypothetical* to map event timelines.
  - **Temporal Validity Modeling**: Applied probability distributions to represent the time span of each event's relevance.
- Contributed to the public release of the Chronocept Dataset, a benchmark for AI temporal reasoning in NLP.

Projects

- **Kisaan Saathi:** AI-powered Farmer Dashboard designed to empower Indian farmers through real-time intelligence, disease detection, and smart agricultural tools.
  - Used a custom-trained Xception model to detect 38 types of crop diseases, with an LLM backend providing cause, prevention, and treatment insights.
  - Developed an ML-powered Water Footprint Calculator using a Random Forest Regressor for water requirement estimation.
  - Integrated a multi-agent RAG-based Farmer AI Assistant using ChromaDB and LangChain for context-aware farming guidance and mental health support.
  - Enabled real-time market analysis through agri-market APIs and DBSCAN clustering for disease hotspot mapping to aid land inspection prioritization.
  - Kisaan Saathi.
  - **Technologies:** FastAPI, TensorFlow, Scikit-learn, LangChain, LangGraph, ChromaDB, Groq LLM, Gemini API, TailwindCSS, Chart.js

- **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

- **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.
  - **Technologies:** Python, Tensorflow/Keras, Flask, OpenCV, Pickle, Numpy.

Achievements

- **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.