Samvedya **Jedhedeshmukh**

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Education

Pimpri Chinchwad College of Engineering (PCCOE) *Pune, India*

B.E. in Computer Engineering with Honors - 8.91 CGPA *June 2019 - July 2023*

- Graduated Bachelor of Engineering in Computer Engineering along with a Honors in Artificial Intelligence and Machine Learning.

Experience

Whiz.AI *Pune, India*

Software Engineer *October 2023 - Present*

- Led the development and fine-tuning of Large Language Models (LLMs) for NLP tasks, including data creation, NLQ variation generation, and JSON output structuring, employing prompting strategies to enhance Natural Language Understanding (NLU).
- Implemented various fine-tuning techniques , driving model performance through hyperparameter optimization and testing protocols.
- Developed an Embedding Visualization Tool using PCA for 3D visualization of word embeddings, facilitating model accuracy improvements.
- Spearheaded the setup of a DVC (Data Version Control) pipeline for efficient data and model versioning & automating model deployment.
- Engineered a GPT-4 streaming solution for generating narrative summaries from data, integrated via ActiveMQ for improved data interpretation.
- Worked on the development and management of a time-series forecasting prediction pipeline using Apache Spark, incorporating algorithms like XGBRegressor and Greykite, and ensured the operational integrity and scheduling of Causal Analysis jobs through ActiveMQ & Celery.
- Developed Paraphrase Tool with LLMs for regression testing, enhancing NLQ/KBQ flexibility.

Whiz.AI *Pune, India*

Software Intern *March 2023 - October 2023*

- Developed and integrated applications utilizing open-source LLMs, LangChain, RAG technique, Word Embedding Models, and Vector Databases for Intent Classification, NER, Automatic EDA, and application performance enhancement.
- Designed and a GraphGPT-based POC for extracting entities and relationships into Neo4J database, leveraging the OpenAI GPT API.
- Enhanced Text-To-Speech (TTS) technologies (SpeechT5, FastSpeech2) with advanced parallelization and preprocessing, tailored outputs for customer requirements.
- Conducted scalability and efficiency benchmarks using JMeter, employed modern development practices with Flask, Docker, Kubernetes, and Jenkins for deployment.

Projects

Innovative Applications of Large Language Models for Data Analysis and Interaction *Whiz.AI*

- Developed a Proof of Concept (POC) for automating the generation of insights through causal analysis using Langchain and DoWhy Library, aimed at enhancing data analysis techniques with large language models (LLMs).
- Created a chatbot powered by LLM-based Retrieval Augmented Generation to improve accessibility and user engagement with user manuals and confluence pages, demonstrating a practical application of LLMs in enhancing information retrieval and user experience.
- Developed an application that utilizes Natural Language Processing (NLP) to convert natural language text into SQL queries for database interaction, highlighting the potential of NLP in simplifying and streamlining database management tasks.

Plant Disease Detection System *PCCOE*

- Developed a robust plant disease detection model leveraging a variety of Machine Learning techniques such as Decision Trees, SVM, KNN, Random Forest, Ensemble Learning, Neural Networks, and Transfer Learning, including the implementation of ResNet50 architecture for optimal accuracy.
- Focused on extensive Hyper-parameter Tuning and combining multiple ML approaches to ensure the model delivers accurate and efficient solutions in plant pathology.

Book Recommendation System *PCCOE*

- Developed a Book Recommendation System utilizing Collaborative Filtering and Item-Item Similarity Matrix, applying Python libraries (NumPy, Pandas, Matplotlib, Seaborn, SciKit-Learn) for comprehensive Data Processing and Analysis. Enhanced user experience by implementing Data Preprocessing and leveraging DictVectorizer for User-Based Vectors creation.
- Achieved personalized book recommendations through the calculation of Pairwise Similarity between books using Cosine Similarity, demonstrating advanced skills in Data Manipulation, Machine Learning Algorithms, and Collaborative Filtering Techniques.

Skills

Python, Java, C++, SQL, PostgreSQL, PGVector, Docker, Kubernetes, ActiveMQ, Flask, HTML, CSS, JavaScript, PHP, Transformers, LangChain, LLamaIndex, Apache Spark