Sneha Sree Vavilapalli

4132102599 | sneha.vavilapalli@gmail.com | sneha-sree-v/

Skills and Expertise

Languages: Python, C++, SQL, PySpark, Matlab, C
Tools/ Technologies: Git, Docker, AWS, OpenAI, Azure, Pytorch, Databricks, Langchain
LLMs/ VLMs: CLIP, T5, BERT series, Ollama, GPT, InternVL series, LLaVA-CoT

Experience

Graduate Student Researcher, Microsoft Jan 2025 – Present
- Developed a general agent judge agent to evaluate agentic decision-making by analyzing intermediate and final outputs
- Designed an automated evaluation system while ensuring human alignment on 3+ datasets such as WorkBench
- Implemented a three-step evaluation strategy using reasoning-based checklist, RAG and multimodal analysis
- Evaluated performance using confusion matrix across 3+ domains such as Coding, Web and Tools

AI Engineer Intern, DocketAI June 2024 – Aug 2024
- Implemented a framework that performs semantic similarity on previously answered questions in the database
- Synthesized 8+ datasets of 500+ rows to evaluate off the shelf and fine-tuned SetFit-T5 and BERT based methods
- Engineered prompt based techniques to enhance the accuracy and reliability of question deduplication in the system
- Delivered a service that reduces the query processing time of previously answered queries& achieve 95% precision

Data Scientist, Fractal Jul 2021 – Aug 2023
- Built the optimum shipment for Load Runner project in Databricks using Python and visualised the results in PowerBI
- Achieved 10% increase in Volume Fill Rate in trucks at client's warehouse compared to default Stock Transport Order
- Resulted in Kaizen star award nomination and attracted 4+ clients to customise this tool according to their requirement
- Contributed to the Output Based Command Center full stack web application wearing multiple hats through the project
- Aided the Regeneron team to identify the patient profile likely to take Eylea as first line drug using machine learning

Projects

Multi-modal IR System with VLMs by Incorporating External Knowledge Oct 2024 – Present
- Enhanced context understanding for VWSD task by retrieving the gold image corresponding to an ambiguous text query
- Used WordNet& ChatGPT for glossary definition generation with CoT, to improve the context understanding of text query
- Employed CLIP and InternVL models to generate the image, text and definition embeddings for Bayesian inference
- Attained 10% accuracy and 7% MRR improvement with InternVL & CoT, than the baseline results using CLIP model

Classifier Guided Style Constrained Generation Feb 2024 – May 2024
- Built a method capable of generating text in a given style using few shot exemplars leveraging SetFit and FUDGE
- Trained a classifier with enhanced few-shot samples, refining the FUDGE approach, which trains on the entire dataset
- Leveraged T5 based formality classifier model to modify the logits of the T5 decoder to generate the text in a given style
- Observed that our improved method achieves within a 5% error range of the original FUDGE method across 5+ metrics

LLM Agent for data analysis agent using LangChain and OpenAI Dec 2024
- Implemented an LLM agent system using GPT-4 to generate Python& SQL code for data analysis, to enable users insights
- Integrated an LLM-based SQL query and Python validation system, ensuring accuracy and reducing failure rates
- Developed an iterative error-handling mechanism that detects failures reducing debugging iterations by 20%
- Connected APIs for weather, air quality, and Airbnb pricing to enrich data analysis and insights for given queries

Reinforcement Learning algorithms analysis in discrete and continuous domains Dec 2024
- Developed and optimized (Monte Carlo Tree Search, REINFORCE with baseline, Actor-Critic) using OpenAI Gym
- Utilized neural networks for policy and value function approximation, fine-tuning hyperparameters to enhance learning
- Observed that above polices under perform slightly compared to Value& Policy iterations algorithms in discrete domains

Education

University of Massachusetts, Amherst *Sep 2023 - May 2025*
Master of Science in Computer Science - GPA: 3.92/4.0

Indian Institute of Technology, Kharagpur *July 2017 - Apr 2021*
Bachelor of Technology in Mechanical Engineering - GPA: 8.44/10.00