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TRISHA MANDAL

EDUCATION

University of Southern California, *Los Angeles, CA* GPA: 3.7
Master of Science (MS) in Computer Science, Specialization: Artificial Intelligence Jan 2022-May 2023

Pennsylvania State University, *State College, PA* GPA: 3.5
Bachelor of Science (BS) in Computer Science, Minor in Mathematics Aug 2017-May 2021

SKILLS

- **Programming Languages**: Python, C/C++, Java, SQL, HTML, CSS, Javascript, MATLAB, Racket, Verilog
- **Tools and Frameworks**: TensorFlow, PyTorch, LangChain, NetworkX, Scrapy, Pandas, NumPy, Scikit-learn, Keras, SpaCy, NLTK, Pytest, Matplotlib, Gensim, CUDA, HuggingFace, Java Spring, Git, Jira, Linux, Power BI, MySQL, OpenAI, Pinecone, Redis, MongoDB, AWS OpenSearch, JetBrains IDEs, Jupyter Notebook, Visual Studio Code, Docker, Google Cloud Platform
- **Industry Knowledge**: Machine Learning, Data Science, Natural Language Processing, Large Language Models, Deep Learning, Statistics, Data Structures and Algorithms, Software Engineering, MLOps, LLMOps
- **Soft Skills**: Technical Writing, Verbal and Written Communication skills, Leadership, Collaboration, Detail-Oriented

EXPERIENCE

Griptape, Inc | Software Engineer | Los Angeles, CA Jul 2023-Present
- Implementing vector store database drivers for MongoDB, Redis and OpenSearch with read/write and search latencies below 1.2s, to efficiently store word embeddings from machine learning models and perform vector search similarity.
- Developing tools for Large Language Models (LLMs) for seamless integration with Google services such as Drive, Docs, Sheets, and Gmail. Functionalities include upload/download, listing, sharing, and, real-time editing of docs and sheets.
- Conducting comprehensive testing (unit and integration) with 100% code coverage, to ensure tool robustness and flawlessness. Additionally, curating detailed documentation for these tools in alignment with mkdocs standards.
- Integrating language model APIs with Griptape agents, which facilitates the automated generation and optimization of natural language prompts to improve efficiency of prompt engineering tasks like summarization, extraction, etc.
- Contributed to over 15 pull requests in the Griptape open-source framework and continuing to actively contribute.

USC Marshall School of Business | Research Assistant | Los Angeles, CA Oct 2022-May 2023
- Designed and led NLP research that performs sentiment analysis and topic modeling on customer reviews using advanced deep learning models and techniques, resulting in the extraction of valuable insights for market research.
- Contributed to a study comparing the performance of multimodal and unimodal models by building a multitask text convoluted neural network (CNN) that outperformed separate CNNs for each task.
- Executed fine-tuning of GPT-3 model to identify synonym phrases for key topics in fashion and technology interviews.

Lexalytics, Inc. | Software Engineer Intern | Amherst, MA Jun 2020-Aug 2020
- Rectified anomalies in the output for Machine Learning model used for converting PDF documents to JSON output by refactoring 70 lines of technical debt for the purpose of Natural Language Processing.
- Leveraged Docker containers to increase performance and portability of applications.

Lexalytics, Inc. | Software Engineer Intern | Boston, MA Jun 2019-Aug 2019
- Developed REST API documentation on the web using Java Spring Framework and Swagger UI/UX properties.
- Increased data graph efficiency on data analytics platform by 7% through unit testing with Python programming.
- Performed Named Entity Extraction for over 800 financial documents for NLP and data analytics prospects.

PROJECTS

Long-Text Processing Using BELT- *PyTorch, NumPy, HuggingFace* Nov 2023
- Developed DataFormatter class to standardize and structure public datasets for LLM training using BELT (BERT for Longer Texts), enabling efficient processing of long-text datasets exceeding transformer token limits for NLP tasks.

Adapting Multimodal Models to Unimodal Tasks by Ensembling FLAVA with ALBERT - *TensorFlow* Apr 2023
- Performed a research study to adapt multimodal models to perform unimodal tasks and improve visual question answering (VQA) results by replacing baseline text encoder BERT with ALBERT, GPT-2 and RoBERTa. Executed training and testing on various VQA/QA Hugging Face datasets.

Knowledge Graph and Fusion Based Transformer Approach for Multi-Hop Question Answering - *PyTorch* Nov 2022
- Conducted academic research paper on knowledge graph and fusion-based transformer approaches for multi-hop question answering to replace the linear-sum baseline model with complex fusion techniques for better performance on QA datasets.