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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, Git, Jira, Linux, Power BI, MySQL, OpenAI, Pinecone, Redis, MongoDB, AWS OpenSearch, Jupyter Notebook, Apache Airflow, FastAPI, 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, Statistics
- **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 to aid Retrieval-augmented generation (RAG) workflows.
- 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.
- Building dynamic, interactive chatbots using Griptape's agent, rulesets and LLM tools to innovate in domains like storytelling, personal work assistance, customer support and tailored recommendation systems.
- Contributed to over 25 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 generated an accuracy above 90% and 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 improve portability of applications and Google Kubernetes Engine for model deployment.

Lexalytics, Inc. | Software Engineer Intern | Boston, MA Jun 2019-Aug 2019
- Developed HTTP REST API's for Lexalytics data analytics platform and their documentation using Java Spring Framework and Swagger UI/UX properties and improved the platform's results by 6% through unit testing.
- Performed Named Entity Extraction using spaCy for over 800 financial documents for NLP and data analytics prospects.

PROJECTS

Long-Text Processing Using BELT - *PyTorch, NumPy, HuggingFace* Nov 2023
- Engineered 'DataFormatter' class to standardize and structure public datasets to train BELT (BERT for Longer Texts) model on them for classification tasks, enabling efficient processing of long-text datasets exceeding transformer token limits. Automated this ETL pipeline with a DAG workflow in Apache Airflow for streamlined data handling.

Adapting Multimodal Models to Unimodal Tasks by Ensembling FLAVA with ALBERT - *TensorFlow* Apr 2023
- Performed a research study to adapt multimodal model: FLAVA (Foundational Language and Vision Alignment model by Facebook) 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.