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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
- **Tools and Frameworks**: TensorFlow, PyTorch, LangChain, Pandas, NumPy, Scikit-learn, Keras, SpaCy, Pytest, Matplotlib, CUDA, Scrapy, HuggingFace, Git, Jira, Linux, Power BI, MySQL, OpenAI, Pinecone, Redis, MongoDB, AWS OpenSearch, Apache Airflow, FastAPI, Docker, Google Cloud Platform
- **Industry Knowledge**: Machine Learning, Deep Learning, NLP, Large Language Models, Computer Vision

EXPERIENCE

Griptape, Inc | Software Engineer | Los Angeles, CA Jul 2023-Dec 2023
- Engineered **vector store database drivers** for MongoDB, Redis, and OpenSearch achieving latencies below **1.0s** for vector storage and vector similarity search, enhancing **RAG** workflows.
- Developed integration tools for **Large Language Models** with Google Workspace, enabling file management and real-time collaboration on Drive, Docs, Sheets, and Gmail.
- Conducted thorough unit and integration testing for **100% code coverage** and created mkdocs-standard documentation.
- Designed industry-specific, dynamic chatbots leveraging Griptape's LLM tools and rulesets, and contributed to over **25 pull requests** within the Griptape open-source framework.
- Technologies Used: Python, Pytest, NumPy, Google OAuth 2.0, OpenAI, Git

USC Marshall School of Business | Research Assistant | Los Angeles, CA Oct 2022-May 2023
- Spearheaded NLP research using **text-based multi-task CNN** built from scratch for customer review analysis, achieving over **90% accuracy** in sentiment analysis and outperforming separate CNNs for each task.
- Performed exploratory data analysis, topic modelling and keyword matching using Pandas and Matplotlib visualization, LDA analysis and GPT-3 respectively to distill customer sentiment and market trends from **8-million-entry** datasets.
- Technologies Used: Python, TensorFlow, Keras, NumPy, NLTK, Regex, GPT-3, Pandas, Matplotlib

Lexalytics, Inc. | Software Engineer Intern | Amherst, MA Jun 2020-Aug 2020
- Rectified anomalies in output for automated workflow built to convert PDFs to JSON output used by a machine learning model by performing exploratory data analysis, data preprocessing and refactoring **70 lines** of technical debt.
- Leveraged Docker containers to improve portability of applications and Google Kubernetes Engine for model deployment.
- Technologies Used: Python, Java, Pandas, Docker, Google Kubernetes

Lexalytics, Inc. | Software Engineer Intern | Boston, MA Jun 2019-Aug 2019
- Programmed **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.
- Technologies Used: Java, Python, SpaCy, SQL, Swagger UI

PROJECTS

Refining Mistral 7B for Deployment on Ollama - *PyTorch, NumPy, HuggingFace* Jan 2024
- Fine-tuned the **Mistral 7B** model on the Gath_baize dataset using **LoRa** for enhanced adaptability, and efficiently converted it into **GGUF** format for seamless deployment on the **Ollama** platform, boosting performance and user experience.

Optimization of Video ML Pipeline - *PyTorch, TensorRT, NumPy, CUDA, Docker* Jan 2024
- Optimized and dockerized a **video ML pipeline** for manufacturing safety, involving acceleration of objection detection, tracking, and background blurring in videos using the **YOLOX** model by processing frames in parallel using **multi-GPU processing**.

Adapting Multimodal Models to Unimodal Tasks by Ensembling FLAVA with ALBERT - *TensorFlow* Apr 2023
- Performed an ablation study to adapt multimodal model: FLAVA (Foundational Language and Vision Alignment model by Facebook) to execute unimodal question-answering and vision classification tasks. Conducted experiments to increase multimodal accuracy on QA Hugging Face datasets by replacing baseline text encoder **BERT** with **ALBERT**, **GPT-2** and **DistilBert** and finetuning the multimodal with more datasets.