

## TRISHA MANDAL

### EDUCATION

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**University of Southern California, Los Angeles, CA**  
**Master of Science in Computer Science, Specialization: Artificial Intelligence**

GPA: 3.7  
Jan 2022-May 2023

**Pennsylvania State University, State College, PA**  
**Bachelor of Science (BS) in Computer Science, Minor in Mathematics**

GPA: 3.5  
Aug 2017-May 2021

### SKILLS

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- **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, Seaborn, SpaCy, NLTK, Pytest, Matplotlib, Gensim, CUDA, 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
- **Soft Skills:** Technical Writing, Verbal and Written Communication skills, Leadership, Collaboration, Detail-Oriented

### EXPERIENCE

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**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 tooling for Large Language Models (LLMs) to strengthen integration with Google services such as Drive, Docs, Sheets, and Gmail. These tools incorporate functionalities for listing, uploading, downloading, sharing files, as well as real-time editing of documents 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. This ensures real-time response adaptation and improving the efficiency of prompt engineering tasks like summarization, extraction, and completion.

**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 700 financial documents for NLP and data analytics prospects.

### PROJECTS

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**Adapting Multimodal Models to Unimodal Tasks by Ensembling FLAVA with ALBERT**

- Performed a research study to adapt multimodal models to perform unimodal tasks and improve the visual question answering (VQA) results by replacing baseline text encoder BERT with ALBERT and testing on various VQA/QA Hugging Face datasets.

**Knowledge Graph and Fusion Based Transformer Approach for Multi-Hop Question Answering**

- Conducted semester-long team academic research paper on knowledge graphs and fusion-based transformer approaches for multi-hop question answering to replace the simple linear-sum baseline model with complex fusion techniques for better performance.

**LangChain FAQ Matcher**

- Developed an interactive Python script with LangChain OpenAI embeddings and Faiss vector database, utilizing PyQt5 for GUI. The script matches queries with relevant FAQs in PDFs and suggests potential follow-up questions.