Fardeen Ali Mohammed

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**Education**

University of North Texas | Denton, TX

Expected: May 2025

Master of Science – Information Science, Concentration: Information Systems

GPA: 3.9/4

Courses: Big Data, Data Analytics, Machine Learning, Data Visualization, Data Analysis, Google Cloud.

**Skills**

AI Stack: Natural Language Processing, Machine Learning, Neural Networks (RNN, Seq2seq, LSTM), Retrieval Augment Generation(RAG), Transformers (BERT, OpenAI, Mistral), Fine Tuning, Prompt Engineering

Programming /Frameworks: Python, SQL, HTML/CSS, JavaScript, NumPy, Pandas, Scikit-learn, Matplotlib, Seaborn, TensorFlow, LangChain, LlamaIndex, Hugging Face, Scrapy, NLTK

Cloud: AWS (IAM, EC2, S3, Snowflake), GCP (BigQuery, Dataproc, HDFS, Looker, Hive, Spark), **Azure**

**Personal Experience**

Tweet Emotion Recognition

April 2025

• Built an emotion classification model using a Bidirectional LSTM architecture to predict emotional labels from social media tweets.

• Processed and prepped the dair-ai/emotion dataset with under sampling, data cleaning, and embedding-based input pipelines for robust model training on **complex data sets**.

• Achieved ~90% validation accuracy and validated results with confusion matrix and performance visualization for multi-class emotion prediction.

**Smart Tutor AI: Virtual Teaching Support**

March 2025

• Developed a RAG-based intelligent tutoring system by automating the Canvas API to extract and structure MOOC platform data, enabling efficient preprocessing for large-scale NLP and dynamic content retrieval.

• Constructed a modular data pipeline using the LlamaIndex framework, parsing diverse file formats and integrating a Chrome vector database with Llama 3.1 Latest LLM to power context-aware response generation.

• Delivered a fully interactive front-end using Streamlit, seamlessly connecting APIs for **collaborative development** to provide real-time, intelligent query resolution, enhancing the virtual learning experience with adaptive and relevant feedback.

**Multi-Modal Summarization and RAG for Scientific Articles**

Feb 2025

• Engineered a multi-modal RAG system using GPT-4o-mini and Mistral, incorporating tool calling mechanisms to dynamically extract and interpret visual data (e.g., graphs, tables) alongside scientific text for enhanced summarization and QA.

• Integrated LangChain with Chrome vector store to manage multi-document and image embeddings and implemented GPT-4o-mini and Mistral LLM for high-precision generation, achieving a 90% improvement in QA and summarization accuracy.

• Conducted rigorous evaluation using BERT Score and G-Eval, validating the model’s effectiveness in combining textual and visual modalities for significantly enhanced knowledge synthesis and user comprehension in a production environment.

**Professional Experience**

Teaching Assistant - Natural Language Processing & Python Programming

Nov 2025 – Present

University of North Texas | Denton, TX

• Instructed 50 students on key NLP and data science techniques, including web scraping, data preprocessing, feature engineering, word embeddings, topic modeling, sentiment analysis, and text classification, **complex data set** handling, transformer architecture and prompt engineering using Python.

• Designed student assignments leveraging ChatGPT to enhance learning and promote AI-assisted problem-solving skills and achieved a 90% student satisfaction score for clarity and relevance, showcasing my communication and collaboration abilities.

• Mentored a final project team of 7 students in developing an MVP on virtual teaching assistant for student query response with Git version control using reliable cutting-edge technology and featuring **educational assessment** in the **higher education** context through an AI in Action workshop, emphasizing teamwork and responsibility.

**Software Engineer Trainee**

Areksoft Technologies | India

Dec 2022 – Jun 2023

• Developed responsive, user-friendly web interfaces using HTML, CSS, Bootstrap, and JavaScript across diverse projects, including leading the creation of the ED Plus webpage and contributing to multiple CRM platforms focused on operations and service quality

• Optimized seamless front-end to back-end functionality in web applications by integrating FastAPI, improving API response times by 30% and reducing development turnaround by 25%.

**Technical Accomplishments:**

• Engaged in **data processing**, **data manipulation**, and **dashboarding** to improve reporting and monitoring capabilities of software products, leveraging **statistical software** for **statistical modeling** and performance testing.

• Supported research efforts through data collection and analysis while addressing **unstructured data** challenges to enhance data quality and insight generation.