Mohammed Tareq Sajjad Ali

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Profile

Graduate Teaching Assistant and Data Analytics Engineering student at George Mason University with strong foundations in machine learning, data engineering, NLP, automation, data analysis, and GenAI systems. Proven ability to deliver production-ready AI and analytics solutions, including multimodal chatbots, real-time dashboards, and sentiment analyzers. Experienced in Python, SQL, Power BI, FAISS, Whisper, Azure OpenAI, and Hugging Face. Adept at mentoring students, supporting faculty research, and translating complex technical concepts into actionable insights across academic and industry settings.

Currently contributing to research and teaching in NLP and AI courses, with a strong emphasis on explainability, ethical AI, and hands-on model deployment. Passionate about bridging academic innovation with real-world impact through scalable data products and applied AI pipelines.

Education

George Mason University, Fairfax, VA — Jan 2024 – Dec 2025
Master of Science in Data Analytics Engineering — CGPA: 3.88 (In Progress)

Jawaharlal Nehru Technological University, Hyderabad, India — Aug 2016 – Sep 2020
Bachelor of Technology in Computer Science and Engineering — CGPA: 7.7 / 10.0

Technical Skills

Interests and Domain: Data Analytics and Visualization, Machine Learning, NLP, Artificial Intelligence, Neural Networks, Computer Vision , CNN
Programming Languages: Python, R, SQL, HTML, CSS, JSON
Business Intelligence: Power BI, Power Apps, Tableau
Cloud & Infrastructure: Azure, AWS, Git, Jupyter Notebook, Google Colab
Databases & ETL: Oracle SQL, MySQL, PostgreSQL, MongoDB, REST APIs, ETL Pipelines
Libraries & Tools: NumPy, Pandas, Scikit-learn, TensorFlow, Keras, PyTorch, XGBoost, LightGBM, Seaborn, Matplotlib, ggplot2, Statsmodels, NLTK, SpaCy, OpenCV, Librosa

Experience

George Mason University – Fairfax, VA
Graduate Teaching Assistant — Aug 2025 – Present

- Supporting two courses: **AIT 626–NLP: Theory and Practice** and **IT 371-Applied AI for IT**, assisting with lectures, lab sessions and grading.
- Guiding student projects involving applied ML, transformer models, and ethical AI implementations.
- Contributing to course material refinement and student engagement strategies.

George Mason University – Fairfax, VA
Graduate Teaching Assistant — Jan 2025 – May 2025

- Assisted in teaching **AIT 526: Introduction to NLP**, covering core concepts in NLP, AI, and ML.
- Led hands-on lab sessions on NLP models, text preprocessing, and model implementation.
- Graded assignments, provided feedback, and supported **270+ students** across the semester.

George Mason University – Fairfax, VA
Graduate Research Volunteer — Sep 2024 – Present

- Participated in academic research initiatives in data science and NLP under Dr.Liao's supervision.
- Supported exploratory tasks, data preparation, and preliminary result analysis.

Mason Recreation Center – Fairfax, VA
Fitness Attendant Sep 2024 – Jan 2025

- Maintained equipment hygiene and gym safety protocols in a high-traffic environment.
- Assisted members with safe equipment usage, boosting satisfaction metrics.
- Logged maintenance requests in Connect2, helping reduce equipment downtime.

AmTech Software Solutions Pvt Ltd – Hyderabad, India
Web Developer May 2021 – Jun 2023

- Designed and developed responsive websites using **HTML, CSS, and JavaScript**.
- Implemented backend modules using **MySQL** for dynamic content and optimized queries.
- Resolved critical performance issues and improved application stability.
- Worked collaboratively with teams to integrate efficient, scalable solutions.

Projects

VoizSense: Voice Emotion and Sentiment Analyzer May 2025
Tools/Technologies: Python, OpenAI Whisper, Hugging Face Transformers, Librosa, Streamlit

- Developed a voice-based analyzer using **OpenAI Whisper** for transcription and **Hugging Face Transformers** for emotion and sentiment classification.
- Extracted vocal tone dynamics by analyzing **paralinguistic features** such as pitch, energy, and tempo via Librosa.
- Combined linguistic and acoustic cues to produce a unified **tone summary** reflecting speaker affect and mental state.
- Engineered a modular real-time pipeline extensible to **Streamlit UI**, mental health tracking, and user behavior analytics.

Bridges at Risk: Coastal vs. Inland Environmental Impacts Dec 2024
Tools/Technologies: Python, K-Means, Random Forest, XGBoost

- Analyzed over **34,000 bridge records** to identify environmental impact on deterioration patterns.
- Applied K-Means clustering for risk classification and ensemble models for lifespan prediction.
- Generated actionable insights to support **predictive maintenance and resource optimization**.

DARIA-3o: AI-Powered Chatbot for InfoTunnel Dec 2024
Tools/Technologies: LLaMA-2, Phi-2, FAISS, Hugging Face, Whisper, LoRA, PEFT

- Built a **multimodal chatbot** supporting both text and voice input for natural search queries.
- Integrated FAISS for semantic retrieval and used **LoRA+PEFT** for performance optimization.
- Designed scalable architecture adaptable to education, healthcare, and enterprise domains.

Customer Feedback Analytics Dashboard Jun 2023
Tools/Technologies: HTML, CSS, JavaScript, Python, MySQL, Power BI, Scikit-learn

- Designed a full-stack web platform to collect and visualize customer feedback submitted through AmTech product portals.
- Processed feedback text using **Python (TF-IDF + Logistic Regression)** to classify responses as positive, negative, or neutral.
- Enabled product managers to prioritize feature updates, leading to a **22% increase** in customer satisfaction scores over 3 months.

Deep Learning Applications in Medical Image Analysis – Brain Tumor Nov 2020
Tools/Technologies: Python, Keras, TensorFlow, CNNs, Medical Imaging Datasets

- Developed a medical imaging analysis module using **deep learning** and **convolutional neural networks (CNNs)**.
- Enabled automated detection of brain tumors by uncovering hierarchical data patterns in large-scale diagnostic image datasets.

Leadership and Activities

Graduate Teaching Assistant & Mentor
Provided hands-on guidance to **270+ students** in NLP, ML and AI, leading lab sessions and offering project mentorship.

AI Data Science Project Lead
Led development of the DARIA-3o AI Chatbot and Bridges at Risk ML model; implemented real-world predictive solutions.

Workshop Organizer
Conducted training sessions in Python, SQL, Power BI, and NLP applications for peer students and faculty collaborators.

Open-Source Contributor
Contributed to community-led tools for medical image classification and disease detection using CNN-based pipelines.

Academic Recognition
Received Certificate of Merit for consistent academic excellence during undergraduate coursework (2016–2018).