Mohammed Zuhaib Damudi

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Education

Northeastern University Sep 2025 – May 2027
Master of Science in Computer Science *Boston, MA*
- **Coursework:** Algorithms, Database Management Systems, Foundations of AI, Programming Design Paradigm

Manipal Institute of Technology Jul 2019 - Jul 2023
Bachelor of Technology in Computer Science & Engineering, Minor Specialization in Big Data Analytics *Manipal, India*
- **Research Thesis:** "Single-Step Sampling Approach for Unsupervised Anomaly Detection of Brain MRI Using Denoising Diffusion Models" - *International Journal of Biomedical Imaging, Vol 2024, Issue 1*; DOI: 10.1155/ijbi/2352602

Experience

Shell Aug 2023 – Aug 2025
Software QA Engineer *Bengaluru, India*
- Led data-driven performance engineering initiatives for **10+ high-impact projects**, simulating up to **200 requests per second** and **3,000 concurrent users**, to identify complex system bottlenecks and optimize performance.
- Collaborated closely with cross-functional teams to deliver solutions across domains including *Finance*, *Workforce Management*, *and Identity & Access Management (IAM)*, supporting critical business functions within Shell.
- Transformed raw performance metrics into comprehensive reports providing key insights to validate system scalability.
- Contributed to a patent filing for an *AI-powered Code Converter Tool*, powered by *GPT-4o*, automating up to **80%** of manual programming efforts, significantly improving developer productivity.

Questt AI May 2022 – Jul 2022
Data Engineer Intern *Bengaluru, India*
- Designed and implemented a scalable ETL pipeline in Apache Airflow to extract and flatten over **1 million documents** in MongoDB, converting unstructured and heavily nested data into a structured relational schema.
- Built an automated data-processing system that collects, manages, and converts raw JSON into a structured format while dynamically adapting to changes in schema, allowing analysts to query and generate critical reports **twice as fast**.
- Architected a data warehouse in Google BigQuery that served as the primary internal tool for strategic business insights, eliminating costly third-party vendors and saving **thousands of dollars** in annual operational costs.

Projects

Runnalytics - Strava Running Analytics Dashboard | *Python, NumPy, Pandas, Scikit-learn, Flask, JavaScript* Dec 2025 - Jan 2026
- Engineered a data pipeline to process Strava running exports, extracting **30+ performance metrics** such as pace, elevation, heart rate, and cadence, while generating personalized insights including pace improvement trends and PR tracking.
- Built a run classification system to categorize activities into **5 training types** based on pace and distance patterns, and implemented race time predictions for multiple distance categories using the Riegel formula.
- Developed an interactive dashboard view with synchronized chart-to-map GPS tracking, city-based route filtering via reverse geocoding using Leaflet.js, and real-time elevation and heart rate visualizations.

Anomaly Detection in Brain MRI using Denoising Diffusion Models | *Python, PyTorch, Matplotlib* Jan 2023 - Jul 2023
- Developed a novel single-step sampling approach for brain tumor detection that improved inference speeds by **200x** and reduced computational overhead by **99%**, featured as a peer-reviewed publication within the *Wiley Online Library*.
- Introduced a partial diffusion technique using *Denoising Diffusion Probabilistic Models (DDPMs)* to generate healthy brain MRI samples, accurately identifying the presence of anomalous regions about **80%** of the time.
- Achieved up to **66% improvement** in key segmentation metrics such as IoU, Precision, Recall, and AUC, significantly enhancing the model's ability to accurately detect and locate anomalies.

Habitual - Mobile Habit Tracker Application | *Flutter, SQLite* Jan 2022 - Mar 2022
- Architected and deployed an end-to-end, cross-platform habit-tracking application in Flutter to store user data and provide comprehensive statistics on habit trends, achieving **100+ downloads** on the Google Play Store.
- Implemented robust data storage systems using SharedPreferences and SQLite, ensuring data integrity for in-app records.
- Adopted state management techniques utilizing the *Provider* package to significantly improve application performance.

Technical Skills

Languages: Python, SQL, C, C++, Java, JavaScript, HTML/CSS, Dart
Technologies: NumPy, Pandas, Matplotlib, PyTorch, Scikit-learn, OpenCV, Flask, React, MongoDB, MySQL, Git, Docker, Flutter, Selenium, Google BigQuery, Apache Airflow, Apache JMeter, LoadRunner Enterprise, Azure Load Testing, Postman
Concepts: Machine Learning, Data Science, Data Engineering, Big Data Analytics, Data Visualization, Anomaly Detection, Computer Vision, Generative AI, LLMs, ETL Pipelines, Mobile Application Development, Automation, Performance Engineering