Mohammed Zuhaib Damudi

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Education

Northeastern University   Sep 2025 – May 2027
Master of Science in Computer Science   *Boston, MA*
- **Coursework:** Database Management Systems, 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*
- **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 performance engineering initiatives for **10+ high-impact projects**, simulating up to **200 requests per second** and **3,000 concurrent users**, to help identify system bottlenecks and improve 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.
- Conducted in-depth performance analysis to enhance system reliability and scalability, using tools such as LoadRunner Enterprise, Apache JMeter, and Azure Load Testing to script and execute load tests.
- 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   May 2022 – Jul 2022
Data Engineer Intern   *Bengaluru, India*
- Designed and implemented an 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 system that collects, manages, and converts raw JSON into a structured format while dynamically adapting to changes in schema, allowing analysts to query and report **twice as fast**.
- Architected a data warehouse in Google BigQuery, serving as a core internal tool for conducting analysis and generating valuable business insights.

Projects

Anomaly Detection in Brain MRI using Denoising Diffusion Models | *PyTorch*   Jan 2023 - Jul 2023
- Developed a novel sampling approach for brain tumor detection, improving inference speeds by up to **200 times**.
- 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, enabling faster and more accurate detection of anomalies.

Web Automation and Data Analysis - TypeRacer | *Selenium, NumPy, Pandas, Matplotlib*   Oct 2022 - Nov 2022
- Employed web scraping techniques to automate the extraction and analysis of historical TypeRacer data.
- Transformed and organized data for analysis using NumPy and Pandas for efficient data manipulation.
- Created **10+ data plots** with Matplotlib to track and visualize users' long-term typing speed progress.

Habitual - Mobile Application | *Flutter, SQLite*   Jan 2022 - Mar 2022
- Developed an interactive habit tracker application in Flutter to store user data and provide comprehensive statistics on habit trends, with **100+ downloads** on the Google Play Store.
- Implemented persistent data storage for in-app data using SharedPreferences and SQLite for local database.
- Adopted state management techniques utilizing the *Provider* package to enhance application performance.

Technical Skills

Languages: Python, C, C++, Java, JavaScript, Dart
Technologies: NumPy, Pandas, OpenCV, PyTorch, MongoDB, MySQL, Git, Docker, Flutter, Selenium, Google BigQuery, Apache Airflow, Apache JMeter, LoadRunner Enterprise, Postman
Concepts: Data Engineering, Data Science, Big Data Analytics, Computer Vision, Generative AI, ETL Pipelines, Android Development, Automation, Performance Engineering