SYED ZUBAIR AHMED

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EDUCATION

STATE UNIVERSITY OF NEW YORK AT BUFFALO Buffalo, NY
***Master of Science in Computer Science Engineering,* 3.92/4** **Aug. 2024-Dec. 2025 (Expected)**
Courses: CSE531 – Algorithms Analysis and Design, CSE574 – Intro to Machine Learning, CSE587 – Data Intensive Computing

CARNEGIE MELLON UNIVERSITY Pittsburg, PA
Coursework in Electrical and Computer Engineering **Feb. 2021-May 2022**
Courses: 18744 - Autonomous Driving, 18793 - Image and Video Processing, 18788 – Big Data Science

VASAVI COLLEGE OF ENGINEERING Hyderabad, India
***Bachelor of Engineering in Computer Science and Engineering,* 8.2/10** **Aug. 2014 – Apr. 2018**

EXPERIENCE

PETAL JEWELRY INC., Software Engineer **Aug. 2022-Dec. 2023**
- Performed Software-side adaptation of a Mobile Personal Emergency Response System(MPERS) into a marketable product.
- Implemented fall detection algorithm using threshold method on sensors based on 3-axis integrated MEMS (iMEMS®) accelerometer to measure acceleration.
- Engineered a robust software solution for the MangOH cellular IoT platform, enhancing cellular calling functions on a Linux based OS, which improved communication efficiency for over 20 devices in the network.

QUALCOMM, Programmer Analyst **Jul. 2018 – Sep. 2020**
- Designed a **Python**-based automated process for cleansing and validating Knowledge Silo Matrix (KSM) data used for assessing talent risk, reducing human intervention by 40 man-hours per month.
- Decommissioned the **Numerify ServiceNow** data platform and replaced with an economical and robust **Perspectium** data sync platform, resulting in $300,000 of annual OPEX savings. Set up an operational data store in **AWS Aurora DB** and implemented data warehouse in **Snowflak**e.
- Developed a centralized repository for Distribution Channel data reporting and analytics by integrating data from Model N to a Data warehouse using **SQL**, **Informatica**, and **Control-M**. Enabled integrated reporting across multiple systems, structured security, and data archiving capabilities.
- Migrated Schemas with Structures and data for ITBI Datawarehouse from **IBM Netezza** to **Oracle** Database that reduced operating costs by $200,000 annually.

TECHNICAL SKILLS

- Languages: Python, C++, SQL, HTML, HQL, ZPL
- Frameworks/Tools: AWS, Tableau, Informatica, Control-M, Pega, MATLAB, PyCharm, NumPy, SciPy, Pandas.

PROJECTS

Automated RAG – Based PDF Data Extraction System **Jan. 2025**
- Implemented a Retrieval-Augmented Generation (RAG) system to process PDF documents, leveraging large language models (LLMs) to generate accurate text embeddings and create a vectorized database for efficient querying and response generation.
- Developed an end-to-end workflow, including splitting PDF content, embedding text using AI, querying a vector database, and generating structured responses, ensuring seamless data extraction from unstructured documents.
- Designed a scalable and deployable Streamlit application containerized with Docker, integrating modern AI techniques for document digitization and analysis with practical deployment tools.

Analysis of Prison Data (2001–2013) **Dec. 2024**
- Analyzed judicial inefficiencies across states and crimes using Random Forest, achieving a 95.6% accuracy, highlighting disparities in trial statuses.
- Predicted prison budget allocations using XGBoost with an R^2 of 0.96, uncovering budgetary planning in overpopulated prisons.
- Classified inmates' trial statuses (undertrial/convicted) based on demographics with Logistic Regression, improving model accuracy from 50% to 75% by addressing data imbalance.

Path Planning for Autonomous Vehicles in Structured Scenarios. **Mar. 2023**
- Simulated a working environment for an autonomous vehicle to navigate through different scenarios developed on CARLA.
- Implemented a 3-tier hierarchical path planning stack with global planner, behavioral planner and local planner doing longitudinal and lateral control.
- Designed eight distinct test cases with increasing difficulty and evaluated the performance using key metrics such as success rate, minor and major collisions, and road rule violations.

Multilingual Speech Recognition with a single end-to-end model **Nov. 2022**
- Created a single sequence-to-sequence ASR model, trained on three different Indian languages, by taking a union of language-specific grapheme sets and trained a grapheme-based sequence-to-sequence model.
- Additionally, trained three monolingual models independently on data for each language.
- Conducted experiments to show that the joint LAS model improves recognition performance by 21% compared to analogous models trained on each language individually.

INVOLVEMENT

- Vice President –Indian Graduate Student Association at Carnegie Mellon University
- Vice President – Street Cause (Student Run NGO with an active workforce of 2000+ students).
- Winner of Dragathon - Annual Hackathon held at Qualcomm.
- Secured 2nd at Charles Darwin National Debate Competition.