K. M. Asifur Rahman

AI/ML Engineer
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Machine learning engineer with over a year of experience developing statistical models and implementing state-of-the-art large language models (LLMs). **Key Achievement:** Successfully deployed fine-tuned LLMs locally for trade document intelligence within bank-grade, restricted environments.

Relevant Work Experience

Spectrum Software and Consulting ltd. *July, 2024 – Present*
Machine Learning Engineer

- Developed and deployed Doc-Ai systems that can extract data from both structured and unstructured documents and take necessary decisions or measures based on requirements.
- Designed a scalable, asynchronous, cloud-based AI service system. The system can handle multiple users and AI services at a time. The main objective is to work as an Api service provider.
- Researched on RAG, Large Language models, LLM Inference Engines, Lora, and Qlora finetunings. Applied fine-tuning and advanced memory management techniques in model customization and deployment.
- Experienced in developing computer vision and voice-enabled smart systems that can recognize persons and summarize meetings.

Era Info Tech *May, 2023 – June, 2023*
ML Intern

- Developed a transaction named entity recognition system using Natural Language Processing (NLP) tools and Python libraries.
- Explored multiple clustering algorithms (KNN, GMM, DBScan, Hierarchical clustering) to develop an accurate classification system.
- Combining these two processes developed a transaction classification system that can accurately classify a transaction (cash, credit, witdraw or puchase) and suggest offers/bonuses for a user.

Education

Bangladesh University of Engineering and Technology, Dhaka, Bangladesh *2024*
Bachelor of Science in Computer Science and Engineering

Skills

Technical: Generative AI, Deep Learning (Advanced), Predictive Modeling (Experienced), Statistical Analysis, Algorithms, System Architectures.
Languages: Bangla (Native), English (Fluent)

Research

5GPT: 5G Vulnerability Detection by Combining Zero-Shot Capabilities of GPT-4 with Domain Aware Strategies Through Prompt Engineering • Accepted in IEEE T-IFS

- We utilized GPT-4's advanced language understanding to detect vulnerabilities directly from 5G specifications. Testing promising cases using Open5GS and UERANSIM. We first adopted a zero-shot approach, then a domain-aware strategy, where we explicitly teach GPT-4 about security properties and hazard indicators. We found 47 potential issues 27 of them was previously unreported. Confirmed 9 vulnerabilities, simulating 14 test cases.

5G RAG Based Conformance Testing • (On Going)

- We proposed a fully automated end-to-end framework that utilizes a Retrieval-Augmented Generation (RAG) pipeline. Our approach grounds LLM outputs in verified, domain-specific data to minimize hallucinations, and overcomes cross-section dependency challenges by integrating a robust con- text retrieval mechanism. Using this approach, we have generated 800 conformance test-cases for essential 5G mobility management procedures in under 3 hours. Overall, our framework offers a scalable, reliable, and robust solution for automating compliance testing in complex, ever-changing domains like 5G and beyond.

Exploring Post-Mortem Neural Signal Processing: Uncovering Computational Potentials in Deceased Animal Brains • Student Poster Champion NSysS 2021

- We investigate the potential of a deceased animal brain to process signals. Specifically, we examine the brain's responses to external stimuli in the form of electrical signals and its ability to act as a memory unit. We also explore the transfer characteristics of the deceased goat brain and elucidate the corresponding function through representative circuits

Assessing the Impact of Temperature Change on Discomfort Index: Temporal Trends and Seasonal Variations in Dhaka City • ICWFM 2025

- This study analyzed the temporal trends and seasonal variations in maximum temperature, minimum temperature, average temperature, and discomfort index in Dhaka city from 1981 to 2020.The discomfort index calculated using Thom Discomfort Index equation and employs a combination of statistical techniques to assess the impact of temperature changes on the discomfort index.

Projects

Climate Report generation from Bengali Audio

- Tech stack: Facebook M4tv2 model, Gemini 2.0, Pydantic, Pandas
- This project aims to generate pdf report from Bangla audio (calamity description). Motivated to add regional language support in the future.
- Details

Anomally Detection in ECG

- Tech stack: Numpy, Pandas, Matplotlib, plotly, Pytorch, rnn, transformer, python
- This project uses transformer model (encoder) layer to separate healthy heart signals from unhealthy ones. Used ECG5000 dataset to train and test.
- Details