Azizul Hakim

hakim.smazizul@gmail.com | homepage | GitHub | LinkedIn | Medium | Google Scholar

Tech Skills: Python, R, C/C++, JavaScript. | Flask, Fast API | React, React Native | AWS S3 / EC2, Docker, Git / GitHub, Bash | SQL / MySQL, MongoDB | Tensorflow, PyTorch, Keras, NumPy, Pandas, scikit-learn, OpenCV, Prompt engineering, MLFlow.

WORK EXPERIENCE

Graduate Assistant | Grand Valley State University | Grand Rapids, MI, USA | January 2023 - Present

- Conducted experiments with zero-shot and few-shot prompt engineering techniques initially on ChatGPT, then on open-source Large Language Models (LLMs) like LLaMA to create an unstructured to structured requirements converter.
- Developed a multi-panel visualization tool utilizing Flask and React to convert semi-structured requirements into structured formats.
- Built an active learning pipeline to facilitate the continuous training and testing of the CodeT5 model, enhancing its ability to structure software test requirements.
- Built GPU enabled Docker containerized LLM API and CodeT5 converter API.

Machine Learning Engineer | Reea Digital | Dhaka, Bangladesh | November 2022 - December 2022

- Evaluated the performance of BERT variants like ALBERT, RoBERTa, and DistilBERT for automatic data preprocessing and annotation using state-of-the-art Natural Language Processing (NLP) models at the research and development phase.
- Fine-tuned an Electra-QA model to annotate watch features from raw descriptions.
- Achieved over a 10-fold reduction in data annotation costs and time by leveraging large language models for data annotation.

Research Engineer | United International University | Dhaka, Bangladesh | March 2022 - September 2022

- Designed and developed a full-stack artificial intelligence based Smart Receptionist web application, with React frontend, Flask backend, and MySQL database.
- Containerized and deployed the microservices on a Linux server using Docker and Nginx.

Machine Learning Engineer | Gigalogy | Dhaka, Bangladesh | March 2020 - October 2021

- Built NLU REST API back-end engine, enabling integration into existing chatbots and prioritizing optimal user experience.
- Demonstrated strong analytical and problem-solving skills by crafting a complex JSON parser.
- Developed an AI voice assistant based on the NLU engine.
- Evaluated various deep learning based object detection algorithms for inference and memory usage on AWS EC2.
- Created computer vision APIs using OpenCV and TensorFlow for object detection, age-gender prediction, and emotion recognition from both images and videos.
- Enhanced deep learning based object detection inference time by over 50% by resolving CUDA GPU memory leaks in Darknet and containerized for production.
- Implemented the scheduled batch upload of detection results to AWS S3 using Celery and Redis.
- Created a product search engine using Elasticsearch with text and categorical filters.
- Added image recommendations to the existing recommendation engine through image processing and feature vectorization.
- Implemented a machine learning based budget prediction feature for online ad campaigns through feature engineering and clustering.

PROJECTS

- **rag-chatapp:** A financial assistant chatbot powered by Retrieval Augmented Generation, RAG with Streamlit, LlamaIndex, and ChatGPT which answers queries regarding finance by scraping through the latest financial news articles. github
- **pyvis:** Added graphical edit functionality to the pyvis module. github

EDUCATION

Grand Valley State University — *Jan. 2023 - Present*
Master's in Applied Computer Science — *Grand Rapids, MI*
Chittagong University of Engineering & Technology — *Mar. 2014 - dec. 2018*
Bachelor in Computer Science & Engineering — *Chattogram, Bangladesh*

PUBLICATIONS

- Real-time Vision-based Bangla Sign Language Detection using Convolutional Neural Network, ICACC 2021.
- Handwritten Bangla Numeral and Basic Character Recognition Using Deep Convolutional Neural Network, ECCE 2019.