

# Azizul Hakim

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## 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 requirement converter.
- Designed a multi-panel visualization tool utilizing Flask and React, Docker, and MongoDB to convert semi-structured requirements into knowledge graphs and structured formats.
- Built an active learning pipeline to facilitate the continuous training and testing of the CodeT5 model.
- Devised a GPU enabled Docker containerized LLM API and CodeT5 converter API using LangChain.
- Presently, supervised fine-tuning (SFT) Mistral-7B with custom data using PEFT LoRA.

### Machine Learning Engineer | Reea Digital | Dhaka, Bangladesh

November 2022 - December 2022

- Evaluated the performance of BERT-based state-of-the-art Natural Language Processing (NLP) models like ALBERT, RoBERTa, and DistilBERT for automatic data preprocessing and annotation at the research and development phase.
- Fine-tuned an Electra-QA model to annotate watch features from raw descriptions.
- 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

- Developed an AI-driven Smart Receptionist web app, featuring a 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, an intent and named entity recognition (NER) engine, capable of integrating into existing chatbots with FastAPI.
- Created computer vision based REST API for age-gender prediction, and emotion recognition from images and videos.
- Evaluated both TensorFlow and Darknet-based YOLO object detection algorithms for inference and memory usage on GPU.
- Experimented with TFLite and ONNX conversion of object detection models.
- Configured CUDA-enabled OpenCV and Darknet for object detection and deployed containerized microservice on AWS EC2.
- Composed a scheduled batch upload of object detection results to AWS S3 using Celery and Redis.
- Integrated an image-based recommendations system with Elasticsearch and feature vectorization through MobileNet.
- Implemented an ML-based budget predictor for online ad campaigns using feature engineering and unsupervised learning.

## PROJECTS

### rag-chatapp | [web app](#) | [github](#)

- A financial assistant chatbot powered by Retrieval Augmented Generation (RAG) with Streamlit, LlamaIndex, ChatGPT, Selenium, multithreading, and Docker to answer questions regarding finance by scraping through the latest financial news.
- Deployed on GCP with cloud build and cloud run CI/CD pipeline.

### Enhanced pyvis | [github](#)

- Integrated graphical add, delete, and edit functionality to nodes and edges in the [pyvis](#) module.

## TECH SKILLS

Python, C, C++, JavaScript, Flask, FastAPI, React, React Native, AWS S3, AWS EC2, GCP, Docker, Git, GitHub, Bash, SQL, MySQL, MongoDB, Tensorflow, PyTorch, Keras, NumPy, Pandas, Scikit-learn, NLTK, OpenCV, HuggingFace.

## EDUCATION

Grand Valley State University | MS in Applied Computer Science | Grand Rapids, MI, USA

Jan 2023 - Dec 2024

Chittagong University of Engineering & Technology | BS in Computer Science | Chattogram, Bangladesh

Mar 2014 - Dec 2018

## 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.