S M Azizul Hakim

Software Engineer · Machine Learning Engineer

Grand Rapids, MI, USA

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Work Experience

Grand Valley State University — *Grand Rapids, MI, USA*

Graduate Assistant — *Jan 2023 - Present*

- Automating software test generation, resulting in a 5x reduction in test generation time, leveraging state-of-the-art NLP models and knowledge graphs.
- Conducted experiments with zero-shot and few-shot prompt engineering techniques initially on ChatGPT-3, then on LlaMA2 models 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 using Large Language Models (LLMs).

Reea Digital — *Dhaka, Bangladesh*

Machine Learning Engineer — *Nov 2022 - Dec 2022*

- Evaluated the performance of BERT variants like ALBERT, RoBERTa, and DistilBERT for automatic data preprocessing and annotation.
- 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.

AIMS Lab — *Dhaka, Bangladesh*

Research Engineer — *Mar 2022 - Sep 2022*

- Designed and developed an AI Smart Receptionist web application, encompassing front-end and back-end components, featuring speaker identification, face recognition, and a conversational module.
- Deployed the application using Docker and Nginx.

Gigalogy — *Dhaka, Bangladesh*

Machine Learning Engineer — *Mar 2020 - Oct 2021*

- Built a REST API-based NLU engine based on Rasa, enabling integration into existing chatbots.
- 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 improved inference time 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%, resolved 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.
- Expanded the existing recommendation engine with an image recommendation feature.
- Implemented a machine learning-based budget prediction feature for online ad campaigns through historical campaign metadata clustering.

Skills

Programming	Python, R, C/C++, JavaScript.
Development	Flask, Fast API | React, React Native | AWS S3 / EC2, Docker, Git / GitHub, Bash | SQL / MySQL, MongoDB.
Machine Learning	Tensorflow, PyTorch, Keras, scikit-learn, OpenCV, Darknet, HuggingFace, LLMs, ChatGPT, Prompt engineering.

Education

Grand Valley State University — *Grand Rapids, MI, USA*

Masters in Applied Computer Science — *Jan. 2023 - Present*

Chittagong University of Engineering & Technology — *Chattogram, Bangladesh*

B.S. in Computer Science and Engineering — *Mar. 2014 - Dec. 2018*

Publications

2021	R. B. Rafiq, S. M. A. Hakim and T. Tabashum, "Real-time Vision-based Bangla Sign Language Detection using Convolutional Neural Network". ICACC 2021	*Kochi, India*
2019	S M Azizul Hakim and Asaduzzaman, "Handwritten Bangla Numeral and Basic Character Recognition Using Deep Convolutional Neural Network". ECCE 2019	*Cox's Bazar, Bangladesh*