Md Bikasuzzaman

Bangladesh
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EDUCATION

Islamic University, Bangladesh **Jan 2018 – Jun 2023**
Bachelor of Engineering in Information and Communication Technology ***CGPA** - **3.45** out of **4.00***

Course - Artificial Intelligence, Digital Image Processing, Calculus & Differential Equation, Geometry & Vector Analysis, Statistics for Communication Engineering, Information Theory

RESEARCH

- Bikasuzzaman M, Polok AP, Saha B. **A Transformer-Based Approach for Summarizing Employee Logs**. Submitted to Springer Conference. July 2024.

EXPERIENCE

Machine Learning Engineer **Nov 2023 - Present**
Business Automation Ltd. *Rajshahi, Bangladesh*

- Developing cutting-edge solutions in generative AI, computer vision, and deep learning technologies. Utilizing expertise in neural networks, image processing, and machine learning algorithms to drive innovation in the field of artificial intelligence. Contributing to the development of the GenAI model on custom data.
- Digitized Handwritten Prescriptions layout-based segmentation and OCR, leveraged generative LLM models for output formation, optimizing inference time to around 2.28 seconds and minimizing human workload by 44.68%, impacting more than 50k patients.
- Executed Employee Behavioral Log Text Summarization enhancing efficacy in task-based accomplishment utilizing Mistral, and Pegasus.

Machine Learning Intern **July 2023 - Oct 2023**
Deshlink Limited *Dhaka, Bangladesh*

- Engaged as a Machine Learning Intern with a focus on algorithm development, data preprocessing, and exploratory data analysis. Contributed to project development by applying advanced analytical techniques and leveraging statistical models to derive actionable insights from complex datasets. Executed data cleaning, transformation, and feature engineering to enhance model performance and optimize predictive accuracy.

Research Assistant **Jan 2019 - Feb 2023**
ICE Innovation Lab *Islamic University, Bangladesh*

- Research and development of Computer Vision in collaboration with IU Vision Team.

TECHNICAL SKILLS

AI Stack: Machine Learning, Deep Learning, Computer Vision, Natural Language Processing, GenAI
Languages: Python, Matlab, C, C++, SQL
Frameworks: Flask, FastAPI
Library: Tensorflow, scikit-learn, Pytorch, Keras, OpenCV, pandas, matplotlib, seaborn, plotly, nltk, Langchain
Generative AI: Prompt Engineering, Large Language Model (LLM), RAG, OpenAI, Gemini, Ollama, Azure openAI, Open-WebUI, Vector Database(Pinecone, CromaDB, Faiss)
MLOps: MLflow, Comet ML, Linux, Git, Github Actions CI/CD, Docker, Prometheus, Grafana, XAI

PROJECTS

Handwritten Prescription Digitalization using Layout Analysis and OCR | CV, TrOCR

- Utilizing vision-based layout segmentation and an OCR model, the project digitizes handwritten prescriptions, reducing the CER score for drug names to 0.11. It accurately extracts IDs, diagnosis frequencies, quantities, and patient histories, converting raw data into structured outputs in 2.28 seconds, minimizing human workload by 44.68%, and improving healthcare record-keeping.

Intelligent Question Answering and Code Generation Chatbot on Tabular Data | LLM, GenAI

- Builded an intelligent system that enables users to ask questions about tabular data in natural language and automatically generates code snippets to answer those questions as well as visualize user questions. [**GitHub**]

Abstract Text Summarization using Large Language Model (LLM) | Google Pegasus Model

- Employee work logs are automatically being summarized. Managers receive concise summaries highlighting key points, progress, and challenges by feeding verbose logs into the system. By leveraging LLM models improves summarization efficiency and accuracy.[**GitHub**]

Automated Passport Number Tracking Using Image Verification & Identification | DL

- Employing the VGGFace deep learning model in tandem with MTCNN (Multi-task Cascaded Convolutional Networks) , this project pioneers precise face detection and recognition within image verification systems. Beyond merely tracking passport numbers, it integrates an automated model training mechanism triggered at specified intervals upon receiving new images, guaranteeing ongoing refinement and peak performance. [**GitHub**]

Image Super Resolution Based on Generative Adversarial Networks (GANs) | SRGAN, DL

- Developed an image super-resolution system leveraging GANs to enhance the quality of low-resolution images. Trained a GAN model to generate high-resolution images with improved detail and clarity from their low-resolution counterparts. [**GitHub**]

Forecasting Retail Store Revenue | LSTM, ARIMA, SARIMA, RF, EDA

- Utilized advanced data analytics and machine learning techniques, including time series modeling (SARIMA, LSTM) and ensemble methods (Random Forest), to predict monthly sales. The forecasting process incorporated historical data, seasonal trends, and economic factors to ensure accurate predictions. [**GitHub**]

Name Entity Recognition (NER) with MISTRAL, BERT, and FLAN T5 | LLM, Unsloth

- The BERT model was employed on a Bangla dataset for NER, achieving a test accuracy of 85% across six entity categories. The Mistral and Flan-T5 models were fine-tuned on a Cyber Security dataset across 24 entity categories, effectively classifying texts into their respective entity categories. [**GitHub**]

Enhancing Image Generation with Deep Convolutional GANs | DCGAN, DL

- Developed an image augmentation model using Deep Convolutional Generative Adversarial Networks (DCGAN). The project involved several key steps: preprocessing the data, constructing and training both the generator and discriminator models, and visualizing the generated images to monitor progress. [**GitHub**]

Multi-label Bengali Text Classification using Transformers | Llama3, BERT

- Analyzing Bengali user feedback on e-commerce platforms through a robust multi-label classification system with six class labels. The evaluation demonstrates strong model performance with a test accuracy of 93%, highlighting the model's effectiveness through precision and recall metrics across these aspects.[**GitHub**]

CERTIFICATIONS

- Generative AI with Large Language Models - Coursera
- Convolutional Neural Networks with TensorFlow in Python - Coursera
- Mathematics for Machine Learning: Multivariate Calculus - Coursera
- Neural Networks and Deep Learning - Coursera

REFERENCE

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