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

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.
- Implemented Bangla Law Consultancy chatbot with interaction-based instruction dataset using Llama 3, featuring RAG system and effective tokenization method.
- 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

Languages: Python, Matlab, C, C++, SQL
Developer Tools: VS Code, PyCharm
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, LLM

- The project focuses on digitizing handwritten prescriptions through sophisticated layout analysis and OCR technologies. Employing a segmented model for precise line-by-line segmentation, it extracts crucial details. An optimized OCR model is utilized for accurate information extraction from handwritten text, while a generative model transforms raw data into structured outputs, enhancing efficiency and precision in medication management and healthcare record-keeping.

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

- The goal of this project is to build an intelligent system that enables users to ask questions about tabular data in natural language and automatically generates code snippets to answer those questions. Enable the system to connect with and interact with different datasets stored in structured formats like CSV, Excel. Depending on the dataset, the model can visualize user queries. [**GitHub**]

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

- Abstract text summarization with a Large Language Model (LLM) uses advanced AI to condense lengthy documents into coherent summaries while retaining essential information. By leveraging LLM models improves summarization efficiency and accuracy, capturing key ideas and generating concise summaries. [**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 advanced image super-resolution system leveraging Generative Adversarial Networks (GANs) to enhance the quality of low-resolution images. This project involves training a GAN model to generate high-resolution images with improved detail and clarity from their low-resolution counterparts. The approach utilizes deep learning techniques to achieve state-of-the-art results in image enhancement, making it applicable for various fields such as medical imaging, satellite imagery, and digital photography. [**GitHub**]

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

- Utilizing advanced data analytics and machine learning techniques like time series modeling (e.g., SARIMA, LSTM) and ensemble methods (e.g., Random Forest), to predict monthly sales. These models leverage historical data, seasonal trends, and economic factors for accurate forecasting and strategic decision-making in retail environments. [**GitHub**]

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

- Name Entity Recognition (NER) system implemented using MISTRAL, BERT, and FLAN T5 models. These models can identify and classify entities such as persons, organizations, and locations. Mistral, and Flan T5 models are fine-tuned on the Cyber Security dataset for classifying the class of texts as well. [**GitHub**]

Enhancing Image Generation with Deep Convolutional GANs | DCGAN, DL

- Developed a Deep Convolutional Generative Adversarial Network (DCGAN) using TensorFlow and Keras to generate synthetic MNIST images. The project involved preprocessing data, constructing and training the generator and discriminator models, and visualizing the generated images to track progress. Successfully demonstrated improved image quality through a GIF animation, showcasing advanced neural network techniques and practical GAN applications. [**GitHub**]

Aspect-Based Evaluation of Bengali User Feedback on E-commerce Platforms | Llama3, BERT

- Analyzing Bengali user feedback on e-commerce platforms, this project employs a robust classification system to categorize feedback into key aspects such as price, packaging, product quality, delivery, service, and seller performance. The evaluation demonstrates strong model performance across various aspects, emphasizing precision and recall metrics.[**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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