

MD BIKASUZZAMAN

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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 BIDA and EBS 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, Django, REST API

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, Open-WebUI

Vector Database: Pinecone, ChromaDB, Faiss

DevOps: Git and Github, Docker

PROJECTS

Doctor's Handwritten Text Extraction from Medical Prescriptions [🔗](#) | [TrOCR](#), LLM

- Automated extraction of handwritten text from medical prescriptions using an OCR pipeline. Developed an algorithm to segment and save handwritten medicine names from images. Annotated images and compiled a CSV with filenames and text. Trained a TrOCR model for text recognition and used it to extract text from new images. Organized the extracted text with the Gemma-7b language model.

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](#)]

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](#)]

AI-Driven Legal Assistance Chatbot for Bangladesh [↗](#) | [Llama3](#), [Unsloth](#), [xformers](#)

- Developed an AI-powered legal assistance chatbot for the Bangladeshi legal system, providing instant, accurate responses to common legal queries in Bengali. [[GitHub](#)]

Question answering and Code generation System on Tabular Data using OpenAI [↗](#)

- 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](#)]

Automated Passport Number Tracking Using Image Verification & Identification [↗](#)

- 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](#)] [[HuggingFace](#) – [Space is Private](#)]

Image Super Resolution Based on Generative Adversarial Networks (GANs) [↗](#) | [SRGAN](#)

- 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](#)]

Time Series Forecasting using Auto Regression & LSTM [↗](#) | [LSTM](#), [ARIMA](#), [SARIMA](#), [EDA](#)

- To understand the patterns, trends, and seasonality in the time series data, one begins by visualizing the series. Checking for stationarity using the Augmented Dickey-Fuller (ADF) test reveals that the data is non-stationary. Differencing techniques, such as first-order and seasonal differencing, are applied to achieve stationarity, confirmed by a significant p-value in the ADF test. To choose the appropriate lag order (p) for the Auto Regression (AR) model, analysis of the autocorrelation (ACF) and partial autocorrelation (PACF) plots helps identify significant lags to include in the model. [[GitHub](#)]

CERTIFICATIONS

- Generative AI with Large Language Models - Coursera
- Custom Models, Layers, and Loss Functions with TensorFlow - Coursera
- Convolutional Neural Networks with TensorFlow in Python - Coursera
- Deep Learning: Recurrent Neural Networks with Python - Udemy
- Mathematics for Machine Learning: Multivariate Calculus - Coursera
- Neural Networks and Deep Learning - Coursera
- Custom and Distributed Training with TensorFlow - Coursera
- Python Data Structures - Coursera

REFERENCE

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Islamic University, Kushtia