# Asif Pervez Polok

Dhaka, Bangladesh

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## EDUCATION

**Noakhali Science and Technology University** **Dec. 2017 – Feb. 2023**

*Bachelor of Science in Information and Communication Engineering (ICE)* ***CGPA - 3.26 out of 4.00***

**Courses -** Artificial Intelligence, Digital Image Processing, Calculus and Differential Equation, Statistics for Communication Engineering, Geometry and Vector Analysis, , Information Theory

## EXPERIENCE

**Machine Learning Engineer** **Dec 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.
- Implemented Bangla Law Consultancy chatbot with interaction-based instruction dataset using Llama3, featuring RAG system and effective tokenization method.
- Executed Employee Behavioral Log Text Summarization enhancing efficacy in task-based accomplishment utilizing Mistral, Pegasus.

**Artificial Intelligence Training** **June 2023 – Sept 2023**

*Extent IT Ltd* *Dhaka, Bangladesh*

- 4-month professional "Artificial Intelligence" training program funded by EDGE, IIT, and BCC. Engaged as an AI Trainee focused on algorithm development in Machine and Deep Learning platform. Led data preprocessing, exploratory data analysis, and feature engineering to boost model accuracy and performance. Explored NLP and Computer vision core topics and Contributed to projects by applying advanced analytical techniques and statistical models, extracting actionable insights from complex datasets to drive impactful results.

**Artificial Intelligence Intern (Remote)** **Sept 2022 – Dec 2022**

*Shiga Corp & Trust* *Tamil-Nadu, India*

- Completed a 4-month remote internship funded by Shiga Corp & Trust Ltd., focusing on cutting-edge technologies in Machine Learning, Deep Learning, Time Series Analysis, and NLP. The internship involved specialized coursework that significantly enhanced technical proficiency and deepened expertise in advanced AI methodologies.
- Projects:
  - Fashion Recommendation System | *ResNet50, K Nearest Neighbor, Streamlit* | **GitHub**
  - Chatbot Building Deep Learning Project | *Bag of Words, ANN, Tkinter* | **GitHub**

**Research Assistant (Remote)** **Nov 2022 – Feb 2023**

*The University of Texas at El Paso* *Texas, United States*

- Collaborated with a Ph.D. student from The University of Texas at El Paso on academic research and assignments, contributing to the development of some research papers as well as the formulation of research hypotheses and methodologies.
- Research Projects:
  - Sartorious Cell Segmentation and Masking | *Tensorflow, UNet, CNN, Data Augmentation* | **GitHub**
  - Fine-tuning Bangla-Bert for Bangla News headline Classification | *Pytorch, BERT, NLTK* | **GitHub**

## TECHNICAL SKILLS

**Languages**: Python, C, C++, SQL
**AI Stacks**: Machine Learning, Deep Learning, NLP & Computer Vision
**Generative AI**: Prompt Engineering, Large Language Model (LLM), VLM, RAG, Vector Database, Langchain, OpenAI, Gemini, Groq, Ollama
**MLOps**: MLflow, Git & Github, CI/CD(Jenkins), Docker, Prometheus, Grafana, XAI, Whylab & Whylog
**Data Analysis & Visualization**: Tableau, Pandas, Numpy, Matplotlib, Seaborn, Plotly
**Time Series Analysis**: Predictive & Descriptive Analysis
**Database**: SQL, NoSQL (MongoDB)
**Web Scraping**: Beautiful Soup, Scrapy
**Deployment**: Flask, Streamlit, FastAPI

## PROJECTS

**Handwritten Prescription Digitalization using Layout Analysis and OCR** || *YoloV8, TrOCR, LLM* | **GitHub**

* Implemented advanced layout analysis and OCR technologies to digitize handwritten prescriptions. Developed a segmented model for precise line-by-line segmentation, enabling accurate segmentation of text line and utilized an optimized OCR model for accurate text extraction task and employed a generative model to transform raw data into structured outputs, significantly improving efficiency and precision in medication management and healthcare record-keeping

**Abstractive Employee Logs Summarization System using LLM** | *Google Pegasus Model, NLTK* | **GitHub**

* Developed an abstract text summarization system using a Large Language Model (LLM) to condense lengthy documents, including employees' monthly working logs, into coherent and concise summaries by training and implementing LLM models to capture key ideas and improve content condensation quality.

**Automated Passport Number Tracking Using Image Verification & Identification** | *DL* | **GitHub**

* This project automates passport number tracking using image verification and face identification. It processes images, extracts facial features, and compares them with a database to identify individuals. Key technologies include OpenCV, MTCNN for face detection, and VGGFace for feature extraction. An automated model training mechanism ensures continuous refinement and optimal performance as new images are received.

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

* Developed Named Entity Recognition (NER) system using MISTRAL, BERT, and FLAN T5 models. The Bangla-Bert model was used to identify and classify entities like person, organizations, locations, objects, and emails, while MISTRAL and FLAN T5 were fine-tuned on a Cyber Security dataset to classify software and security-related entities

**Automated Visiting & NID Card Cropping System** | *YoloV8, OpenCV, Flask* | **GitHub** | **Live Demo**

* Developed a web application using Flask for detecting and cropping visiting and NID cards from uploaded images, integrating OpenCV for image processing and employing a fine-tuned Ultralytics YOLOv8 model with real card and NID images to enhance detection accuracy and seamlessly crop detected regions.

**Intelligent Question Answering and Code Generation Chatbot for Tabular Data** | *OpenAI,LLM* | **GitHub**

* Developed an intelligent system that enables users to ask natural language questions about tabular data, system able to generates code snippets to provide accurate answers. The system supports data formats like CSV and Excel that allowing users to easily work with and analyze multiple datasets with ease. System also creates visualizations based on queries to enhance the interpretation of data insights according to user inputs.

**BanglaSpellT5: Spell Correction for Bangla Language** | *Bangla-T5, HappyTransformer, NLTK* | **GitHub**

* Developed a spell correction system using the Bangla-T5 model by executing comprehensive data preprocessing, model training, and evaluation, resulting in enhanced accuracy and significant improvements in Bangla spell correction tasks.

**Image To Caption Generator DeepLearning Project** | *Encoder, Decoder, Attention, ResNet101, LSTM* | **GitHub**

* Utilized a pre-trained CNN (ResNet101) as an encoder to extract features from images for generating descriptive captions and an LSTM decoder to generate captions based on the extracted image features, forming a complete image captioning system using deep learning techniques.

**Queue Waiting Time Prediction in Banking System with MLflow** | *Sklearn, RF, XGBoost, MLflow* | **GitHub**

* An XGBoost model predicts queue waiting time with 0.97 accuracy and RMSE of 12.99, enhancing banking efficiency and customer experience. It is integrated with MLflow to streamline the tracking and automate deployment with new model.

## CERTIFICATIONS

- Artificial Neural Networks (ANN) with Keras in Python and R | Udemy | **view**
- Python for Deep Learning: Build Neural Networks in Python | Udemy | **view**
- Time Series Analysis and Forecasting using Python | Udemy | **view**
- ICEPC Farewell Contest 2022 organiser award | ICE, NSTU | **view**

## ACHIEVEMENTS & LEADERSHIP

- Kaggle Notebook Expert | Highest Rank: 1693 | Upvotes: 244 | **Kaggle**
- ICE Sports Club, NSTU | **President** | **Jan 2022 – Feb 2023**

## REFERENCE


- **Md Easin Hasan, Ph.D.**

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*The University of Texas at El Paso, United States*