

Arshadul Hoque

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EDUCATION

BSc. Engineering Degree in Computer Science and Engineering

Chittagong, BD | August 2022

UNIVERSITY OF CHITTAGONG

Coursework: Machine Learning, Artificial Intelligence, Algorithms, Data Structures

Undergraduate Thesis: "Sentiment Analysis of COVID-19 Vaccine Tweets using BERT" – Conducted sentiment analysis using natural language processing (NLP) techniques to assess public opinion on vaccine-related topics. Despite working with a limited dataset of only 130 entries, the model achieved an accuracy of 62%, demonstrating the potential of BERT for extracting insights from small datasets.

EXPERIENCE

UNIVERSITY OF CHITTAGONG | RESEARCH ASSISTANT

Chittagong, BD | December 2023 – Present

- Developed a **transformer-based** model utilizing **BanglaBERT** for multi-label classification of sentiment (positive, neutral, negative) and sarcasm (sarcastic, non-sarcastic) in social media data related to **Bangladesh Cricket**.
- Implemented** advanced techniques, including **multilabel stratified k-fold cross-validation**, **class weight adjustments**, and **focal loss**, to effectively address data imbalance, achieving a notable improvement in F1 scores for underrepresented classes (e.g., **0.73 for positive** sentiment and **0.69 for neutral** sentiment).
- Conducted** a comprehensive comparison study with previous models, demonstrating superior performance, particularly in sarcasm detection for Bangla text.

KAGGLE COMPETITION: AUTOMATIC ESSAY SCORING | NLP CHALLENGE COMPETITOR: KAGGLE ESSAY SCORING

Online Competition | April 2023 - July 2023

- Participated in a Kaggle competition focused on developing **machine learning models** for **automatic essay scoring**.
- Explored various **loss functions**, **language models** and **memory optimization techniques** to enhance **accuracy** and **efficiency** by learning from shared insights and approaches of the community of data scientists.
- Utilized the **DeBERTa** model, achieving an **accuracy of 0.78**.
- Ranked 2141 out of 2706 participants.

CERTIFICATIONS

Machine Learning Specialization – DeepLearning.AI and Stanford University, Coursera (June 2023)

Deep Learning Specialization – DeepLearning.AI, Coursera (September 2024)

Excel Skills for Business: Essentials – Macquarie University, Coursera (June 2022)

SQL for Data Science – University of California, Coursera (February 2023)

PROJECTS

RESTAURANT IDEA GENERATOR

PYTHON, STREAMLIT, TRANSFORMERS, PYTORCH

The tool uses AI to create innovative restaurant names and menu suggestions for different types of cuisine. It can be a valuable resource for entrepreneurs, chefs, and food enthusiasts looking for inspiration to launch a new restaurant, revamp an existing menu, or simply try out new culinary ideas.

HOUSE PRICE PREDICTION USING LINEAR REGRESSION

PYTHON, SCIKIT-LEARN

This project leverages machine learning techniques to build a predictive model that estimates house prices based on a range of input factors, utilizing the Python programming language and the scikit-learn library for implementation.

SKILLS

Core Skills: Machine Learning, Deep Learning, Natural Language Processing, Statistical Analysis

Languages: Python, SQL

Technologies & Tools: Pandas, NumPy, Matplotlib, Seaborn, Microsoft Excel