

Monirul Haque

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RESEARCH INTERESTS

Machine Learning, Natural Language Processing, Computer Vision, Information Retrieval

ACADEMIC QUALIFICATIONS

Bachelor of Science in Computer Science and Engineering

Summer 2018 – Fall 2021

Brac University, Dhaka, Bangladesh

CGPA: 3.81 out of 4.00

PUBLICATIONS

BanglaBait: Semi-Supervised Adversarial Approach for Clickbait Detection on Bangla Clickbait Dataset.

Md. Motahar Mahtab, **Monirul Haque**, Mehedi Hasan, and Farig Sadeque. Proceedings of Recent Advances in Natural Language Processing, pages 748–758, Varna, Bulgaria, September 2023. <https://aclanthology.org/2023.ranlp-1.81/>

RESEARCH PROJECTS

Information Retrieval using Community Detection Techniques on a Word Association Graph Network and Hybrid Approach for Ranking (M.Sc. Thesis 2024)

A novel information retrieval technique that leverages community detection on word association graph network using low resource machines. Also, I am experimenting hybrid approaches with the network for ranking.

WhisperWave: Synergizing Parameter Efficient Fine-Tuning using LoRA Technique in Transformer Models for Out-Of-Distribution Bangla Automated Speech Recognition (Accepted in IEEE CSDE 2023)

Fine-tuned pre-trained multilingual Whisper LargeV2 with Low-Rank Adaptation Parameter Efficient Fine-Tuning Technique on a low specification computer and compared the performance with other transformer-based models like wav2vec2 and conformer.

Flagging Sexism on Social Media Leveraging Hidden Layers of Transformers as Word Representations and Facilitating Model Interpret-ability through XAI Techniques (Accepted in IEEE CSDE 2023)

Calibrated different layers of pre-trained BERT-based transformer models to obtain higher scores on the SemEval-2023 Task 10 Dataset while explaining their insights using Lime and SHAP.

Machine Learning-Based Prediction of Rice Leaf Nutrient Contents Across Growth Stages Using UAV Data (Review in process in Smart Agricultural Technology Journal)

Analyzed multi-spectral images from UAV drones to calculate different vegetation indexes and canopy reflectance from a completely new dataset sponsored by BRRI and experimented machine learning techniques for prediction.

TEACHING EXPERIENCE

Adjunct Lecturer

May 2022 – Present

Brac University, Dhaka, Bangladesh

- Conduct theory and lab classes, prepare and update lecture materials, evaluate and grade examination scripts, and create questions for midterm and semester finals.

Courses: * CSE111: Programming Languages II * CSE331: Automata & Computability * CSE419: Competitive Programming
* CSE220: Data Structures * CSE221: Algorithms * CSE360: Computer Interfacing * CSE421: Computer Networks
* CSE341: Microprocessors * CSE370: Database Systems * CSE422: Artificial Intelligence
* CSE446: Blockchain

Undergraduate Teaching Assistant

June 2021 – January 2022

Brac University, Dhaka, Bangladesh

- Conduct consultation sessions for students, evaluate laboratory assignments, and provide constructive feedback to foster student improvement.

Courses: * CSE220: Data Structures * CSE221: Algorithms

PROFESSIONAL EXPERIENCE

Data Scientist

November 2024 – Present

AI DocBuilder, Toronto, Ontario, Canada (Remote)

- Developing a lightweight OCR engine optimized for minimal computational resource usage while maintaining high accuracy and make it ready for production.

CERTIFICATIONS

Deep Neural Networks with PyTorch

IBM, Coursera, August 2024

Neural Networks and Deep Learning

DeepLearning.AI, Coursera, July 2020

Machine Learning Specialization

University of Washington, Coursera, June 2020

Basics of Robotics

Brac University, Residential Campus, December 2018

CO-CURRICULAR ACTIVITIES

- Served as the role of **Coach** for two teams in **ICPC Dhaka Regional 2022** & four teams in **ICPC Dhaka Regional 2023**
- Conducted a workshop on **Introduction to Competitive Programming in Fall 22**
- Acted as a **Representative of Robotics activity** in RS day (**Residential Semester 49, 2018**)
- Co-Supervised a thesis titled **Analyzing and Predicting Trends in Contemporary Social Discourse through Hashtag Campaigns** which the students successfully defended in **Summer 2024**

ACHIEVEMENTS

- ❑ Participant in **ICPC Dhaka Regional, 2019**
- ❑ Stood **21st** in **LU CSE Carnival Programming Contest, Sylhet, 2019**
- ❑ Stood **5th** in **CSE-ian of BD Programming Contest 7, 2019** (Junior Division)
- ❑ Appeared in **VC's List 4 times** and **Dean's List 2 times**
- ❑ Received **Merit-based scholarship of 25% tuition fees** in Brac University

SOFTWARE PROJECTS

My Entertainment Hub: Java, Spring Boot, Spring Security, MySQL, MVC, TMDb API

A Social cataloging web application to organize and give personal ratings for movies and tv shows.

Bengali Online News Scraper: Python GUI, Selenium Web Driver

A Python GUI software to scrap news from different websites to add in CSV files with additional information.

Catch the Letter 8086 Game: 8086 Assembly Language, TASM compile, DOSBox

An 8086 game which was made using Assembly language to run on TASM compiler and DOS-BOX.

Students Scholarship Management System: Node JS, Express, MySQL, Embedded JavaScript

A CRUD web application to manage and store student scholarship.

Khela Hobe: Node JS, Express, MySQL, Embedded JavaScript

A CRUD storefront web app for video game digital distribution service.

BRACU-CG-Calculator: Java, Android Studio

An android app to calculate CGPA and check what the student needs to get in each courses to get to expected CGPA.

Line Following Robot: Arduino, PID Controller, Webot

Designed a Line Following Robot with PID algorithm on Webot and created it to participate in an Intra-University LFR contest.

TECHNICAL SKILLS

Languages: Python, C/C++, Java, JavaScript, PHP, XML, JSON, Markdown

AI Frameworks/Libraries: Pytorch, Tensorflow, Keras, Scikit-Learn, Hugging Face

Tools: Git, Docker, L^AT_EX, Selenium, Playwright, CUDA

DBMS: MySQL, PostgreSQL, Oracle, SQLite, MongoDB (NoSQL)

Web Technologies: Spring Boot, Flask, Django, Node JS, Express JS, React JS, HTML/CSS, Bootstrap

TEST SCORES

IELTS Score: 7.0

October 2023

Speaking: 7.0, Listening: 8.0, Reading: 7.0, Writing: 6.5

REFERENCES

Muhammad Nur Yanhaona

Associate Professor, Brac University, Dhaka, Bangladesh

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Farig Yousuf Sadeq

Associate Professor, Brac University, Dhaka, Bangladesh

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Md. Imran Bin Azad

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