

Monirul Haque

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RESEARCH INTERESTS

Deep Learning, Natural Language Processing, Computer Vision, Large Language Models, Information Retrieval

ACADEMIC QUALIFICATIONS

Master of Science in Computer Science and Engineering

Brac University, Dhaka, Bangladesh

Spring 2023 – Present

CGPA: 3.83 out of 4.00 (Thesis Defense Pending)

Bachelor of Science in Computer Science and Engineering

Brac University, Dhaka, Bangladesh

Summer 2018 – Fall 2021

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

Multi-Tier Hierarchical Knowledge Transfer Learning: LLM-Powered Mother Machine Knowledge Distillation for Continual Learning on Resource-Constrained Child Machines (M.Sc. Thesis)

A novel hierarchical knowledge transfer learning framework for distributed intelligent systems, featuring a powerful mother machine equipped with an LLM that serves as a central knowledge repository across multiple domains.

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-tuning pre-trained multilingual Whisper LargeV2 with Low-Rank Adaptation Parameter Efficient Fine-Tuning Technique on a low specification computer.

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

Brac University, Dhaka, Bangladesh

May 2022 – Present

Courses: * CSE111: Programming Languages II * CSE331: Automata & Computability * CSE422: Artificial Intelligence
* CSE220: Data Structures * CSE360: Computer Interfacing * CSE426: Basic Graph Theory
* CSE221: Algorithms * CSE370: Database Systems * CSE446: Blockchain
* CSE321: Operating Systems * CSE419: Competitive Programming
* CSE341: Microprocessors * CSE421: Computer Networks

Undergraduate Teaching Assistant

Brac University, Dhaka, Bangladesh

June 2021 – January 2022

Courses: * CSE220: Data Structures * CSE221: Algorithms

PROFESSIONAL EXPERIENCE

Data Scientist

Inteliweave, Toronto, Ontario, Canada (Remote)

November 2024 – Present

- Solely responsible for developing an OCR engine api which consists of multiple different models for page orientation detection, text detection, text recognition, font-properties detection, checkbox detection etc and is optimized for minimal computational resource usage while maintaining high accuracy and speed.
- Leading the OCR team to continuously improving and maintaining the engine, overseeing bug fixes, model fine-tuning, research latest architectures, and expansion to additional languages according to clients requirements.

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**
- Co-Supervised a thesis titled **Analyzing and Predicting Trends in Contemporary Social Discourse through Hashtag Campaigns** which the students successfully defended in **Summer 2024** (Pending review on IEEE TSNE journal)
- Co-Supervising a thesis titled **Semantic Drift in Bengali: A Diachronic Embedding Study Using Transformer Representations** starting from **Summer 2025**
- Delivered a Speech titled *Innovation at Machine Speed: AI in Development & Production Design* at an **IEEE Seminar** held on **August 23, 2025**

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

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.

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, Solidity (Smart Contracts), PHP, XML, JSON, Markdown

AI Frameworks/Libraries: Pytorch, Tensorflow, vLLM, Ollama, Keras, Scikit-Learn, Hugging Face, OpenCV, YOLO

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

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

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

Game Programming: Godot 4.4+ (GDScript), Unreal Engine 5 (C++), Blender (Python), Aseprite

TEST SCORES

IELTS Score: 7.0

October 2023

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

REFERENCES

Muhammad Nur Yanhaona

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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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