

Md.Ariful Islam

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Research Interests

Machine Learning, Deep Learning, High-Performance Computing(HPC), Heterogeneous systems, Natural Language Processing, Computer Vision, Image processing.

Education

Bachelor of Computer Science and Engineering <i>Chittagong University of Engineering and Technology, Bangladesh.</i>	<i>Jan 2018 - Aug 2023</i>
<ul style="list-style-type: none">◦ GPA: 3.21/4.0 (Transcript ↗)◦ Coursework: Computer Architecture, Artificial Intelligence, Data Structure, Algorithm, etc.	

Publications

Islam, M., Ahsan, S., Hoque, M.M:[**TranSenA: A Transformer-based Framework for Sentiment Analysis of Restaurant Reviews**](#). Accepted in International Conference on Signal Processing, Information, Communication and Systems([SPICSCON'2024](#) ↗).[Accepted]

Research Activities

CUET NLP LAB <i>Research Fellow</i>	<i>July 2024 - Present</i>
<ul style="list-style-type: none">◦ Developing a multimodal restaurant review dataset for accurately express the sentiment.◦ Developing a generalized Bengali dataset for sentiment classification including movie reviews, Airplane service.	

CUET NLP LAB <i>Undergraduate Student Researcher</i>	<i>Jan 2023 - June 2024</i>
<ul style="list-style-type: none">◦ Dataset Development: Collaborated in datasets tailored for low-resource languages: (1) BEmoLex(Bangla Emotion Lexicon Dataset) for emotion detection and (2) a restaurant review dataset (BRRD) containing 11004 Bengali restaurant reviews of three types positive (5622), negative (4402), and neutral (980).◦ Investigated performance of various ML, DL, and transformer based models for sentiment analysis of restaurant reviews from Bengali Text.◦ Achieved remarkable results with 0.90 F1 score surpassing previous multiclass sentiment analysis restaurant review detecting models.	

Experience

Software Engineer <i>FSM(Frontier Semiconductor Metrology)</i>	<i>Milpitas, CA</i> <i>June 2023 – Present</i>
<ul style="list-style-type: none">◦ Reduced time for Semiconductor wafer Roughness calculation for a stack of 800 images from 8 mins to 9 Seconds using GPGPU CUDA C++.◦ Implementing parallel processing using NVIDIA GPU for faster stress, and smoothness measurement in semiconductor wafer.◦ Implemented OCR(Optical Character Recognition) to track the wafer ID from wafer Image to trace the wafer more accurately.◦ Analyze data and render 2D, 3D views for better understanding.◦ Build Desktop application using MFC C++.	

Software Engineer Intern <i>SELISE Digital Platforms</i>	<i>Dhaka</i> <i>Oct 2022 – Nov 2022</i>
<ul style="list-style-type: none">◦ Designed and developed an E-commerce website using Angular, NodeJS, and MongoDB	(Github ↗)

Test Score

Graduate Record Examinations (GRE)

Sept 2024

Score: 309 (Quantitative: 161, Verbal: 148, Analytical Writing: 3.0)

Selected Projects

HPC and image processing

(Github) [Link ↗](#)

It has high-speed machine vision cameras for massive amounts of image processing in real-time with **CUDA C++** and high-performance computing (HPC) capability with complex embedded systems for measurement.

Rock Paper Scissor

(Github) [Link ↗](#)

Created a real-time gesture recognition game using OpenCV and MediaPipe to classify hand gestures (rock, paper, scissors) for interactive gameplay. Optimized for smooth, real-time user interaction and dynamic responses.

Optical Character Recognition

Implemented an OCR system to detect wafer IDs written in semifont. Leveraged K-Nearest Neighbors (KNN) for accurate pattern matching and the identification of the nearest character match. Before the identification raw image is processed with several image processing techniques written in C++.

Vocal-Sheild

VocalSheild Bangla leverages the Whisper speech-to-text model to transcribe Bengali voice data into text and runs a custom abusive language detection algorithm on the output. This project is focused on safeguarding Bengali conversations in public forums, social platforms, and personal use, ensuring that offensive or harmful speech is detected. (Ongoing)

Data Analyzer

(Github) [Link ↗](#)

A basic understanding of all MFC C++ features. A chart is generated by selecting two columns from a CSV. The selected values can be transferred and saved into a pdf file.

Honors and Awards

- Undergraduate Merit Scholarship, CUET 2019-2024
- Bangladesh Education Board Scholarships
 - Higher Secondary School Certificate (HSC) Talentpool Scholarship Award 2017
 - Secondary School Certificate (SSC) Talentpool Scholarship Award 2015
- International Collegiate Programming Contest (ICPC) [Link ↗](#) 2020-2024
 - 161st among 1400+ teams in 2021-2022
 - 408th among 1300+ teams in 2020-2021 with Honorable Mention
- Participated in National Collegiate Programming Contest (NCPC) [Link ↗](#) 2020
- Top 40% in Google Code Jam competition [Link ↗](#) 2020-2023
- Top 30% in Google Kick Start competition [Link ↗](#) 2020-2023
- Reached 2nd round in Facebook Hacker Cup [Link ↗](#) 2022

Technical Skills

Expertise : ML, DL, NLP, HPC, GPGPU

Open-source Libraries : Keras, TensorFlow, Pandas, PyTorch, NumPy, Scikit-Learn, Matplotlib

Software Development Skills : HTML, CSS, MFC, Git, MongoDB

Languages : C, C++, Python, JavaScript, SQL

Solved 1200+ competitive programming problems in different online platforms as part of my preparation for programming contests (ICPC, NCPC, etc).

- **Codeforces** Solved 950+ problems ([ai_an1k](#))
- **Leetcode** Solved 350+ problems ([maang5](#))
- **Codechef** Solved 80+ problems ([anik1652](#))

Selective Training and Workshops

- **Computational Linguistics Bangla Language Processing** - 2nd International Workshop on CLBLP
- **AI and Machine Learning with Python** - SKBIT, CUET

Leadership Experiences

CUET NLP Lab

Jan 2023 - Present

Lab Member

- Meet bi-weekly with junior undergrads working in CUET NLP Lab. Discuss research problems, share ideas, and track progress.
- Teach students the basics of deep learning and NLP.

Competitive Programming Club, CUET

2021-2023

Programming Coordinator

- Teach students advanced data structures, number theory, and algorithms.
- Organize contests, keep track of individual performance, and form teams.

Greater Cumilla Student Welfare Association

2018-2024

Member

- Acted as a student representative and collaborated with academia and departmental service.
- Assisted in medical fundraising for critical students.