MD. TARIQUZZAMAN

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EDUCATION

Islamic University of Technology (IUT)   Gazipur, Bangladesh
B.Sc., Computer Science and Engineering   *Jan 2020–June 2024*
CGPA: 3.94/4.00 (*3rd* in CSE department)

– **Thesis:** *"BDA: Bangla text Data Augmentation Framework"*
  Supervisor: Mohsinul Kabir, Assistant Professor, Dept. of CSE, IUT

Govt. City College, Chattogram (GCCC)   Chattogram, Bangladesh
Higher Secondary Certificate (HSC), Science   *July 2017–July 2019*
GPA: 5.00/5.00 (*17th* in Chattogram Board)

Saint Placid's School and College (SPSC)   Chattogram, Bangladesh
Secondary School Certificate (SSC), Science   *Jan 2007–June 2016*
GPA: 5.00/5.00

EXPERIENCE

Bangladesh University of Business and Technology (BUBT)   Mirpur, Dhaka
Lecturer   *July 2024–Present*

– Delivered lectures for **Theory** classes and facilitated **Lab** sessions for undergraduate courses in **Structured Programming** and **Advanced Programming**.
– Developed comprehensive course materials, including syllabi, lecture notes, assignments, and exams.
– Skills: Presentation, Public Speaking, Problem Solving.

RedDot Digital Ltd.   Dhaka, Bangladesh
Software Engineer (Intern)   *May 2023–September 2023*

– Developed ML-based CV Evaluation and Invoice Automation Software, along with APIs, Laravel backend, and Bootstrap frontend. Managed GitHub, resolved conflicts, and documented processes.
– Skills: Python, Matplotlib, Pandas, Scikit-learn, Spacy, FastAPI, Linux, Scripting, Git.

RESEARCH PROJECTS

Undergraduate Thesis Project   *Preprint available*
Bangla text Data Augmentation (BDA) Framework   *2024*

– We proposed a framework for Bangla text Data Augmentation (BDA) based on the generation of augmented datasets and an extensive study on all the available augmentation methods, on Bangla, using a wide range of high-quality datasets.
– Our pipeline consisted of transformer-based and rule-based approaches and a filtering mechanism, which resulted in upto 13% improvement in F1 score on highly contained settings and 3.22% on average.

Violence Detection | `aclanthology.org/2023.banglalp-1.26/`   Published in *BLP-2023, EMNLP*
Informal Bangla Fasttext Embedding for Violence Inciting Text Detection   *2023*

– We presented an Informal Bangla FastText(IFT) embedding trained on a 3.8 million sample dataset with 62.45% vocabulary coverage on the VITD dataset (Saha et al., 2023b).
– Created a cost-effective pipeline using the proposed IFT embedding, which offers 17 times faster training and 1.54 times faster inference speed than BanglaBERT, while having only 4% lower macro-f1 score.

– Performed extensive performance comparison with existing models to determine how well it performs in terms of accuracy and inference speed.

Mental Health Diagnostic Model
An Attention-Based ALBERT Model for Depression Detection

Accepted at IUT-ICCET 2024
2024

– Our evaluation showed the modified ALBERT outperformed DistilBERT and BERT, achieving an improved ROC AUC score, especially in detecting severe depression, while maintaining a lightweight structure with about 14.4 million parameters.

– Our study indicates that enhancing attention mechanisms in ALBERT improves performance in mental health applications, offering a balance between accuracy and computational efficiency for real-time diagnostics.

PUBLICATIONS

[1] **Md. Tariquzzaman**, M. W. Kader, A. Anam, N. Haque, M. Kabir, H. Mahmud, and M. K. Hasan, "The_linguists at BLP-2023 task 1: A novel informal Bangla Fasttext embedding for violence inciting text detection", in *Proceedings of the First Workshop on Bangla Language Processing (BLP-2023)*, F. Alam, S. Kar, S. A. Chowdhury, F. Sadeque, and R. Amin, Eds., Singapore: Association for Computational Linguistics, Dec. 2023, pp. 214–219. DOI: 10.18653/v1/2023.banglalp-1.26.

OTHER PROJECTS

CV Filtering Application | Python/Pytorch/Spacy | ⓞ `tinyurl.com/CvEval1`   RedDot Digital Ltd.
Scores CV against Job Description and Ranks | ▶ `tinyurl.com/CVEvalVideo`   2023

– Extracted Text from CV, under different sections and Matched relevant parts with the provided Job Description

– Performed Document Similarity analysis using Spacy NLP model and ranking candidates.

– Optimized Code and reached evaluation speed of (3 CV/second) on test-bench

Invoice Automation | PostgreSQL/Python/Regex | ⓞ `tinyurl.com/InvoiceAuto`   RedDot Digital Ltd.
Automates Invoice Processing and Database Entry   2023

– Extracted Text from relevant fields of Invoices and converted them into JSON objects.

– Created a Laravel backend that handles database entries based on the extracted text.

Sentiment Analysis | Python/Pytorch | ⓞ `tinyurl.com/DarazSentiment`   CSE 4622: ML Lab
Bangla Multiclass Product Review Sentiment Analysis on Daraz Reviews   2023

– Collected and annotated *1150* samples from Daraz from 5 different categories and 3 class labels.

– Performed dataset statistical analysis and benchmarked the performance on BanglaBERT.

– Analyzed the impact of oversampling in less represented classes.

3D Animated Movie | Blender | ▶ `tinyurl.com/footballblender3d`   CSE 4552: CGMS Lab
An Animated Movie on Robots Playing football   2023

– Created a movie based on the football World Cup 2022. The theme was the hype of the football World Cup.

– Constructed 3d models of a robot, a stadium, and a room from scratch.

– Applied material to the models to make them look realistic. Animated based on keyframing the other objects in the scenario.

Libre | Node/React | ⓞ `tinyurl.com/librecode`   CSE 4510: SD Lab
An eBook Reading and Library Management platform | ▶ `tinyurl.com/LibreBook23`   2022

– An ebook reader and library management app, developed using React, NodeJS, and MySQL.

– Users can add books,read them, and track reading progress.

Notecast | Java/JavaFx | ⓞ `tinyurl.com/notecastjava`   CSE 4510: VP Lab
An eBook Management platform | ▶ `tinyurl.com/NotecastDemo`   2022

– It could take notes using standard formatting tools and save them in a universal HTML format.

– The notes can be organized in a hierarchical structure.

A Fox's Tale | C++/SFML | ⓞ `tinyurl.com/FoxGameCode`   CSE 4510: OOP Lab
A 2D arcade game | ▶ `tinyurl.com/FoxGameplay`   *2021*

- Player can move the main character in a 2d space to avoid obstacles and collect points and powerups. The game also had keyboard and mouse support.
- Added a leaderboard entry system where high scores are being tracked.

CERTIFICATIONS

- **Generative AI with Large Language Models**, Stanford University, Coursera, ⊕ `tinyurl.com/genllm`   2023
- **Machine Learning Specialization**, Stanford University, Coursera, ⊕ `tinyurl.com/MLSpecial`   2022

COURSES

Structured Programming, Object Oriented Programming, Data Structure, Algorithms, Algorithm Engineering, Software Engineering, Operating Systems, Machine Learning, Artificial Intelligence, Data Structures Lab, Algorithm Engineering, Data and Telecommunications, Technical Report Writing, Numerical Methods, Computing for Engineers, Data Mining, Graph theory, Digital Logic Design, Parallel and Distributed Systems, Computer Networks Wireless Networks, Theory of Computing, Compiler Design, Graph Theory, Human-Computer Interaction.

RESEARCH INTERESTS

- **Natural Language Processing:** Sentiment Analysis, Text Classification, Text Generation, Text Summarization, Question Answering, Large Language Models
- **Human Computer Interaction:** Assistive Technologies, Intelligent User Interfaces

SKILLS

- **Programming Languages:** C, C++, Python, Java, Bash, Javascript
- **Framework & Libraries:** Pytorch, Tensorflow, Scikit-learn, Keras, HuggingFace, Matplotlib, Bootstrap, HTML5, CSS3, Flask, React, Express, Node.js, JavaFX, SFML
- **Database:** SQLite, PostgreSQL, PL/SQL, Oracle
- **Prototyping:** Figma, Adobe XD
- **Version Control:** Git, GitHub
- **Typesetting:** LaTeX, Markdown
- **IDE:** Codeblocks, Intellij, Google Colab, Jupyter Notebook, Android Studio, TeXmaker, Vi, Notepad++
- **Operating System:** Arch Linux, Ubuntu, Windows
- **Microsoft Office Suite:** Word, Excel, PowerPoint
- **Graphics/Editing Software:** Draw.io, Lucidchart, Blender, Adobe Photoshop, Adobe Premiere Pro, DaVinci Resolve

CONFERENCE PRESENTATIONS

- **Virtual Attendee** at *The 2023 Conference on Empirical Methods in Natural Language Processing*   2023
the Association for Computational Linguistics
- Virtually presented a poster my work at "Resorts World Convention Centre", Singapore

LANGUAGES

- **Bangla:** Native or bilingual proficiency
- **English:** Fluent or full professional proficiency

EXTRACURRICULAR ACTIVITIES

- **Competitive Programming**   *2015–2021*
Participated in *71+ contests* and solved *500+ programming problems* across many online judges.
  - **Codeforces:** _Faisal101_ (Max. 1370, **Pupil**)
  - **Onsite Contests:** Participated in School, College and University level Contests
- **Project Showcasing**   *2015–2018*
Participated in Inter-School, College, and Divisional level Science Fair and Innovation Fair
- **Math and Chess club**   *2012–2014*
Participated in classes and chess tournaments.

AWARDS, ACHIEVEMENTS & SCHOLARSHIPS

- **Best Shared Task Paper Award**, BLP-2023 Workshop at *EMNLP*, Singapore   *2023*
- **Partial OIC Scholarship**, awarded by the Islamic University of Technology   *2020–2024*
- **Talentpool Scholarship,** for standing *17th* in the 2019 HSC Examination, Chattogram Board   *2020–2023*
- **Best Student Award**, class of 2017, Saint Placid's School and College   *2018*
- **Programming Contests**
  - IUT Intra-University Programming Contest, *12th*   *2022*
  - Codeforces Round 794 (Div. 2), *60th* in Bangladesh   2022
  - EDU Inter-University Programming Contest, *18th*   *2020*
  - National High School Programming Contest (NHSPC) 2017, *20th*   *2017*

- **Project Showcasing**
  - Innovation Fair, Chattogram, *1st* *2018*
  - Divisional Science Fair, Chattogram, *4th* *2016*

LEADERSHIP & VOLUNTEERING

- **Instructor** at *SPSC Programming Workshop* *2018*
  - Conducted a Programming workshop for high school students to learn basic C programming.
  - Organized and conducted Structured Programming classes along with discussion sessions.
  - Conducted a contest to enhance their problem solving skills.

REFERENCES

- **Dr. Md. Kamrul Hasan**, *Professor* CSE, IUT
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- **Dr. Hasan Mahmud**, *Associate Professor* CSE, IUT
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