



EDUCATION

University of Dhaka - Institute of Information Technology, Bachelors of Science in Software Engineering(BSSE) **3.93/4.00**
Accomplishment: Secured the 70th position out of **86,000+** students in the admission examination for University of Dhaka.

GRANTS

Advanced Research Fund | Samsung Research (SR)  | AI **2024**
Secured a prestigious Advanced Research Fund (ARF) grant (~4,000,000 Taka, 4 man-months/1 year) from Samsung on AI. It's highly competitive, with proposals from 33 Samsung Research centers around the world. Since 2009, SR Bangladesh has received only two ARFs. So securing this highly prestigious grant as an academic intern was an extraordinary achievement.

Software Project Fund, DU Bus Tracking System  | Dr. Naushin Nower **2023-24**
We started this software project as a classwork in junior year. Over 5000 students at DU regularly use bus service and they make phone calls or texts to get the current location of the bus. This is cumbersome. So we built this app to track buses. Secured funding from Dr. Naushin Nower to sustain the project. Currently, the project is under evaluation for acquisition by NCP Bangladesh.

AWARDS


- Team "Software Project Lab" received "**Best innovator team**" for 1st quarter during my academic internship in Samsung. **Jul, 2024**
- Secured the 1st Runners-Up position in ITVerse2.0, Bangladesh. **Nov, 2023**
- Secured the 2nd Runners-Up position in Notre Dame Inter-University Ideathon Contest, Bangladesh. **Oct, 2023**
- Secured 1st Runners-up position in Deep Learning Sprint, BUET, Bangladesh. **Jun, 2023**
- **Champion** of Datathon, Coding Object Private Limited, India. **Dec, 2020**
- Received "Rising Star" award in Intra-sport Competition, IIT, University of, Bangladesh **Jan, 2020**

SCHOLARSHIP

- Received **Mitsubishi UFJ Foundation Scholarship** Program FY 2024, Japan **Sep, 2024**
- Received Govt. Scholarship in Higher Secondary School Certification Examination, Bangladesh **2015-2017**
- Received Govt. Scholarship in Junior School Certification Examination, Bangladesh. **2019-2023**
- Received 5 Scholarships from High School due to academic excellence **2010-2017**

PUBLICATIONS


GraphRAG Pipeline on Industry Data, 1st Author, Extended Abstract, *Accepted* in **SBPA**, Samsung R&D (*Specifics* are classified) **May 2024**

State-of-the-Art Translation of Text-to-Gloss using mBART: A case study of Bangla, 2nd Author, Arxiv,  **Apr, 2025**
Text-to-gloss translation is an essential task for Sign Language translation. In this work, we first generated synthetic data using a rule-based approach from prior art. We then fine-tuned mBART, since mBART was trained on shuffling and text-to-gloss translation has shuffling properties. Due to this surprising overlap, we achieved state-of-the-art performance in both American, and Bangladeshi benchmarks.


Temporal Analysis of the Gap Between Media Narratives and Public Sentiment During Bangladesh's July Revolution, 1st Author, *Submitted* in **July Conference '25**, Currently under-review **May, 2025**
Conducted temporal sentiment analysis on 5 Bangladeshi newspapers and 10,000+ Reddit posts during the July 2024 protests, using semi-supervised topic modeling (CorEx) and GPT-4o for emotion classification. Quantified narrative dissonance via a Sentiment Divergence Index.

Where Journalism Silenced Voices: Exploring Discrimination in the Representation of Indigenous Communities in Bangladesh **Oct, 2024**
1st Author, Submitted in **CSCW (CORE A)** Conference '25, Major revision in progress
Using both quantitative and qualitative methods, this research analyzes **2.4M** Bangla newspaper articles to find strong support for discriminatory representation and its impacts. We employed a total of 8 methods to find strong support for our hypothesis, including **LLM** and CorEx. Our results coalign with the United Nations report on the indigenous communities and distribution published in prior literature.

Evaluating Human Comprehension of Labeled Transition System Designs *Rejected* in ICSE Design Workshop '25 **Oct, 2024**
Developed metrics to assess human comprehension of formal design. Applied findings in a design repair tool, reducing comprehension time by 39%, highlighting the value of human-centered metrics for formal design interpretation.

Bengali Document Layout Analysis - A YOLOV8 Based Ensembling Approach, 4th Author, Arxiv,  **Oct 2023**
Experimentation results on Bangla Document Layout Analysis on the BadLaD dataset in DLSprint'23 where we placed 2nd.

RESEARCH EXPERIENCE


NSF Funded Project "ACOSUS"  | State University of New York, Old Westbury, USA | **NLP, Data Mining** **Mar 2024 - Oct 2024**
It's a joint project between 5 universities from the USA, namely Northeastern Illinois University, University of Houston - Victoria, California State Polytechnic University, Humboldt, State University of New York, Old Westbury and University of Texas at El Paso. I work on the NLP technical part where I collected Reddit data and analyzed them to understand how students in community college are affected by social media information.

As a Founding member of the research group Bangla AI Research, Technology and Application (BARTA) under Dr. Under Ahmedul Kabir's supervision, I participated in establishing initial projects, external collaborations and mentoring. My contributions are very significant to this group, hence a position of "lead undergrad researcher" was created and was assigned to me by Co-Director Dr. Ahmedul Kabir.

- (2021 Dec) Started initial projects on NLP text stemming and Bangla NLP Knowledge Graph. Showcased it to [bengali.AI](#) contest.
- (2022) Started a long series of works on Bangla Sign Language (BdSL).
 - First, we visited [Dhaka Deaf High School](#) to understand the social needs of BdSL.
 - We observed a gap between social needs and research focus. So we started a long series of works on it.
 - Over the years, we have created BdSL sign-to-text dataset, text-to-gloss dataset, trained models for sign language recognition and created a tool for learning BdSL at home, leveraging an auto-scoring system.
- (2023) Reached out to over 20 Bangladeshi Govt. research agency to identify who are currently actively working on BdSL. Later we visited the [Center for Disability Development \(CDD\)](#) to collect materials for the BdSL Learning Platform we were developing.
- (2023) Arranged BARTA research dissemination session with junior students where Dr. Kabir and Dr. Rayana gave valuable insights.
- (2023-2024) Started a project on identifying the discrimination in the representation of indigenous people in media, submitted in CSCW.
- (2024) Supervision on Chakma Language Corpus Building Project, led by Aditya Khisa, IIT, University of Dhaka.
- (2024) Joined with Dr. Ahmedul Kabir to discuss potential industry collaboration with [SoftBD Limited](#), Bangladesh.
- (2023-2024) Started new projects on Bangla Font Dysmorphia, Spelling Correction and Affective Computing.
- Conducted surveys with Chakma Indigenous group, teachers of deaf students. Wrote IRB Approval for human surveys.
- (2025) Participated in meetings with [Physically-challenged Development Foundation](#) (PDF) and joined in discussion of collaborations.
- (2025) BARTA Lab received [IMLI](#) Funding! Partly supervising juniors along with Dr. Ahmedul Kabir to implement the project.
- (2025) Submitted manuscript in July Conference, 2025. In review. Our group's website open at <https://bartalab.vercel.app/>
- At BARTA, I have researched topics in NLP, including Bayesian language models, normalization, word embeddings, BdSL, spelling correction, topic modeling, information retrieval, stemmers, POS tagging, and more. Long experience with LLM based research tasks.
- Technically, I have trained Syntax aware Transformer, Sign Language Recognition, Sign Mimicking, News Frame classifier, Topic Model, Word Embedding, RAG, Fine-Tuned BERT, Non-negative Matrix Factorization (NMF), SVD, Small Language Model (SLM), Spelling Correction, GRU, RNN, LSTM. Currently, focusing on learning how to minimize the size of LLMs and improving test-time reasoning.

Samsung R&D Institute, Bangladesh (SRBD) | Engineer | ML, Ontology

2024 Jan-June, 2025 -Present

- (March--) Working on innovation on AI. Note that the NDA-protected data is obfuscated with publicly available or obvious information.
 - Submitted idea proposal in "Samsung Research Strategy Discussion", June, 2025
 - Submitted idea proposal in "Device Feature Enhancement using AI" contest, June, 2025.
 - Submitted PoC proposal for an Internal Project, partially developed and maintained by my team.
 - Demonstrated project on "AI Proof-of-Contest Challenge", currently **in-progress as a POC**, April, 2025
 - Submitted idea proposal for "Advanced Research Fund, Q1 2025", was declined. May 2025
 - Submitted project proposal in "Generative AI Challenge", was declined, March, 2025
 - Submitted patent proposal on Samsung's internal project, currently **in-progress as a DOI**, March, 2025
- (February-March) Worked on Ontology, in collaboration with Oxford Semantics , acquired by Samsung Research.
 - Worked on researching the development of Ontology-related tools, announced in Oxford Semantics official website.
 - Researched and shared our algorithm designs with Oxford Professor Dr. Ian Horricks's team at Oxford Semantics.
- (2024 Jan-June) During my six months academic internship, I worked on Software Testing initially. However, my team was kind enough to soon reassign me in AI and innovation after demonstrating my expertise and interest to the team.
 - Tested Samsung Smart Home, Samsung Notes, Watch, Fits, Ring application. Developed test-suite from requirements specification and **approved** it from HQ. Wrote automated test cases and guidelines on how to do nonfunctional testing (January-April 2025).
 - Built a RAG pipeline on industry data that uses Knowledge-Graph to augment its performance. Since industry data with its vocabularies and project-specific meanings create a low-resource regularized domain, I trained custom vector embeddings to improve RAG results.
 - Submitted 2 SBPA extended abstracts and 1 was **approved** by HQ. (May 2025)
 - Submitted an Advanced Research Fund (ARF) and was **approved** by HQ. (June 2025)

DEVELOPMENT SKILLSET

Languages:	Python, JS, Solidity, E-Lisp, TS, Java, R, C, C++, SQL, Bash, Php, Rust, NuSMV, LTSA, TLA+, Alloy, Coq
Libraries and Frameworks:	MEAN, OpenCV, Scikit-Learn, BNLTK, Solana, PyTorch, LangChain, open-instruct (theory only).
Development Tools:	Git, Azure Cloud, Linux/UNIX, Emacs, Docker Swarm.

LEADERSHIP & VOLUNTEER EXPERIENCE

- Volunteer at Organizing ITVerse1.0, an Inter-University Event, University of Dhaka, Bangladesh	2020
- Secretary, Puja Organizing Committee, IIT, Jagannath Hall, University of Dhaka, Bangladesh	2023
- Cultural Secretary, IIT Student Engineering Community (IITSEC), University of Dhaka, Bangladesh	2023-2024
- Instructor at Bangladesh's first Code Refactoring Contest, ITVerse2.0, University of Dhaka, Bangladesh	2024

CERTIFICATES

2020 "Industrial Data Science in Python", Coding Objects Private Limited, Kolkata, India.
2023 "KolpoKoushol", Workshop by Universal Machine Inc, Silicon Valley, California, US.