

# TONMOY TALUKDER

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## AREAS OF RESEARCH INTEREST

I am passionate about researching the utilization of *Multimodal Deep Learning*, *Natural Language Processing*, *Computer Vision* and *Human-Computer Interaction*. I am particularly interested in how to utilize these technologies to improve the understanding and use of low-resource languages.

## EDUCATION

- **Ahsanullah University of Science and Technology** Dhaka, Bangladesh  
**Discipline:** Computer Science and Engineering  
**Degree:** Bachelor of Science Graduated: May, 2023  
**Thesis:** Bengali Key-to-Text: Text Generation from Keywords in Bengali using Pre-trained Transformers

## RESEARCH EXPERIENCE

- As Research Assistant of Undergrad Supervisor** Dhaka, Bangladesh | (2023 – Present)
- Exploring multimodal research scopes using *LLMs (Large Language Models)* in NLG, Computer Vision area for the Bangla language.

- Ahsanullah University of Science and Technology** Dhaka, Bangladesh | (2022 – 2023)
- Developed *keyword-extractor* and *sentence generation from keywords technique* for a low-resource language, Bangla. Also developed a dataset for this.
  - Explored ranking-based Bengali text summarization.

## PUBLICATIONS

Undergrad Thesis:

- **Bengali Key-to-Text: Text Generation from Keywords in Bengali using Pre-trained Transformers** (Under Review in EMNLP 2023)
  - I have developed a keyword extractor using BERT and a keyword-text pair dataset.
  - I trained T5 that can generate captions from Bengali sentences.

Academic Papers:

- **Rank Your Summaries: Enhancing Bengali Text Summarization via Ranking-based Approach** (Published) (Corresponding Author)  
**Authors:** G. M. Shahariar\*, **Tonmoy Talukder\***, Rafin Alam Khan Sotez, and Md. Tanvir Rouf Shawon (\* denotes equal contribution, names are listed in alphabetical order).  
**Conference:** International Conference on Big Data, IoT and Machine Learning (BIM 2023)
  - Used a BERT text ranker to generate the best summary.
  - Applied ensemble approaches. And compared their results.
- **Vision2Cap: Bengali Caption Generation from Images using Pre-trained Transformer** (Ongoing)
  - I am currently working on the development of a pre-trained LLM transformer-based model aimed at detecting objects and generating image captions in Bangla.
- Additional research insights can be found at: <https://tonmoytalukder.github.io/research>

## PRESENTATIONS

- G. M. Shahriar\*, **Tonmoy Talukder\***, Rafin Alam Khan Sotez, Md. Tanvir Rouf Shawon. *Rank Your Summaries: Enhancing Bengali Text Summarization via Ranking-based Approach*. Presented at the International Conference on Big Data, IoT and Machine Learning (BIM 2023). (\* denotes equal contribution, names are listed in alphabetical order).

## SKILLS

**Research:** Natural Language Processing, LLM fine Tuning, Computer Vision, Multimodal Learning

**Programming Language:** Python, JavaScript, C++, SQL (MsSQL), Markup Language (HTML, CSS)

**Frameworks:** Pytorch, Tensorflow, Keras, React JS, Node JS, Next JS, Material UI, Tailwind CSS

**Tools:** Jupyter Notebook (Anaconda 3), Colab, VS Code, Git, LaTeX

**Additional Skills:** Exploratory Data Analysis, Data Preprocessing, Full Stack Web Development (MERN)

## VOLUNTEERING EXPERIENCE

### **Technovation Bangladesh**

Dhaka, Bangladesh

A global tech education nonprofit that empowers girls to become leaders, creators, and problem-solvers.

*Mentor*

December, 2021 – Present

Responsible for...

- Mentoring students to learn App Development, AI & Machine Learning Tools
- Helping students to develop projects for the Technovation Global Competition

## ACTIVITIES

- Intra Aust Programming Contest – 2019 (7th Position, Junior Division)  
Ahsanullah University of Science & Technology, Dhaka
- Makers' Mania – Programming Contest – 2018 (4th Position, Junior Division)  
Independent University Bangladesh, Dhaka

## REFERENCES

**Dr. Md. Shahriar Mahbub**, Professor and Head [shahriar.cse@aust.edu](mailto:shahriar.cse@aust.edu)  
Department of Computer Science and Engineering  
Ahsanullah University of Science and Technology, Dhaka, Bangladesh  
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InnoVerse Foundation, Dhaka, Bangladesh  
The Diana Award Holder 2021