

# Md. Akram Hossain

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## RESEARCH INTERESTS

My research interests lie in Computational Linguistics and Natural Language Processing, particularly in the areas of Multilingual NLP, low-resource language modelling, and causal NLP applications. I am especially focused on developing NLP models for underrepresented languages like Bengali, with applications in the healthcare and financial domains.

## EDUCATION

B.Sc. (Engg.) in Computer Science and Engineering (CSE)

Jan 2018 - Sep 2023

University of Chittagong

Chittagong, Bangladesh

Medium of Instruction: English

Undergraduate Thesis: Named Entity Recognition from Financial Text Using Graph Neural Network

## RESEARCH EXPERIENCE

### Research Assistant

Apr 2020 - Present

- At **CSECU-DSG Lab** with Dr. Abu Nowshed Chy, University of Chittagong, Chittagong, Bangladesh
  - Secured **first place** at **CLEF-2023**, **EMNLP-2022**, and **FIRE-2020** Conference's research track

### Research Collaboration

Jan 2021 - Present

- At **KDE Lab** with Prof. Dr. Masaki Aono, Toyohashi University of Technology
  - Toyohashi, Japan
- With Dr. Md Zia Ullah, Edinburgh Napier University
  - Edinburgh, UK

## TEACHING EXPERIENCE

### Lecturer

December 2024 - Present

Department of CSE and CSIT, **Shanto-Mariam University of Creative Technology**,

Dhaka, Bangladesh

### Adjunct Lecturer

July 2024 - December 2024

Department of CSE, **BGC Trust University Bangladesh**,

Chittagong, Bangladesh

## RESEARCH PUBLICATIONS

### Journal Papers (J):

\* implies equal contributions

- J1. Abdul Aziz\*, **Md. Akram Hossain\***, Abu Nowshed Chy, Md Zia Ullah, and Masaki Aono, *Leveraging Contextual Representations with BiLSTM-based Regressor for Lexical Complexity Prediction*, Elsevier Natural Language Processing Journal, Vol. 05, No. 100039, 2023. (PDF)

### Conference and Workshop Papers (C) :

\* implies equal contributions

- C1. **Md. Akram Hossain**, Abdul Aziz, Muhammad Anwarul Azim, Abu Nowshed Chy, Md Zia Ullah, and Mohammad Khairul Islam, *BiGCAT: A Graph-Based Representation Learning Model with LLM Embeddings for Named Entity Recognition*, RANLP 2025, Varna, Bulgaria (Short Paper).
- C2. Nabila Ayman, **Md. Akram Hossain\***, Abdul Aziz\*, Rokan Uddin Farouqi, and Abu Nowshed Chy, *BengaliLCP: A Dataset for Lexical Complexity Prediction in the Bengali Texts*, LREC-COLING 2024, Torino, Italia (Long Paper). (PDF)
- C3. Abdul Aziz, **Md. Akram Hossain**, and Abu Nowshed Chy, *CSECU-DSG at CheckThat! 2023: Transformer-based Fusion Approach for Multimodal and Multigenre Check-Worthiness*, CLEF 2023, Thessaloniki, Greece. (PDF)
- C4. Abdul Aziz\*, **Md. Akram Hossain\***, and Abu Nowshed Chy, *CSECU-DSG @ Causal News Corpus 2022: Fusion of RoBERTa Transformers Variants for Causal Event Classification*, CASE@EMNLP 2022, Abu Dhabi, United Arab Emirates. (PDF)
- C5. Abdul Aziz\*, **Md. Akram Hossain\***, and Abu Nowshed Chy, *Enhancing the DeBERTa Transformers Model for Classifying Sentences from Biomedical Abstracts*, ALTA 2022, Adelaide, Australia. (PDF)

- C6. Abdul Aziz\*, **Md. Akram Hossain\***, and Abu Nowshed Chy, *CSECU-DSG at SemEval-2022 Task 3: Investigating the Taxonomic Relationship Between Two Arguments using Fusion of Multilingual Transformer Models*, SemEval@NAACL 2022, Washington, USA. (PDF)
- C7. Abdul Aziz\*, **Md. Akram Hossain\***, and Abu Nowshed Chy, *CSECU-DSG at SemEval-2021 Task 1: Fusion of Transformer Models for Lexical Complexity Prediction*, SemEval@ACL-IJCNLP 2021, Bangkok, Thailand. (PDF)
- C8. Abdul Aziz\*, **Md. Akram Hossain\***, and Abu Nowshed Chy, *Feature Fusion with Hand-crafted and Transfer Learning Embeddings for Cause-Effect Relation Extraction*, CEREX@FIRE 2020, Hyderabad, India. (PDF)

## ACHIEVEMENTS

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**1st Place (Winning Team) in CheckThat!@CLEF-2023 Subtask 1A Arabic** Aug 2023  
Task: Check-Worthiness in Multimodal and Multigenre Content (Task Website)  
Paper URL: CheckThat!@CLEF-2023 (PDF)

**1st Place (Winning Team) in CASE @EMNLP-2022 Subtask 1** Dec, 2022  
Task: Event Causality Identification (Task Website)  
Paper URL: CASE@EMNLP-2022 (PDF)

**1st Place (Winning Team) in CEREX @FIRE2020 Task A** Dec, 2020  
Task: Automatic Cause-effect Relation Extraction from Text (Task Website)  
Paper URL: CEREX @FIRE2020(PDF)

**2nd Place in ALTA-2022 Shared Task** Dec, 2022  
Task: Biomedical Abstracts Classification for Evidence-Based Medicine (Task Website)  
Paper: Enhancing the DeBERTa Transformers Model for Classifying Sentences from Biomedical Abstracts  
Paper URL: ALTA-2022 (PDF)

**4th Place in PreTENS-SemEval@NAACL-2022 Subtask 1** Jul, 2022  
Task: Presupposed Taxonomies: Evaluating Neural Network Semantics (PreTENS) (Task Website)  
Paper URL: PreTENS-SemEval@NAACL-2022 (PDF)

## EXTRA RESEARCH ACTIVITIES AND SKILLS

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**Reviewer:** ACL '25, CLEF '23, SemEval '22

**Conference Student Volunteer (Virtual):** ACL '23, SIGIR '21

**Programming Languages:** Python, C, C++, JAVA.

**ML Libraries:** PyTorch (implement most of the projects using it), TensorFlow, Huggingface

## PROJECT EXPERIENCE

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**AI-Based Hearing Aid System Development**, IoT and Robotics Lab, Shanto-Mariam University of Creative Technology, Bangladesh January 2025 - Present

This project develops an embedded system for a cognitively-inspired hearing aid integrating NLP and speech enhancement for real-time audio processing on edge devices.

**Technologies used:** Python, TensorFlow, PyTorch, ESP32, Raspberry Pi 5, IoT Protocols

**Medical Information System**, University of Chittagong, Bangladesh

This application serves as a backbone system for a medical centre providing features like doctor and lab test appointments, an EHR system, a symptoms analyzer, a doctor finder, and a medicine routine.

**Technologies used:** Android Studio, Java, XML, Firebase, SQLite database, TensorFlow

## LANGUAGE SKILLS

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Bengali: Vernacular

English: Proficient (IELTS Score: 7)

## REFEREES

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- Available on request