

# Md. Akram Hossain

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## RESEARCH INTERESTS

Large Language Model (LLM), Natural Language Processing, Trustworthy AI, Generative AI, Multimodal Information Processing, Lexical Semantics, Causal Inferences, and Graph Neural Networks.

## EDUCATION

2018 - 2023	BSc in Engineering Computer Science & Engineering, University of Chittagong, Chittagong, Bangladesh.	(CGPA: 3.50/4.00)
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## LABORATORY AFFILIATIONS

- At CSECU Data Science Group (CSECU-DSG) laboratory as an undergraduate research student, University of Chittagong, Bangladesh.  
**Supervisor:** Dr. Abu Nowshed Chy  
URL: [www.csecu-dsg.github.io](http://www.csecu-dsg.github.io) | Duration: May, 2020 ~ Present.
- At Knowledge Data Engineering and Information Retrieval laboratory, Toyohashi University of Technology, Japan.  
**Supervisor:** Prof. Dr. Masaki Aono  
URL: [www.kde.cs.tut.ac.jp](http://www.kde.cs.tut.ac.jp) | Duration: May, 2020 ~ Present.
- At EPSRC COG-MHEAR research programme as an honorary research assistant, Edinburgh Napier University, UK.  
**Description:** This research project aims to design algorithms that can separate the sounds of an acoustically complex environment and deliver the speech of interest to the hearing-impaired listener.  
**Supervisor:** Dr. Md Zia Ullah, Prof. Dr. Amir Hussain, and Dr. Kia Dashtipour  
URL: [www.cogmhear.org](http://www.cogmhear.org) | Duration: March, 2024 ~ Present.

## RESEARCH PUBLICATIONS

### Peer Reviewed Conferences:

- C1 **Md. Akram Hossain**, Abdul Aziz, Muhammad Anwarul Azim, Abu Nowshed Chy, Md Zia Ullah, and Mohammad Khairul Islam. *BiGCAT: A Hybrid Graph Neural Network-Based Approach to Named Entity Recognition for Financial Text* (Short Paper), [Submitted to SIGIR 2025].
- C2 Abdul Aziz, **Md. Akram Hossain**, Abu Nowshed Chy, and, Md Zia Ullah. *Multimodal Complaint Detection Using Sentiment and Emotion-Aided Multitask Contrastive Learning Model* (Long Paper), [Ongoing].
- C3 Abdul Aziz, **Md. Akram Hossain**, Abu Nowshed Chy, and, Md Zia Ullah. *Can Contrastive Learning Enhance Code-mixed Text Understanding? A Study on Multitask Sentiment and Emotion Analysis*. (Short Paper), [Ongoing].
- C4 Nabila Ayman, **Md. Akram Hossain**, Abdul Aziz, Rokan Uddin Faruqui, Abu Nowshed Chy. *BengaliLCP: A Dataset for Lexical Complexity Prediction in the Bengali Texts* (Long Paper), The 2024 Joint International Conference on Computational Linguistics, Language Resources and Evaluation (**LREC-COLING**), 2024.

### International Journals:

- J1 **Md. Akram Hossain\***, Abdul Aziz\*, Abu Nowshed Chy, Md Zia Ullah, and Masaki Aono. *Leveraging Contextual Representations with BiLSTM-based Regressor for Lexical Complexity Prediction*, Natural Language Processing Journal, Vol. 5, December 2023.  
\* equal contributions.

### Workshop/Technical Papers:

- W1 **Hossain et al.**, *CSECU-DSG at CheckThat! 2023: Transformer-based Fusion Approach for Multimodal and Multi-genre Check-Worthiness*, Conference and Labs of the Evaluation Forum (CLEF), 2023. **(1st out of 10 teams)**
- W2 **Hossain et al.**, *Enhancing the DeBERTa Transformers Model for Classifying Sentences from Biomedical Abstracts*, Proceedings of the 20th Annual Workshop of the Australasian Language Technology Association (ALTA), 2022. **(2nd out of 6 teams)**
- W3 **Hossain et al.**, *CSECU-DSG @ Causal News Corpus 2022: Fusion of RoBERTa Transformers Variants for Causal Event Classification*, Proceedings of the 5th Workshop on Challenges and Applications of Automated Extraction of Socio-political Events from Text (CASE@EMNLP), 2022. **(1st out of 13 teams)**

- W4 **Hossain et al.**, *CSECU-DSG@ Causal News Corpus 2023: Leveraging RoBERTa and DeBERTa Transformer Model with Contrastive Learning for Causal Event Classification*, Proceedings of the 6th Workshop on Challenges and Applications of Automated Extraction of Socio-political Events from Text (CASE@RANLP), 2023. **(3rd out of 10 teams)**
- W5 **Hossain et al.**, *CSECU-DSG at SemEval-2023 Task 4: Fine-tuning DeBERTa Transformer Model with Cross-fold Training and Multi-sample Dropout for Human Values Identification*, Proceedings of the 17th International Workshop on Semantic Evaluation (SemEval-2023), 2023. **(8th out of 41 teams)**
- W6 **Hossain et al.**, *CSECU-DSG@ Multimodal Hate Speech Event Detection 2023: Transformer-based Multimodal Hierarchical Fusion Model For Multimodal Hate Speech Detection*, CASE@RANLP, 2023. **(5th out of 13 teams)**
- W7 **Hossain et al.**, *CSECU-DSG at SemEval-2022 Task 3: Investigating the Taxonomic Relationship Between Two Arguments using Fusion of Multilingual Transformer Models*, Proceedings of the 16th International Workshop on Semantic Evaluation (SemEval-2022), 2022. **(4th out of 21 teams)**
- W8 **Hossain et al.**, *CSECU-DSG at SemEval-2022 Task 11: Identifying the Multilingual Complex Named Entity in Text Using Stacked Embeddings and Transformer based Approach*, SemEval-2022, 2022. **(9th out of 20 teams)**
- W9 **Hossain et al.**, *CSECU-DSG at SemEval-2021 Task 1: Fusion of Transformer Models for Lexical Complexity Prediction*, Proceedings of the 15th International Workshop on Semantic Evaluation (SemEval-2021), 2021. **(9th out of 55 teams)**
- W10 **Hossain et al.**, *Feature Fusion with Hand-crafted and Transfer Learning Embeddings for Cause-Effect Relation Extraction*, Forum for Information Retrieval Evaluation (CEREX@FIRE), 2020. **(winning team)**

## UNDERGRADUATE THESIS

My thesis project is 'Named Entity Recognition from Financial Text Using Graph Neural Network'. The research is conducted under the supervision of Assistant Professor Dr. Abu Nowshed Chy. This study aims to identify three categories of named entities (Person, Location, and Organization) from financial text using graph representation learning. The proposed approach employs DistilRoBERTa to generate the span representation of token words and construct a signed span graph, trained with a multistage graph neural network (GNN) and BiLSTM neural networks, as well as task-specific features. We set the state-of-the-art benchmark for the FiNER-ORD dataset by Shah et al., 2023 and the FIN dataset by Alvarado et al., 2015.[ C1]

## CONFERENCE PRESENTATION

- **Md. Akram Hossain.** Enhancing the DeBERTa Transformers Model for Classifying Sentences from Biomedical Abstracts. Australian Language Technology Association, Flinders University, Adelaide, December, 2022 ([Video](#)).
- **Md. Akram Hossain.** Feature Fusion with Hand-crafted and Transfer Learning Embeddings for Cause-Effect Relation Extraction. Forum for Information Retrieval Evaluation, Hyderabad, December, 2020 ([Video](#)).

## AWARDS AND HONORS

### International Accolades:

<b>1st Place</b>	International workshop on CheckThat!@CLEF-2023 Subtask 1A Arabic [W1]	August, 2023
<b>1st Place</b>	International workshop on CASE@EMNLP-2022 Subtask 1 [W3]	December, 2022
<b>1st Place</b>	International workshop on CEREX@FIRE2020 Task A [W10]	December, 2020

### National Accolades:

<b>20th out of 73 teams</b>	Inter-university programming contest of NSTU ICE Fest 2020	January, 2020
<b>1st out of 46 teams</b>	CSE Day intra-departmental programming contest 2019	September, 2019
<b>27th out of 96 teams</b>	Inter-university programming contest of CUET CSE Fest 2019	August, 2019
<b>3rd out of 12 teams</b>	ICS inter-hall debate competition	October, 2018
<b>Champion team</b>	CSECU premier league football Tournament	June, 2022

## EMPLOYMENT HISTORY

- Lecturer  
Duration: December 2024 ~ Present  
Department of Computer Science and Engineering,  
Shanto-Mariam University of Creative Technology, Dhaka, Bangladesh

- Adjunct Lecturer  
Duration: July 2024 ~ December 2024  
Department of Computer Science and Engineering,  
BGC Trust University Bangladesh, Chittagong, Bangladesh
- Mathematics and Information and Communication Technology (ICT) Instructor  
Duration: March - December 2018  
Grade: Middle and high school students  
Probaha Coaching Centre, Chawkbazar, Chittagong, Bangladesh

## PROFESSIONAL TRAINING AND ACTIVITIES

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- Teaching Assistant at Structured Programming Language (C) Lab with Prof. Abu Nowshed Chy, January-July 2020
- Reviewer at the 15, 16, and 17th International Workshop on Semantic Evaluation (SemEval-2021, 2022, 2023).
- ACL Year-Round Mentorship Program (Virtual), September, 2021.
- Student volunteer at the 44th International ACM SIGIR Conference (SIGIR-2021).
- Problem setter at the CSECU Intra-departmental competitive programming contest (2022 and 2023)

## SELECTED ONLINE EDUCATION

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<u>Coursera Course</u>	<u>Institution/Provider</u>	<u>Completed</u>
Mathematics for Machine Learning Specialization	Imperial College London	05/2024
Deep Learning Specialization	deeplearning.ai	09/2020
Python Basics	University of Michigan	07/2020

## SKILLS & INTERESTS

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**Programming Languages:** Python, C, C++, Java, PHP, R.

**Machine Learning Libraries:** Numpy, Pandas, SciKit-Learn, spaCy, Keras, TensorFlow, PyTorch, Huggingface.

**Web Designing Tools:** HTML, XML, JavaScript, CSS, jQuery, UML.

**Database Management Tools:** MySQL, XAMPP, Firebase database.

**IDE Experiences:** Google Colaboratory, PyCharm, Code Blocks, Android Studio, Eclipse, VS Code, LaTeX, Unity.

## PROJECT EXPERIENCE

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### Medical Information System

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

### MarketWatch: An Integrated Market Intelligence System

This application serves as a platform to fix the appropriate production, search for the source of all commodities, collect tariff and transportation costs, permit actual import, and ensure the supply chain by keeping up with international prices.

**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