# Eftekhar Hossain

*PhD Student, Univerisity of Central Florida*

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## Research Interest

My broad research interests are `Natural Language Processing` and `Multimodal Learning`. My work focuses on leveraging *Large Language Models* to understand how AI interprets complex information from multi-perspective narratives, aiming to enhance AI-driven comprehension across diverse viewpoints and modalities to support better decision-making in various applications.

## Education

**2024–** **PhD., Computer Science**, *University of Central Florida*, USA.

**2021–2023** **MSc., Electronics and Telecommunication Engineering**.
*Chittagong University of Engineering and Technology*, Bangladesh

*Thesis :* Investigating Multimodal Features to Identify Multilingual Offense from Social Media Memes
📙 *Thesis* | 🄿 *Slide*

**2014–2018** **B.Sc., Electronics and Telecommunication Engineering**.
*Chittagong University of Engineering and Technology*, Bangladesh

*CGPA :* 3.88/4.00

## Publications ⓖ

### Conference Proceedings

*C9* Kawsar Ahmed, Md Osama, Omar Sharif, Eftekhar Hossain, Mohammed Moshiul Hoque. ***"BenNumEval: A Benchmark to Assess LLM's Numerical Reasoning Capabilities in Bengali"***. Findings of ACL. 2025

*C8* Bowen Yan, Zhengsong Zhang, Liqiang Jing, Eftekhar Hossain, Xinya Du. ***"FIHA: Autonomous Hallucination Evaluation in Vision-Language Models with Davidson Scene Graphs"***. Findings of ACL. 2025

*C7* Eftekhar Hossain, Sanjeev Kumar Sinha, Santu Karmaker *et al*. ***"LLMs as Meta-Reviewers' Assistants: A Case Study"***. NAACL. 2025

*C6* Eftekhar Hossain, Omar Sharif, Mohammed Moshiul Hoque, and Sarah M Preum. ***"Deciphering Hate: Identifying Hateful Memes and Their Targets"***. ACL. 2024

*C5* Shawly Ahsan*, Eftekhar Hossain*, Omar Sharif, Mohammed Moshiul Hoque *et al*. ***"A Multimodal Framework to Detect Target Aware Aggression in Memes"***. EACL. 2024

*C4* Eftekhar Hossain*, Omar Sharif*, Mohammed Moshiul Hoque, and Sarah M Preum. ***"Align before Attend: Aligning Visual and Textual Features for Multimodal Hateful Content Detection"***. EACL-SRW. 2024

*C3* Eftekhar Hossain, Omar Sharif, Mohammed Moshiul Hoque. ***"MUTE: A Multimodal Dataset for Detecting Hateful Memes"***. AACL-SRW. 2022

*C2* Eftekhar Hossain, Omar Sharif, Mohammed Moshiul Hoque. ***"MemoSen: A Multimodal Dataset for Sentiment Analysis of Memes"***. Language Resources and Evaluation Conference (LREC). 2022

*C1* Omar Sharif, Eftekhar Hossain, Mohammed Moshiul Hoque. ***"M-BAD: A Multilabel Dataset for Detecting Aggressive Texts and Their Targets"***. CONSTRAINT @ACL. 2022

## Journal Articles

**J4**   Md Shalha Mucha Bhuyan, Eftekhar Hossain, Khaleda Akhter Sathi, Md Azad Hossain, M Ali Akber Dewan. ***"BVQA: Connecting Language and Vision Through Multimodal Attention for Open-Ended Question Answering"***. IEEE Access. 2025. **(Impact Factor: 3.367)**

**J3**   Ahatesham Bhuiyan, Eftekhar Hossain, Mohammed Moshiul Hoque, M Ali Akber Dewan. ***"Enhancing Image Caption Generation Through Context-Aware Attention Mechanism"***. Journal of Heliyon. Elsevier, 2024. **(Impact Factor: 3.4)**

**J2**   Eftekhar Hossain, Omar Sharif, Mohammed Moshiul Hoque, Md Azad Hossain *et al.*. ***"Identification of Multilingual Offense and Troll from Social Media Memes Using Weighted Ensemble of Multimodal Features"***. Journal of King Saud University - Computer and Information Sciences. Elsevier, 2022

**J1**   Eftekhar Hossain, Mohammed Moshiul Hoque, Enamul Hoque, Md Saiful Islam. ***"A Deep Attentive Multimodal Learning Approach for Disaster Identification From Social Media Posts"***. IEEE Access. 2022. **(Impact Factor: 3.367 )**

## Shared Task

**S3**   Eftekhar Hossain, Omar Sharif, Mohammed Moshiul Hoque. ***"Multilingual Code-Mixed Hope Speech Detection using Cross-lingual Representation Learner"***. LT-EDI @EACL. 2021

**S2**   Eftekhar Hossain, Omar Sharif, Mohammed Moshiul Hoque. ***"Investigating Visual and Textual Features to Identify Trolls from Multimodal Social Media Memes"***. DravidianLangTech @EACL. 2021

**S1**   Omar Sharif, Eftekhar Hossain, Mohammed Moshiul Hoque. ***"Offensive Language Detection from Multilingual Code-Mixed Text using Transformers"***. DravidianLangTech @EACL. 2021

## Research Experience

### Research Assistant, University of Central Florida

*Aug 2024 – present*   ***Multi-Perspective Narrative Understanding using LLMs***.
(1) Developing a method for retrieving narratives that are similar with respect to a specific criterion.
(2) Developing a framework to identify the overlap, unique, and conflicting information from pairs of alternative narratives.

*Advisor :*   **Prof. Dr. Santu Karmaker**, *Bridge-AI Lab*, University of Central Florida (*Personal Web-page*)

### Visiting Student (Remote), University of Texas at Dallas

*Jan '24 – May '24*   ***Evaluating Fine-grained Hallucination in Large Vision Language Models***.
Proposed an LLM- and annotation-free fine-grained evaluation framework for assessing object, attribute, and relationship hallucinations in LVLMs. 🖶 *ACL*

*Advisor :*   **Prof. Dr. Xinya Du**, *DuLab*, University of Texas at Dallas (*Personal Web-page*)

### Visiting Student (Remote), Dartmouth College

*May '23 – Dec '23*   ***Multimodal Hateful Content Detection in Social Media***.
Proposed a context-aware and dual co-attention framework to meaningfully align the visual and textual features for multimodal hateful content detection. 🖶 *EACL* | *ACL*

*Advisor :*   **Prof. Dr. Sarah M. Preum**, *Persist Lab*, Dartmouth College (*Personal Web-page*)

### Researcher, CUET NLP Lab, Bangladesh

*July '19 – July '24*   ***Multimodal Meme Understanding***.
Developed several benchmarks including MemoSen, MUTE, MIMOSA for Multimodal research in Bangla Language. 🖶 *LREC* | *AACL* | *EACL*

*Advisor :*   **Prof. Dr. Mohammed Moshiul Hoque**, , Chittagong University of Engineering and Technology, Bangladesh (*Personal Web-page*)

## Professional Experience

**Dec '22–July '24**  **Assistant Professor, Dept. of Electronics and Telecommunication Engineering**.
*Chittagong University of Engineering and Technology*, Bangladesh

**July '19–Dec '22**  **Lecturer, Dept. of Electronics and Telecommunication Engineering**.
*Chittagong University of Engineering and Technology*, Bangladesh

**Oct '18–June '19**  **Lecturer, Dept. of Electrical and Electronic Engineering**.
*Premier University*, Chittagong, Bangladesh

## Technical skills

*Languages*  Python, C, C++, Shell

*ML/DL*  PyTorch, TensorFlow, Keras, Scikit-Learn, Numpy, Pandas

*LLM Libraries*  Huggingface, LangChain, vLLM, Ollama

*Web Dev.*  Flask, Bootstrap, PHP, MySQL

*IDE & Tools*  Jupyter, Spyder, VS Code, Git, LATEX

## Academic Achievements & Awards

*2023*  **Best Research Award** among Faculty of ECE at Chittagong University of Engineering and Technology (CUET), Bangladesh

*2021*  **Winner** in **Hope Speech Detection Shared Task** at EACL conference.

$2^{nd}$ **Runner-up** in **Multimodal Troll Meme Detection and Offense classification Shared Task** at EACL conference.

*2017*  **1st Prize** at the **Project Show competition** at CUET.

**1st Prize** at the **Web Development Project Design Course** at CUET.

*2016*  **Merit Award** for **Obtaining Highest CGPA in an Undergraduate Academic Year** at CUET.

## Invited Training  ⚯ *Github Repo*

*Feb 2024*  **Trainer** of the short training on **"Machine Learning with Python"** Organized by *IT Bussiness Incubator at CUET*.

*Feb 2023*  **Instructor** of the course **"Hands on Training on Bangla Language Processing"** Organized under $2^{nd}$ *International Workshop on Computational Linguistics and Bangla Language Processing (CLBLP)*, Bangladesh.

*Oct 2022*  **Trainer** of the short training on **"Machine Learning with Python"** Organized by *IT Bussiness Incubator at CUET*.

*June 2022*  **Instructor** of the one week long training on **"AI and Machine Learning with Python"** Organized by *IT Bussiness Incubator at CUET*.

## Undergraduate Teaching

*2023*  **CSE 281: Data Structure and Algorithms**, CUET.

**CSE 284: Object Oriented Programming**, CUET.

*2022*  **CSE 181: Fundamentals of Computer Programming**, CUET.

**CSE 284: Object Oriented Programming**, CUET.

*2021*  **ETE 455: Neural and Fuzzy Systems**, CUET.

**ETE 407: Multimedia Communication**, CUET.

| 2020 | **CSE 281: Data Structure and Algorithms**, CUET. |
| | **ETE 311: Information Theory and Coding,** CUET. |
| | **ETE 317: Antenna and Wave Propagation,** CUET. |
| 2019 | **EEE 201: Signal and System**, Premier University.. |
| | **EEE 101: Electrical Circuits-I,** Premier University. |
| 2018 | **EEE 435: Cellular Mobile Communication**, Premier University. |

## Certification

| June 2020 | **Natural Language Processing Nanodegree**, *Udacity*. ↗ |
| April 2020 | **IBM AI Engineering Professional Certificate**, *Coursera*. ↗ |
| March 2020 | **TensorFlow: Data and Deployment Specialization**, *Coursera*. ↗ |
| Oct 2019 | **DeepLearning.AI TensorFlow Developer Specialization**, *Coursera*. ↗ |
| Sep 2019 | **Deep Learning Specialization**, *Coursera*. ↗ |

## Co-Curricular

### Judge and Organizer

| Nov 2023 | **Machine Learning Competition**, <u>*ETE Infixon 2023*</u>. 🔗 |
| Feb 2023 | **Natural Language Processing Competition 1**, <u>*CLBLP 2023*</u>. 🔗 |
| | **Natural Language Processing Competition 2**, <u>*CLBLP 2023*</u>. 🔗 |
| Oct 2022 | **Machine Learning Competition**, <u>*ETE DecaHertz 2022*</u>. 🔗 |

*June 11, 2025*