Ahatesham Bhuiyan

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Savar, Dhaka - 1340, Bangladesh

OBJECTIVE

Passionate about attention mechanisms, language models, computer vision, and multimodal learning, I am driven to explore the intersection of these fields in pursuit of innovative solutions. With a robust background in data analysis and machine learning, I am eager to embark on advanced studies to delve deeper into these areas and contribute to groundbreaking research endeavors.

RESEARCH INTERESTS

Natural Language Processing, Computer Vision, Multimodal, Deep Learning, Large Language Models.

EXPERIENCE

• **City University** *August 2023 - present*
Lecturer, Dept. of Electrical and Electronic Engineering Dhaka, Bangladesh

EDUCATION

• **Chittagong University of Engineering & Technology** *January 2018 - May 2023*
B.Sc. Engg. in Electronics and Telecommunication Engineering Chittagong, Bangladesh
  ◦ CGPA: 3.79/4.00 (Last 4 semesters: 3.94)
  ◦ Merit Position : 4th

• **Notre Dame College** *2017*
Higher Secondary School Certificate Dhaka, Bangladesh
  ◦ GPA: 5.00/5.00

PROJECTS

• **News Classifier** *August 2022*
Tools: Python, Keras, Flask [○]
  ◦ Naive Bayes algorithm and Long Short Term Memory (LSTM) are used to detect fake news from the Twitter dataset of USA Presidential Election 2020.

• **Indian Food Image Classifications** *October 2021*
Tools: Python, Keras, Transfer Learning [k]
  ◦ Custom CNN and Pre-trained models (VGG16, InceptionResNetV2) are implemented

PATENTS AND PUBLICATIONS   J=JOURNAL, S=IN SUBMISSION, T=THESIS

[J.1] **Ahatesham Bhuiyan**, Eftekhar Hossain, Mohammed Moshiul Hoque, et al. (2024). Enhancing Image Caption Generation Through Context-Aware Attention Mechanism. *Heliyon*. DOI: https://doi.org/10.1016/j.heliyon.2024.e36272

  • This work demonstrates the superiority of incorporating **ResNet-50** and a **context-aware** attention network over the conventional encoder-decoder architecture in Bangla image captioning.

  • Through extensive experiments on three benchmark datasets, we analyze the adaptiveness of image captioning outcomes across domains, showcasing the potential of **cross-domain transfer** for generating accurate out-of-domain image captions.

[S.1] Abid Hossain Mugdho, **Ahatesham Bhuiyan**, Eftekhar Hossain (2024). **A Text-Enhanced Multimodal Fusion Network For Disaster Response**. Manuscript submitted for publication.

  • A **multimodal architecture** is proposed that employs **ResNet50** and the **multi-head attention-based pre-trained transformer (BERT)** model to classify damage-related posts using both visual and textual information.

  • The proposed model is empirically evaluated on a benchmark dataset and how system performance is improved via intrinsic evaluation by incorporating **multi-head attention**.

SKILLS

- **Languages:** Python, C, MatLab, SQL
- **IDE:** Google Colab, PyCharm, VS code, Jupyter Notebook
- **Library/Framework:** Keras, TensorFlow, sci-kit learn, Flask, NLTK, SciPy
- **Artificial Inteligence:** Machine learning algorithms, CNN, LSTM, GRU, Transformers, LLM
- **Web Development:** HTML, CSS, Flask, Bootstrap
- **Tools:** Cisco Packet Tracer, Cadence, Wireshark, Git, LaTeX

HONORS AND AWARDS

Merit Award *April 2023*
Chittagong University of Engineering & Technology
• Obtained second highest GPA in last academic year

Datathon 2.0 (Second Round) *June 2022*
Robi Axiata Limited
NLP Hackathon (First Round Cleared) *January 2023*
Bangladesh Open Source Network - BdOSN
Runner Up *2015*
Chemistry Olympiad, Notre Dame College
Awarded with Government Scholarship in Primary, Secondary, and Higher Secondary exam *2010, 2012, 2015, 2017*
Dhaka Board, Bangladesh

LEADERSHIP AND VOLUNTEER EXPERIENCE

- **Finance Secretary**
  ETE DecaHertz, Dept. of ETE, CUET
- **Executive Member**
  CUET Career Club
- **Executive Member**
  Exam Committee, Dept. of EEE, City University

CERTIFICATIONS

- **Natural Language Processing with Classification and Vector Spaces** *June 2021*
- **Convolutional Neural Networks** *April 2022*
- **Sequence Models** *April 2022*
- **Using Python to Access Web Data** *July 2023*
- **SQL: A Practical Introduction for Querying Databases** *July 2023*

TEST SCORES

GRE: Overall: 314 (Quant- 163, Verbal- 151)

REFERENCES

1. **Eftekhar Hossain**
   Assistant Professor, Electronics and Telecommunication Engineering
   Chittagong University of Engineering & Technology
   Email: eftekhar.hossain@cuet.ac.bd
   Relationship: Thesis Supervisor

2. **Dr. Md. Saiful Islam**
   Associate Professor, Electronics and Telecommunication Engineering
   Chittagong University of Engineering & Technology
   Email: saiful05eee@cuet.ac.bd
   Relationship: Course Teacher