Md Farhan Ishmam

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Research Interests

Visual Question Answering (VQA), Low Resource Natural Language Processing (NLP), Resource Efficiency and Evaluation of Large Language Models (LLMs)

Education

- **Islamic University of Technology** — Dhaka, Bangladesh
  Bachelor of Science in Computer Science and Engineering; GPA: 3.96 (Ranked: 4^{th}/96) — *Jan 2019 - Aug 2023*
  - **Thesis:** Visual Robustness Analysis of VQA [1] and Caption Ranking in Zero-Shot VQA

Teaching Experience

- **Islamic University of Technology** — Dhaka, Bangladesh
  Lecturer, Department of Computer Science and Engineering — *Aug 2023 - Present*
  - **Courses:** Simulation and Modeling (Winter 2024), Microprocessor and Interfacing (Summer 2023), Business Analytics and Technology (Winter 2023)

Industry & Research Experience

- **Penta Global Limited** — Dhaka, Bangladesh
  AI Researcher, Research and Development — *July 2023 - Present*
  - **Telecom LLM:** Designing and developing a private Retrieval Augmented Generation (RAG) system using LLMs for the telecommunications domain.
  - **Bangla NLP:** Conducted research-based projects on romanized Bangla back-transliteration [6] and Bangla VQA systems [7] using novel datasets and methodologies.
- **Advanced Machine Intelligence Lab** — Dhaka, Bangladesh
  Researcher, Natural Language Processing and Computational Linguistics — *May 2023 and Aug 2023*
  - **VQA Survey:** Compiled a comprehensive survey on VQA through critical analysis and introduced novel taxonomy of the VQA literature [2].

Research

1. Visual Robustness Benchmark for Visual Question Answering (VQA)
   MF Ishmam*, I Tashdeed*, TA Saadat*, MH Ashmafee, ARM Kamal, MA Hossain
   ArXiv Preprint, 2024 [Preprint] [Code]
2. From Image to Language: A Critical Analysis of Visual Question Answering (VQA) Approaches, Challenges, and Opportunities
   MF Ishmam, MS Shovon, MF Mridha, N Dey
   Information Fusion Journal, 2024 [Paper] [Preprint]
3. Penta NLP at EXIST 2024 Task 1-3: Sexism Identification, Source Intention, Sexism Categorization In Tweets
   FT Shifat, F Haider, MSUR Sourove, DD Barua, **MF Ishmam**, M Fahim, FA Bhuiyan
   EXIST at Conference and Labs of the Evaluation Forum (CLEF), 2024 [Paper][Code]
4. Penta ML at EXIST 2024: Tagging Sexism in Online Multimodal Content With Attention-enhanced Modal Context
   DD Barua, MSUR Sourove, F Haider, FT Shifat, **MF Ishmam**, M Fahim, FA Bhuiyan
   EXIST at Conference and Labs of the Evaluation Forum (CLEF), 2024 [Paper] [Code]
5. BnSentMix: A Diverse Bengali-English Code-Mixed Dataset for Sentiment Analysis
   S Alam, **MF Ishmam**, NH Alvee, MS Siddique, MA Hossain, ARM Kamal
   ArXiv Preprint, 2024 [Preprint] [Code]

6. BanglaTLit: A Benchmark Dataset for Back-Transliteration of Romanized Bangla
   M Fahim*, FT Shifat*, **MF Ishmam***, DD Barua, F Haider, MSUR Sourove, FA Bhuiyan
   In-Review [Code]
7. ChitroJera: A Regionally Relevant Visual Question Answering Dataset for Bangla
   M Fahim*, DD Barua*, MSUR Sourove*, **MF Ishmam**, FT Shifat, F Haider, FA Bhuiyan
   In-Review [Code]
8. Leveraging FourierKAN Classification Head for Pre-Trained Transformer-based Text Classification
   AA Imran*, **MF Ishmam***
   ArXiv Preprint, 2024 [Preprint] [Code]

Research Tags

Visual Question Answering (3) - [1,2,7]
Sexism (2) - [3,4]
Low Resource NLP (3) - [5,6,7]
Language Mixing (2) - [5,7]

Projects

1. **Queuing System Simulation:** Open source implementation of queuing systems in C++ [Code]
2. **ML Algorithm Visualizer:** A Jupyter notebook serving as a learning resource to visualize ML algorithms [Code]

Achievements

- *Finalists*, Robi Datathon 3.0 - Bangladesh's largest data science event with 3,500+ participants.

Technical Skills

Languages: Python, C++, SQL, Java, Bash
Tools and Tech: PyTorch, Keras, Git, LaTeX, Draw.io