Md Farhan Ishmam

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Research Interests

Visual Question Answering (VQA), Vision Language Modality Alignment, Multicultural & Low Resource NLP.

Education

- **Islamic University of Technology (IUT)** — Dhaka, Bangladesh
  Master of Science in Computer Science and Engineering — *Aug 2023 - May 2025 (expected)*
  - **Thesis:** Layer-wise Modality Alignment of Vision-Language Models.
  - **Advisors:** Dr. Md. Azam Hossain, Dr. Abu Raihan Mostofa Kamal
- **Islamic University of Technology (IUT)** — Dhaka, Bangladesh
  Bachelor of Science in Computer Science and Engineering; GPA: 3.96 (Ranked: 4th/96) — *Jan 2019 - May 2023*
  - **Thesis:** Visual Robustness Analysis of VQA [1] and Caption Ranking in Zero-Shot VQA.

Research

1. Visual Robustness Benchmark for Visual Question Answering (VQA)
   MF Ishmam*, I Tashdeed*, TA Saadat*, MH Ashmafee, ARM Kamal, MA Hossain
   WACV, 2025 [Preprint] [Code]
2. BanglaTLit: A Benchmark Dataset for Back-Transliteration of Romanized Bangla
   M Fahim*, FT Shifat*, F Haider*, DD Barua, MSUR Sourove, **MF Ishmam**, FA Bhuiyan
   EMNLP Findings, 2024 [Code] [Dataset] [Poster] [Slides] [Video]
3. 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, 2024 [Paper] [Preprint]
4. FourierKAN outperforms MLP on Text Classification Head Fine-tuning
   AA Imran* and **MF Ishmam***
   FITML at NeurIPS, 2024 [Paper] [Code]
5. ChitroJera: A Regionally Relevant Visual Question Answering Dataset for Bangla
   DD Barua*, MSUR Sourove*, **MF Ishmam***, F Haider, FT Shifat, M Fahim, FA Bhuiyan
   In-review (NAACL 2025) [Preprint] [Code]
6. BanTH: A Multi-label Hate Speech Detection Dataset for Transliterated Bangla
   F Haider*, FT Shifat*, **MF Ishmam***, DD Barua, MSUR Sourove, M Fahim, FA Bhuiyan
   In-review (NAACL 2025) [Preprint] [Code]
7. BnSentMix: A Diverse Bengali-English Code-Mixed Dataset for Sentiment Analysis
   S Alam, **MF Ishmam**, NH Alvee, MS Siddique, MA Hossain, ARM Kamal
   In-review (LoResLM at COLING 2025) [Preprint] [Code]
8. Contextual Breach: Assessing the Robustness of Transformer-based QA Models
   A Saadat*, NI Asad*, **MF Ishmam**
   In-review (COLING 2025) [Preprint] [Code]

Research Tags

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

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

- **Yaana Technologies** — Milpitas, CA, USA
  Research Intern, AI Research and Development — *June 2024 - Aug 2024*
  - **Telecom LLM:** Designed and developed a Retrieval Augmented Generation (RAG) system and LLM agent-based solutions for contract negotiation (agent to human) and demand forecasting in the telecommunications domain.
- **Penta Global** — Dhaka, Bangladesh
  AI Researcher, Research and Development — *May 2023 and Aug 2023*
  - **Bangla NLP:** Conducted research-based projects on romanized Bangla back- transliteration [2], Bangla VQA [5], and transliterated Bangla hate detection [6] systems.
- **Advanced Machine Intelligence Lab** — Dhaka, Bangladesh
  Researcher, Natural Language Processing and Computational Linguistics — *May 2023 and July 2023*
  - **VQA Survey:** Compiled a comprehensive survey on VQA through critical analysis and introduced a novel taxonomy of the VQA literature [3].
- **HawarIT Limited** — Dhaka, Bangladesh
  Research Intern, Research and Development — *Oct 2021 and Dec 2021*
  - **Stereo Vision:** Implemented a pipeline for estimating the distance to traffic signs from camera positions using Python stereo vision libraries.

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]

Technical Skills

Deep Learning Tools: PyTorch, Hugging Face, JupyterLab/Colab, Scikit Learn, Keras.
Programming Languages: Python, C++, C, SQL, Bash, Java, R.
General Tools: Git, LaTeX, Draw.io, Visual Studio Code, Docker, Microsoft Office, Obsidian.

Relevant Courses

• Natural Language Processing • Digital Image Processing • Machine Learning • Deep Learning • Linear Algebra • Multivariate Calculus • Probability and Statistics • Data Analytics • Big Data Analysis with SQL • Database Management System • Data Mining • Data Structures • Algorithms • Graph Theory • Simulation and Modeling • Object Oriented Programming • Operating System • Software Engineering Principles

Awards & Achievements

- *Finalists* (Top-7) at Robi Datathon 3.0, Bangladesh's largest data science event with 3,500+ participants.
- *EXIST Shared Task* - Achieved Top-10 rankings in Task-2 and 6 of the EXIST challenge. [Code]
  - Task 1-3: Sexism Identification, Source Intention, Sexism Categorization In Tweets. [Paper]
  - Task 4-6: Tagging Sexism in Online Multimodal Content with Attention-enhanced Modal Context. [Paper]
- *IUT Full OIC Scholarship* - 20,000$ grant offered by Organisation of Islamic Cooperation (OIC) to the undergraduate students of Islamic University of Technology (IUT) based on merit.