

Md Farhan Ishmam

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RESEARCH INTERESTS

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

EDUCATION

- **Islamic University of Technology** Dhaka, Bangladesh
Master of Science in Computer Science and Engineering Aug 2023 - June 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** Dhaka, Bangladesh
Bachelor of Science in Computer Science and Engineering; GPA: 3.96 (Ranked: 4th /96) Jan 2019 - Aug 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
ArXiv, 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. FourierKAN outperforms MLP on Text Classification Head Fine-tuning
AA Imran* and **MF Ishmam***
Fine-Tuning in Modern Machine Learning: Principles and Scalability at NeurIPS, 2024 [[Paper](#)] [[Code](#)]
4. BANGLATLIT: A Benchmark Dataset for Back-Transliteration of Romanized Bangla
M Fahim*, FT Shifat*, F Haider*, DD Barua, MSUR Sourove, **MF Ishmam**, FA Bhuiyan
Findings of the Association for Computational Linguistics EMNLP, 2024 [[Code](#)] [[Dataset](#)]
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
ArXiv, 2024 [[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
ArXiv, 2024 [[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
ArXiv, 2024 [[Preprint](#)] [[Code](#)]
8. Contextual Breach: Assessing the Robustness of Transformer-based QA Models
A Saadat*, NI Asad*, **MF Ishmam**
ArXiv, 2024 [[Preprint](#)] [[Code](#)]
9. 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](#)]
10. 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](#)]

RESEARCH TAGS

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

Multicultural & Low Resource NLP (4) - [4,5,6,7]
LLMs & Multimodal-LLMs (4) - [1,4,5,6]

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 Jan 2024 - Present
 - **Telecom LLM:** Designing and developing a private Retrieval Augmented Generation (RAG) system using LLM agents for the telecommunications domain.
- **Penta Global** Dhaka, Bangladesh
AI Researcher, Research and Development July 2023 and Dec 2023
 - **Bangla NLP:** Conducted research-based projects on romanized Bangla back-transliteration [4], 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 Aug 2023
 - **VQA Survey:** Compiled a comprehensive survey on VQA through critical analysis and introduced a novel taxonomy of the VQA literature [2].

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, L^AT_EX, 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

ACHIEVEMENTS

- *Finalists*, Robi Datathon 3.0 - Bangladesh's largest data science event with 3,500+ participants.
- *EXIST Shared Task* - Achieved Top-10 ranking in Task-2 and 6.