

Rafid Ahmed

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🌐 LinkedIn | 🐙 Github | 📊 Kaggle

EDUCATION

• University of Dhaka

BSc in Computer Science & Engineering

Jan 2019 - Jan 2024

Dhaka, Bangladesh

RESEARCH INTERESTS

Natural Language Processing: Low Resource Languages; Knowledge Distillation; LLM Reasoning & Concept Learning, Parameter Efficient Fine Tuning.

Large Language & Vision-Language Models: Multimodal Adapters; Multimodal Self-Supervised Learning; Visual Question Answering; Medical AI (VQA, Linear Projection, Prompt Learning, Preference Optimization)

WORK EXPERIENCE

• Penta Global Limited 🌐

AI Engineer

April 2025 - Present

Dhaka, Bangladesh

- **Current Project:** Working as an AI Engineer, focusing on developing scalable data manipulation and automation pipelines using AWS cloud services such as *Lambda, S3, Glue, EC2 & SageMaker*. Designed and developed intelligent AI agents and copilots powered by Generative AI, leveraging state-of-the-art large language models (LLMs).
- **Current Research:** LLMs in Production, Medical Imaging & Modality, Medical VQA, Image classification, Preference optimization, Concept and Value Alignment in LLM, Low Resource Language, Reasoning in LLM.
- **Publications:** Papers Accepted in ACL, AACL, IJCNLP.

• Eximus Technologies 🌐

Software Engineer

March 2024 - February 2025

Dhaka, Bangladesh

- **Working Project:** Built and optimized web applications using Laravel, Vue.js, React.js, and MySQL. Developed APIs, integrated payment and payroll modules, improved UI with Blade and Tailwind, and enhanced system efficiency.

PUBLICATIONS

C=CONFERENCE, J=JOURNAL, W=WORKSHOP

- [C] **Rafid Ahmed***, Intesar Tahmid*, Mir Sazzat Hossain*, Tasnimul Hossain Tomal, Md Fahim, Md Farhad Alam - **Evaluating Large Vision Language Models on Bangla Medical Visual Question Answering: Dataset and Benchmarking**. In *Meeting of the Association for Computational Linguistics (ACL)* | 2026
- [W] **Rafid Ahmed***, Intesar Tahmid*, Mir Sazzat Hossain*, Tasnimul Hossain Tomal, Md Fahim, Md Farhad Alam - **How Good LLMs Are at Answering Bangla Medical Visual Questions? Dataset and Benchmarking**. In *AI for Medicine and Healthcare (AIMedHealth) at AACL* | 2026
- [W] Md Mahir Jawad*, **Rafid Ahmed***, Ishita Sur Apan*, Tasnimul Hossain Tomal, Fabiha Haider, Mir Sazzat Hossain, Md Farhad Alam Bhuiyan – **Benchmarking Large Language Models on Bangla Dialect Translation and Dialectal Sentiment Analysis**. In *Bangla Language Processing (BLP) Workshop at IJCNLP* | 2025 (Best Paper)
- [W] Intesar Tahmid*, **Rafid Ahmed***, Md Mahir Jawad, Anam Borhan Uddin, Md Fahim, Md Farhad Alam Bhuiyan – **PentaML at BLP Shared Task 1: Linear Probing of Pre-trained Transformer based Models for Bangla Hate Speech Detection**. In *Bangla Language Processing (BLP) Workshop at IJCNLP* | 2025

UNDER REVIEW PAPERS

C=CONFERENCE, J=JOURNAL, W=WORKSHOP

- [C] Tasnimul Hossain Tomal*, Intesar Tahmid*, **Rafid Ahmed***, Mir Sazzat Hossain, Md Fahim and Md Farhad Alam - **Decoupling Representation for Fine-tuning with Linear Probing and LoRA on Robust Downstream Adaptation** [Manuscript]

RESEARCH EXPERIENCES

• Multilingual Medical VQA and VLM Optimization

Objective: Collected and curated radiology images, annotated by medical experts for normal and abnormal findings. We have introduced the first multilingual English and Bangla VQA dataset in the medical domain. Currently conducting research on Vision-Language Models (VLMs) for medical applications, focusing on VQA explanation, VLM fine-tuning, preference optimization, linear projection techniques, and medical prompt learning.

Publication: *ACL 2026 (Long Paper)*, *AAAI 2026 (AIMedHealth)*

Period: August 2025 – Present

• Influence-Driven Self-Supervised Preference Optimization (IF-DPO)

Objective: Developed a novel self-supervised DPO framework utilizing **Influence Functions** to identify high-impact samples as synthetic "rejected" signals, matching standard DPO performance without external reward models.

Area: LLM Alignment, Reinforcement Learning from AI Feedback (RLAIF)

Submission: *NeurIPS 2026*

Code: []

• Enhancing Frozen Vision Transformers via Learnable Projection Layers

Objective: Investigated VLM-style projection layers as architectural bottlenecks for ViT. Demonstrated that freezing the backbone while training a projection-head and classifier outperforms full-parameter fine-tuning, extracting more robust representations from frozen encoders.

Area: Representation Learning, Vision Transformers (ViT), Transfer Learning

Target Venue: *CVF Conference (CVPR/WACV)*

Code: []

• Improved LoRA Finetuning for Domain-Specific Tasks

Objective: Empirical analysis of Further Pre-training and Linear Probing of LoRA adapters to mitigate domain-shift issues in specialized classification and generation tasks.

Area: Parameter-Efficient Fine-Tuning (PEFT), Domain Adaptation

Publication: Submitted – *LREC-COLING 2026*

Period: August 2025 – Present

TECHNICAL SKILLS

- **Programming Languages:** Python, C, C++ , JavaScript, Java, Kotlin, PHP
- **Deep Learning Tools:** Pytorch, Huggingface, Tensorflow, TIMM
- **Large Language Models:** RAG, GraphRAG, Multimodal RAG, LLM Agents, Web Agent
- **LLM Tools:** LangChain, LlamaIndex, Chroma, VLLM, OLLaMa, Faiss Vector Search
- **Other Tools:** Scikit-Learn, Numpy, SciPy, Pandas, NLTK, Plotly

MACHINE LEARNING ACHIEVEMENTS

Best Paper Award, IJCNLP–BLP Workshop

December 2025

Awarded for the paper "*Benchmarking Large Language Models on Bangla Dialect Translation and Dialectal Sentiment Analysis.*" [[Certificate](#)]

Finalist in Robi Datathon 3.0

May 2024

In the top 20 teams among 3,500+ participants at Bangladesh's largest datathon.

Finalist in Robi Datathon 2.0

July 2022

Ranked in the top 20 teams among 384+ teams.

REFERENCES

• Md. Farhad Alam Bhuiyan

Head of R&D, Penta Global Limited

Co-director, Center for Computational & Data Sciences, IUB

Assistant Professor, CSE, Green University of Bangladesh

pdcsedu@gmail.com

• Md. Mahmudur Rahman

Assistant Professor

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