

Mahmudul Hoque

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EDUCATION

Morgan State University	Ph.D., Advanced & Equitable Computing (started August 2025) 2025 M.S. , Advanced Computing, GPA: 3.77/4.0
North South University	2022 B.S. , Computer Science and Engineering, GPA: 3.73/4.0 Dhaka, Bangladesh

RESEARCH EXPERIENCE

My research interests lie in the development of generative and vision-language models that are more interpretable and practical for high-stakes domains.

Morgan State University Computer Science Department (Baltimore, MD, USA)	8/2023 – present	Graduate Research Assistant Supervisor: Dr. Md Mahmudur Rahman
National Institute of Standards and Technology (Gaithersburg, MD, USA)	6/2024 – 6/2025	Research Associate Supervisor: Dr. Felix Hoyer Kim Engineering Laboratory

TEACHING EXPERIENCE

Morgan State University Computer Science Department (Baltimore, MD, USA)	08/2025 – present	Graduate Teaching Assistant Introduction to Data Science Supervisor: Dr. Md Mahmudur Rahman
North South University Mathematics & Physics (Dhaka, BD)	08/2021 – 04/2022	Undergraduate Teaching Assistant Physics II, Probability and Statistics Supervisors: Dr. Zaid Bin Mahbub, and Israt Jahan

INDUSTRY EXPERIENCE

iFarmer Ltd. (Dhaka, BD)	05/2023 – 08/2023	Intern, Data Analyst Supervisor: NM Tanvir Siddiki
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PUBLICATIONS

All papers listed are published except where indicated as under review.

- [1] M. Hoque, M. R. Hasan, Md. I. S. Emon, E. P. O. Oluwafemi, M. M. Rahman, and F. Khalifa. “Comparative Analysis of Fine-Tuned Multimodal Models in Radiology Image Captioning.” *IEEE International Conference on Computing and Machine Intelligence (ICMI)*. 2025.
- [2] Md. I. S. Emon, M. Hoque, M. R. Hasan, F. Khalifa, and M. Rahman. “A novel vision transformer-based approach to detect generative model fingerprint.” *SPIE Medical Imaging: Imaging Informatics*. 2025.
- [3] E. P. O. Oluwafemi, B. D. Tunde, M. Hoque, D. Briggs, M. M. Rahman, and F. Khalifa. “Colonoscopy Image Synthesis: Transforming Medical Image Classification With Enhanced Quality and Computational Efficiency.” *IEEE International Conference on Computing and Machine Intelligence (ICMI)*. 2025.
- [4] E. P. O. Oluwafemi, M. Hoque, E. F. Akor, R. N. Chowdhury, A. Umar, and M. M. Rahman. “Solving Medical Data Limitations Through AI: Multi-Modal Vision-Language Learning for Gastrointestinal VQA and Synthetic Training Data Generation.” *CLEF Working Notes*. 2025.
- [5] R. N. Chowdhury, M. Hoque, M. R. Hasan, E. P. O. Oluwafemi, and M. M. Rahman. “Modality-Guided Radiology Caption Prediction with Small Vision-Language Models and Image Classifier.” *CLEF Working Notes*. 2025.
- [6] M. Hoque and F. H. Kim. “Generative modeling of additive manufacturing lack-of-fusion defects using three-dimensional adversarial network: Dataset development and applications in XCT simulation.” *NIST Advanced Manufacturing Series*. 2025. (In review)
- [7] M. Hoque, R. N. Chowdhury, M. R. Hasan, E. P. O. Oluwafemi, F. Khalifa, and M. M. Rahman. “An Empirical Evaluation of Low-Rank Adapted Vision–Language Models for Radiology Medical Image Captioning.” *Bioengineering*. 2025. (In review)

AWARDS

- Best Thesis in MS, Department of Computer Science, Morgan State University, 2025.
- IBM Masters Fellowship Award, 2024.
- Undergraduate Merit Scholarship, North South University, 2018.

SERVICE

- Peer reviewer, IEEE Journal of Biomedical and Health Informatics, 2025–present.
- Peer reviewer, IEEE Access, 2025–present.
- Executive Board Member, Bangladesh Student Association, Morgan State University, 2024–present.
- Executive Board Member, Graduate Student Association (School of Computer, Mathematical & Natural Sciences Representative), Morgan State University, 2024–2025.
- Sub-Executive Body Member, North South University Young Entrepreneurs Society, 2018–2021.