

# Md Ashiqur Rahman

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## Education

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### Purdue University

*Doctor of Philosophy in Computer Science*  
GPA – 3.96/4.0

Advisor: Raymond A. Yeh

West Lafayette, IN

2021–

### Bangladesh University of Engg & Tech

*Bachelor of Science in Computer Science and Engineering*  
GPA – 3.93/4.0

Advisor: Md. Shamsuzzoha Bayzid

Dhaka, Bangladesh

2015–2019

## Professional Employment

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### Purdue University

*Graduate Assistant in the Department of Computer Science*

- Teaching Assistant for courses on deep learning and computer graphics.

West Lafayette, IN

2021–present

### NVIDIA

*Research Intern*

Manager: Anima Anandkumar

- Researched large-scale weather prediction and foundation model for scientific computing.

Santa Clara, CA

Summer 2023

### United International University

*Lecturer in the Department of Computer Science*

- Taught courses on computer graphics, networking system, and data structure.

Dhaka Bangladesh

2019–2021

## Research Experience

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### Geometric Deep Learning

- Conducted research on developing robust machine learning models under geometric transformations.
- Developed a scale-equivariant computer vision model that demonstrates robustness to image resizing (Published at NeurIPS 2023).
- Introduced an anti-aliasing operator for group-equivariant computer vision models (ICLR 2025, under review).
- Currently working on designing equivariant models for local group actions.

### Operator Learning

- Developed efficient U-shaped neural operators for learning in function spaces (Published in TMLR 2023).
- Created a generative adversarial neural operator that extends GANs from finite-dimensional to function spaces (Published in TMLR 2023).

### Scientific Computing

- Developed a codomain attention neural operator to solve complex multi-physics partial differential equations (Published at NeurIPS 2024).
- Contributed to large-scale weather modeling and the development of a foundation model for scientific computing during a summer internship at Nvidia (2023).

### Vision-Language Models

- Currently working on utilizing language information for geometric vision tasks, such as symmetry detection (Under review at CVPR 2025).

## Publications

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### Refereed Conference

- [C1] **Md Ashiqur Rahman**, R. J. George, M. Elleithy, D. Leibovici, Z. Li, B. Bonev, C. White, J. Berner, R. A. Yeh, J. Kossaifi, K. Azizzadenesheli, and A. Anandkumar. Pretraining codomain attention neural operators for solving multiphysics PDEs. In *Advances in Neural Information Processing Systems (NeurIPS)*, 2024.
- [C2] **Md Ashiqur Rahman** and Raymond A. Yeh. Truly scale-equivariant deep nets with fourier layers. In *Advances in Neural Information Processing Systems (NeurIPS)*, 2023. (10 pages, acceptance rate 26.1%).
- [C3] **Md Ashiqur Rahman**, Abdullah Aman Tutul, and A. B. M. Alim Al Islam. Solving the maze of diagnosing parkinson's disease based on portable eeg sensing to be adaptable to go in-the-wild. *Proceedings of the 7th International Conference on Networking, Systems and Security*, 2020. (Best Paper Award).
- [C4] Akm Ashiquzzaman, Abdul Kawsar Tushar, **Md Ashiqur Rahman**, and Farzana Mohsin. An efficient recognition method for handwritten arabic numerals using cnn with data augmentation and dropout. *Data Management, Analytics and Innovation*, 2018.

### Refereed Journal

- [J1] **Md Ashiqur Rahman**, Abdullah Aman Tutul, Mahfuza Sharmin, and Md. Shamsuzzoha Bayzid. Beene: deep learning-based nonlinear embedding improves batch effect estimation. *Bioinformatics*, 2023.
- [J2] **Md Ashiqur Rahman**, Manuel A. Florez, Anima Anandkumar, Zachary E. Ross, and Kamyar Azizzadenesheli. Generative adversarial neural operators. *Transactions on Machine Learning Research*, 2022.
- [J3] **Md Ashiqur Rahman**, Zachary E. Ross, and Kamyar Azizzadenesheli. U-no: U-shaped neural operators. *Transactions on Machine Learning Research*, 2022.
- [J4] **Md Ashiqur Rahman**, Abdullah Aman Tutul, Sifat Muhammad Abdullah, and Md. Shamsuzzoha Bayzid. Chapao: Likelihood and hierarchical reference-based representation of biomolecular sequences and applications to compressing multiple sequence alignments. *PLoS ONE*, 2022.

### Preprints / In Submission

- [S1] Hrishikesh Viswanath, **Md Ashiqur Rahman**, Abhijeet Vyas, Andrey Shor, Beatriz Medeiros, Stephanie Hernandez, Suhas Eswarappa Prameela, and Aniket Bera. Neural operator: Is data all you need to model the world? an insight into the impact of physics informed machine learning. 2023.
- [S2] **Md Ashiqur Rahman**, Jasorsi Ghosh, Hrishikesh Viswanath, Kamyar Azizzadenesheli, and Aniket Bera. Pacmo: Partner dependent human motion generation in dyadic human activity using neural operators. *ArXiv*, abs/2211.16210, 2022.
- [S3] Hrishikesh Viswanath, **Md Ashiqur Rahman**, Rashmi Bhaskara, and Aniket Bera. Adafnio: Adaptive fourier neural interpolation operator for video frame interpolation. 2022.

## Services

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Conference Reviewer: NeurIPS, ICLR, ICML, CVPR