Md. Mushfiqur Rahman

Email: **mrahma45@gmu.edu**   Phone: **+1 (571) 668-1664**

Website: https://mushfiqur11.github.io/   GitHub: https://github.com/mushfiqur11/
Career Interests: **Computer Vision**, **Machine Learning** and **AI** Research

KEY SKILLS

Programming Languages	Python	C	C++	Java	C#	MATLAB
ML/DL Frameworks	TensorFlow	Pytorch	TFLite		
Web/Game Development	ReactJS	Django	Angular	Unity	
Others	Latex	MS Office			

EDUCATION AND ACADEMIC HIGHLIGHTS

George Mason University   Aug 2021 – Present
Ph.D. in Computer Science   Current CGPA: 3.87/4.00
Expected graduation: 2026
Research Domain: Machine Learning Optimization and Continual Learning

Islamic University of Technology (IUT)   Jan 2017 – Mar 2021
BSc.Engg. in Computer Science and Engineering   CGPA: 3.79/4.00
- Thesis: "StructGAN: Image Restoration Maintaining Structural Consistency Using A Two-Step Generative Adversarial Network"
- Obtained OIC scholarship
- Worked at IUT Computer Vision Lab (Supervisor: Prof. Md. Hasanul Kabir, Ph.D.)

RESEARCH PUBLICATIONS (Peer-reviewed)

Md. Mushfiqur Rahman, T. Abedin, K. S. S. Prottoy, A. Moshruba, F. H. Siddiqui. **"Video captioning with stacked attention and semantic hard pull"**, DOI: 10.7717/peerj-cs.664. *(PeerJ CS)* [Paper]

Md. Mushfiqur Rahman, S. B. Noor, F. H. Siddiqui, **"Automated Large-scale Class Scheduling in MiniZinc"**, *2020 2nd International Conference on Sustainable Technologies for Industry 4.0 (STI)*, 2020, pp. 1-6, DOI: 10.1109/STI50764.2020.9350485. [Paper]

Md. Mushfiqur Rahman, N. M. Zahin, K. R. Mahmud, A. B. Ansar, **"Automated Intersection Management with MiniZinc"**, *2020 2nd International Conference on Sustainable Technologies for Industry 4.0 (STI)*, 2020, pp. 1-6, DOI: 10.1109/STI50764.2020.9350408. [Paper]

ON-GOING RESEARCH PROJECTS

Gradient Optimization for Continual Learning
On-going research project under the supervision of Prof Dr. Mingrui Liu

Image Restoration with Generative Adversarial Networks
Undergraduate thesis. Submitted for peer-review
- Generative Adversarial Networks in restoration and reconstruction of old broken images by inpainting, deblurring and denoising
- Introduced a novel loss function – "structure loss", to retain edge consistency of the original image

Digital Twin and Industry 4.0: A Systematic Review, Synthesizing Framework and Future Research Agenda
Submitted for peer-review

WORK EXPERIENCE

George Mason University, VA, USA
Graduate Teaching Assistant   Aug 2021 – Present

Military Institute of Science and Technology, Dhaka, Bangladesh
Lecturer   Mar 2021 – Aug 2021
Courses Taught:
- Artificial Intelligence Sessional
- System Analysis, Design and Development Sessional
- Data Communications Sessional

Dhaka University of Engineering and Technology, Gazipur, Bangladesh
Research Assistant   Feb 2020 – Dec 2020
- Built an automated class-scheduler using the heuristic approach and authored a research paper

Samsung R&D Institute Bangladesh, Dhaka, Bangladesh
Intern   Nov 2019 – Jan 2020
- Developed deep learning model that generates 3D models from equirectangular images
- Created a variant of the Conditional GAN architecture adjusted for spherical images

M-World, Bangladesh
Game Development Team Lead   Jul 2019 – Sept 2019
- Developed 2 android games using Unity and C# for a nutrition awareness project (funded by GAIN and BSMMU)
- The two games – Pothe Pothe [Link] and Radhuni Ami [Link] are available in play-store.

RELEVANT ACTIVITIES

Notable Projects
- Parameter reduction of image classifier: Finding lowest parameter model while maintaining minimum 80% top-1 accuracy. The research project was conducted using **Pytorch in Python**
- Implementation of a Real-time Object Detection for Autonomous Vehicles using YOLOv5 using **Pytorch in Python** with extensive use of **opencv**
- A Bengali Hand-written Digit Recognition with **Tensorflow in Python**
- A simple Bengali OCR application for **Android** (available at play-store). The machine learning model was developed with **Tensorflow and Keras**
- A travel manager desktop application with network-socketing written in **Java**
- A cricket scoring desktop application written in **C++ (Qt platform)**

Additional Courses and Certifications
- Completed the Data or Specimens Only Research (Basic Course) Offered by the Collaborative Institutional Training Initiative (CITI) Program
- Completed the Deep Learning Specialization (by DeepLearning.ai) on Coursera including all the 5 courses in it. Verification code: K5323HWVRY83
- Completed the Front-End JavaScript Frameworks: Angular (by HKUST) on Coursera including all the 5 courses in it. Verification code: 4PX82QWASG8B
- Completed the Machine Learning Course (by Stanford University) on Coursera. Verification code: ZRQDDMQT4P2N
- Completed the Introduction to Psychology (by University of Toronto) on Coursera. Verification code: 2GBKRRCSR3FY

ACHIEVEMENTS

- Won silver medal in a Kaggle competition – "Bengali.AI Handwritten Grapheme Classification"
- Runner-up of *Inter University App Development Contest*, 2019 ICT Fest
- Champion of *ICT4D at 4th AUW ICT Fest 2018*
- Completed round 3 in **Google foo-bar challenge** (still on-going)
- 2 times National Topper and Gold Medalist in **International Assessment for Schools (Maths) organized by University of New South Wales**
- Reached the final round in **Stockholm Junior Water Prize, Bangladesh** in 2015.
- Won 5 Divisional Medals and 4 National Medals in **Bangladesh Mathematical Olympiad** (2009, 2012, 2013, 2014, 2016). 2 times National Math Camper
- Won 2 Divisional Medals in **Bangladesh Physics Olympiad** (Dhaka) (2013, 2014)

TEST SCORES

- GRE (Test taken on: 4th November,2020)

Verbal	Quant	AWA	**Overall**
160	167	4.0	**327**