

Md. Mushfiquir Rahman

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SCORES **TOEFL** (Date Taken: 17th October 2020) 105/120
Reading: 29/30 Listening: 30/30 Speaking: 23/30 Writing: 23/30

EDUCATION AND ACADEMIC HIGHLIGHTS **Islamic University of Technology (IUT)** Jan 2017 – Mar 2021 (expected)
Bachelor of Science, Computer Science and Engineering CGPA 3.77/4.00
Concentration: Computer Vision

- Worked at IUT Computer Vision Lab (supervisor: Dr. Md. Hasanul Kabir)
- Worked on several academic projects – “Real-time Object Detection using YOLOv3 in Pytorch for Autonomous Vehicles”, “Bengali Hand-written Digit Recognition in Tensorflow”, “Automated Intersection Management in MiniZinc (with python interfacing)”, etc.
- Developed and deployed multiple applications – a cricket scoring app in C++ (Qt platform), a travel manager in Java, a simple Bengali OCR application for android (available at [play-store](#)) etc.
- Runner-up of *Inter University App Development Contest*, 2019 ICT Fest
- Champion of *ICT4D at 4th AUW ICT Fest 2018*
- Played for IUT Cricket Team. Won 2 tournaments

Notre Dame College 2014 – 2016
Medium of education: English
Higher-Secondary School Certificate, Science GPA 5.00/5.00

- Medalist in *Bangladesh Mathematical Olympiad* (2016)

St. Joseph Higher Secondary School 2006–2014
Medium of education: English
Secondary School Certificate, Science GPA 5.00/5.00

- 2 times National Topper and Gold Medalist in *International Assessment for Schools* (Maths) by UNSW
- 4 National Medals in *Bangladesh Mathematical Olympiad* (2009, 2012, 2013, 2014). 2 times National Math Camper
- 2 Divisional Medals in *Bangladesh Physics Olympiad* (Dhaka) (2013, 2014)
- Played for school cricket team for 5 years. Won 1 district-level tournament

RESEARCH PUBLICATION **Automated Large-scale Class Scheduling in MiniZinc**
Accepted at an international IEEE conference (STI 2020)
Funded by the University Grant Commission (UGC), Bangladesh. Supervised by Dr. Fazlul Hasan Siddiqui
I am the primary author of this paper. In this paper, we propose an automated system to generate class schedules in reasonable time (less than a minute for normal university size). The paper considers the class-scheduling as a constraint satisfaction problem. The use of MiniZinc (a constraint modeling language) and Chuffed (off-the-shelf solver used in the implementation) makes the system robust.

ON-GOING RESEARCH PROJECTS

Semantically Sensible Video Captioning (SSVC)

Submitted to a peer-reviewed journal. Pre-print is available at arXiv

I am the primary author of the paper. Here, we propose a lightweight solution to video captioning by the introduction of two novel concepts – “Stacked Attention” and “Spatial Hard-Pull”. We also propose a novel scoring method for video captioning models.

Image Restoration with GAN

Academic Thesis, Supervised by Dr. Md. Hasanul Kabir

In this research, our goal was to restore and reconstruct old broken images. Our proposed method can handle several kinds of noises simultaneously and have performance comparable to state-of-the-art methods. Our primary contribution is the use of ‘structure loss’ in restoration tasks that helps maintaining overall consistency of the images. Our model also uses coherent semantic attention to ensure proper inpainting.

Artificial Abstraction and Reasoning Generation

On-going research

WORK EXPERIENCE

Dhaka University of Engineering and Technology, Gazipur

Research Assistant

Feb 2020 – Jul 2020

- Worked with Dr. Fazlul Hasan Siddiqui (head of CSE department, DUET)
- Built an automated university scheduler using heuristic approach and authored a research paper
- Used MiniZinc and Python for implementation

Samsung R&D Institute Bangladesh, Dhaka

Intern

Nov 2019 – Jan 2020

- Worked on a research project that aimed at generating realistic equirectangular images from 3D models using GAN
- Implemented 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 and Radhuni Ami are available in google play-store.

Harriken, Dhaka

Intern

Nov 2017 – Dec 2018

- Harriken was a tech start-up where I worked as an intern for 2 months
- My primary duty was to coordinate with the clients and convey their needs to the developers

OTHER RELEVANT ACTIVITIES

- I volunteered for the Bangladesh Mathematical Olympiad as an academy team member for 1 year
- Machine Learning Course on Coursera (offered by Stanford University)
- Deep Learning Specialization on Coursera (offered by DeepLearning.ai)
- Introduction to Psychology on Coursera (offered by University of Toronto)