Md Rezwanul **Haque**

MASc Candidate, University of Waterloo (UW), Canada | ML Scientist & Engineer

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My career spans top academic institutions, including the University of Waterloo (UW), Canada (CA) and Khulna University of Engineering & Technology (KUET), Bangladesh (BD). As a machine learning specialist, I have collaborated with multidisciplinary teams in academia and industry, and contributed to impactful research and real-world AI solutions. I possess an impressive publication record in top-tier venues and have been recognized for my contributions to data science and applied machine learning. My research focuses on multimodal, explainable AI and has been recognized through awards and impactful research contributions.

EDUCATION

University of Waterloo — *Waterloo, CA*
MASc in Electrical and Computer Engineering (ECE) — *May 2024 – p.*
- **Supervisor:** *Prof. Fakhri Karray*
- **Research Focus:** Multimodal Machine Learning (MMML) and Large Language Models (LLMs).
- Completed 5 MASc courses with an average grade of 90+; expected degree completion in Winter 2026.

Khulna University of Engineering & Technology (KUET) — *Khulna, BD*
Bachelor of Science in Computer Science and Engineering (CSE) — *Dec. 2014 - Feb. 2019*
- **Thesis:** "A Study on Non-Invasive Hemoglobin Measurement Techniques and Predictions."
- **Supervisor:** *Prof. Dr. M.M.A Hashem*

EMPLOYMENT

University of Waterloo — *Waterloo, CA*
Graduate Research Assistant — *May 2024 – p.*
- Centre for Pattern Analysis and Machine Intelligence (CPAMI) Lab

University of Waterloo — *Waterloo, CA*
Teaching Assistant — *Sept. 2024 - p.*
- ECE 222: Digital Computers (Fall 2025) – Students: 300
- ECE 459: Programming for Performance (Winter 2025) – Students: 453
- ECE 252: Systems Programming and Concurrency (Fall 2024, Spring 2025) – Students: 206, 210

Apsis Solutions Ltd. — *Dhaka, BD*
Machine Learning Engineer — *Mar. 2021 - Apr. 2024*
- Developed and implemented models for Bangla Handwritten and Printed OCR.
- Engineered and deployed requirement-based OCR APIs for various applications.
- Worked on Quality Assurance (QA) and Text Normalization for a Virtual Personal Assistant (VPA).

EBLICT-Dream71 Bangladesh Ltd. — *Dhaka, BD*
Machine Learning Consultant — *Jan. 2024 - Apr. 2024*
- Provided expertise and development support for a Bangla Virtual Private Assistant.

Bengali.AI — *Dhaka, BD*
Computer Vision and NLP Researcher — *Jan. 2021 - Apr. 2024*
- Conducted research and development for Bengali OCR on both handwritten and printed text.
- Worked on core NLP tasks including Grapheme Parsing, Unicode Normalization, and building a Bengali Common Voice Speech dataset.
- Developed models for Document Layout Analysis (DLA) to understand document structures.

Independent University, Bangladesh (IUB) — *Dhaka, BD*
Part-Time Research Engineer — *Jan. 2022 - Nov. 2022*
- In the Electrical and Electronic Engineering (EEE) department, conducted research on designing a highly efficient, non-invasive device for measuring human blood component levels using Genetic Algorithms and DNN-based models.

PUBLICATIONS

My work on multimodal, explainable, and reliable AI has been presented at top-tier conferences (ICCV, IJCNN, SMC, etc.) and published in leading journals (IEEE Access, Elsevier, Springer, etc.). I have made contributions to substantial research on computer vision, biological diagnostics, and human–AI interaction; a number of my publications have received remarkable recognition and citations. (Google Scholar)

SPOTLIGHT (🔆)   ORAL (🎙)   ≥ 100 CITATIONS (★)   BEST PAPER (🏆)   BEST POSTER AWARD (🏵)   PATENT (❀)
BOOK CHAPTER (📖)   EQUAL CONTRIBUTION (*)   IMPACT FACTOR (I.F.)   IMPACT SCORE (I.S.)   RANK (🥇)

H-INDEX	i10-Index	MAX CITATIONS	TOTAL CITATIONS	🎙	🔆	★	🏆	🏵	❀	📖
10	10	423 [J4]	**1205**	3	2	3	0	1	0	0

Journal Proceedings

J₁ ★ **2021** *IEEE* I.F. 3.9 (Q1) — <u>**Md. Rezwanul Haque**</u>, S. M. Taslim Uddin Raju, Md. Asaf-uddowla Golap, M.M.A Hashem, *"A Novel Technique for Non-Invasive Measurement of Human Blood Component Levels from Fingertip Video Using DNN Based Models"*, IEEE Access, IEEE, vol. 9, pp. 19025–19042, Jan. 2021.

J₂ – **2021** *Elsevier* I.F. 4.9 (Q1) — M. A.-u. Golap, S.T.U. Raju, <u>**Md. Rezwanul Haque**</u>, M.M.A Hashem, *"Hemoglobin and Glucose Level Estimation from PPG Characteristics Features of Fingertip Video Using MGGP-Based Model"*, Biomedical Signal Processing and Control, Elsevier. vol. 67, pp. 102478, Mar. 2021.

J₃ – **2021** *Springer* I.S. 2.4 (Q2) — S. M. A. Ullah, Md. Milon Islam, Saifuddin Mahmud, Sheikh Nooruddin, S.M. Taslim Uddin Raju, <u>**Md. Rezwanul Haque**</u>, *"Scalable Telehealth Services to Combat Novel Coronavirus (COVID-19) Pandemic"*, SN Computer Science, Springer Nature, vol. 2, no. 1, pp. 18, Jan. 2021.

J₄ ★ **2020** *Springer* I.S. 2.4 (Q2) — Md. Milon Islam, <u>**Md Rezwanul Haque**</u>, Hasib Iqbal, Md. Munirul Hasan, Mahmudul Hasan, Muhammad Nomani Kabir, *"Breast Cancer Prediction: A Comparative Study Using Machine Learning Techniques"*, SN Computer Science, Springer Nature, vol. 1, no. 5, pp. 290, Sep. 2020.

J₅ ★ **2020** *Springer* I.S. 2.4 (Q2) — Amanullah Asraf, Md. Zabirul Islam, <u>**Md. Rezwanul Haque**</u>, Md. Milon Islam, *"Deep Learning Applications to Combat Novel Coronavirus (COVID-19) Pandemic"*, SN Computer Science, Springer Nature, vol. 1, no. 6, pp. 363, Nov. 2020.

J₆ – **2025** *IEEE* I.F. 9.8 (Q1) — S M Taslim Uddin Raju, <u>**Md Rezwanul Haque**</u>, Md. Milon Islam, Hamdi Altaheri, and Fakhri Karray, *"ClusGNN-ViT: Integrating Deep Embedded Clustering and GNN-MIL for Microscopic Image Captioning and Diagnosis"*, IEEE Transactions on Medical Imaging, 2025. [**Under Review**]

Conference Proceedings

C₁ 🎙 **2025** *SMC* 🥇B — <u>**Md Rezwanul Haque**</u>, Md. Milon Islam, S M Taslim Uddin Raju, Hamdi Altaheri, Lobna Nassar, and Fakhri Karray, *"MDD-Net: Multimodal Depression Detection through Mutual Transformer"*, IEEE International Conference on Systems, Man, and Cybernetics (SMC), 2025.

C₂ 🎙 **2025** *SMC* 🥇B — <u>**Md Rezwanul Haque**</u>, Md. Milon Islam, S M Taslim Uddin Raju, Hamdi Altaheri, Lobna Nassar, and Fakhri Karray, *"MMFformer: Multimodal Fusion Transformer Network for Depression Detection"*, IEEE International Conference on Systems, Man, and Cybernetics (SMC), 2025.

C₃ – **2025** *IJCNN* 🥇A — S.T.U Raju, Md. Milon Islam, <u>**Md Rezwanul Haque**</u>, Hamdi Altaheri, and Fakhri Karray, *"GNN-ViTCap: GNN-Enhanced Multiple Instance Learning with Vision Transformers for Whole Slide Image Classification and Captioning"*, International Joint Conference on Neural Networks (IJCNN), 2025.

C₄ – **2023** *ATC* 🥇C — M. Rumi, B. Ullah, <u>**Md. Rezwanul Haque**</u>, Abdullah Al Noman, Emranul Haque, and Feroz Ahmed, *"Smartphone Based BP Level Monitoring System Using DNN Model"*, In 2023 International Conference on Advanced Technologies for Communications (ATC), pp. 12–18, 19-21 Oct. 2023.

C₅	–	**2023**	*ICCIT*	⚥C	M. Rumi, B. Ullah, **Md. Rezwanul Haque**, A.A. Noman, E. Haque, and Dr. Feroz Ahmed, *"Body Weight Estimation Using Smartphone Based Photoplethysmography Signal"*, 26th International Conference on Computer and Information Technology (ICCIT), pp. 1-6, 13-15 Dec. 2023.
C₆	–	**2023**	*ICDAR*	⚥A	**Md Rezwanul Haque** et al., *"BaDLAD: A Large Multi-Domain Bengali Document Layout Analysis Dataset"*, ICDAR 2023: Document Analysis and Recognition - ICDAR, pp. 326–341, 19 Aug. 2023.
C₇	🎤	**2018**	*IC4ME2*	–	**Md. Rezwanul Haque**, Md. Milon Islam, H. Iqbal, M.S. Reza, M. K. Hasan, *"Performance Evaluation of Random Forests and Artificial Neural Networks for the Classification of Liver Disorder"*, Proc. International Conference on Computer, Communication, Chemical, Material and Electronic Engineering (IC4ME2), IEEE, pp. 1-5, 8-9 Feb. 2018.

Workshop Proceedings

| W₁ | 💡🏅 | **2025** | *ICCV* | ⚥A* | **Md Rezwanul Haque***, Md. Milon Islam, S M Taslim Uddin Raju, Fakhri Karray, *"A Signer-Invariant Conformer and Multi-Scale Fusion Transformer for Continuous Sign Language Recognition"*, Proceedings of the IEEE/CVF International Conference on Computer Vision (ICCV) Workshops, pp. 4931-4940, 2025. |
| W₂ | 💡 | **2025** | *ICCV* | ⚥A* | Md. Milon Islam*, **Md Rezwanul Haque***, S M Taslim Uddin Raju, Fakhri Karray, *"FusionEnsemble-Net: An Attention-Based Ensemble of Spatiotemporal Networks for Multimodal Sign Language Recognition"*, Proceedings of the IEEE/CVF International Conference on Computer Vision (ICCV) Workshops, pp. 4924-4930, 2025. |

HONORS & AWARDS

Throughout my academic career, I have been consistently recognized with numerous scholarships and awards for excellence at the international, national, regional, and university levels, securing significant funding for my research and studies.

2025	Recipient	**Winner (2nd) of MSLR-2025 Challenge**	USD $750	*ICCV, USA*
2025	Recipient	**Best Poster Award**	–	*ICCV, USA*
2025	Recipient	**Faculty of Engineering (FOE) Award**	CAD $1,500	*UW, CA*
2025	Recipient	**Graduate Student Contingency Bursary**	CAD $5,000	*UW, CA*
2024–p.	Recipient	**Graduate Research Studentship (GRS)**	CAD $18,000/yr.	*UW, CA*
2023	Recipient	**IICT Machine Learning Idea Scholarship**	BDT 20,000	*KUET, BD*
2019	Recipient	**KUET Undergrad Thesis Scholarship**	BDT 10,000	*KUET, BD*
2015–18	Recipient	**KUET Technical Scholarship**	BDT 32,000	*KUET, BD*
2015	Recipient	**Higher Secondary Excellence Result Award**	–	*BD*
2013	Recipient	**Secondary Excellence Result Award**	–	*BD*
2011	Recipient	**School Level Award from Fisheries Subdivision**	BDT 1,000	*BD*
2010–11	Recipient	**High School General Grade Scholarship**	BDT 5,100	*BD*
2007–09	Recipient	**Primary School General Grade Scholarship**	BDT 3,500	*BD*

TECHNICAL PROFILE

2015–p.	Profile	**Stack Overflow**	2900+ Reputations	*Q/A*
2014–p.	Profile	**Codeforces**	350+ Problems Solved	*Programming*
2014–p.	Profile	**UVA Online Judge**	100+ Problems Solved	*Programming*
2019	Kaggle	**LANL Earthquake Prediction**	Top 16%	*Data Science*
2019	Kaggle	**Predict Future Sales**	Top 23%	*Data Science*
2018	Kaggle	**Toxic Comment Classification**	Top 32%	*Data Science*
2022	Course	**Quantum Machine Learning**	–	*edX*
2020	Course	**Deep Learning with Python and PyTorch**	–	*edX*
2018	Course	**Deep Learning Specialization**	–	*Coursera*
2017	Course	**Machine Learning**	–	*Coursera*

SCIENTIFIC REVIEWING

2025–p.	Reviewer	*NeurIPS Workshop MusIML*	*I*
2025–p.	Reviewer	*International Conference on Electrical Information and Comm. Technology*	*I*
2025–p.	Reviewer	*International Conference on Systems, Man, and Cybernetics (SMC)*	*I*
2025–p.	Reviewer	*International Joint Conference on Neural Networks (IJCNN)*	*I*
2023–p.	Reviewer	*PLOS One: A peer-reviewed open access scientific journal*	*II*

OTHER SERVICE

2025	Mentor	*Mentorship Program Fall 2025 (Grad Students)*	*UW, CA*
2018–19	Instructor	*Hardware Acceleration Club of KUET (HACK)*	*KUET, BD*
2015–19	Instructor	*Special Group Interested in Programming Contest (SGIPC)*	*KUET, BD*
2017	Volunteer	*University-Industry Collaboration: Challenges and Opportunities*	*KUET, BD*
2017	Volunteer	*3rd International Conference on Electrical Information and Communication Technology (EICT)*	*KUET, BD*
2015–17	Organizer	*National High School Programming Contest (NHSPC)*	*KUET, BD*
2014	Participant	*Regional Mathematical Olympiad 2014*	*BD*