MD MOTIUR RAHMAN

+1(313) 913-5588 ◇ West Lafayette, Indiana

rahma112@purdue.edu ◇ linkedin.com ◇ Portfolio ◇ Google Scholar ◇ Orcid

OBJECTIVE

With over four years of experience as a **Machine Learning** researcher, I have extensive knowledge and experience in designing, developing, and deploying **Computer Vision** models. Furthermore, I have been a Computer Science instructor at a university level for five years. As of now, I am searching for an internship opportunity focused on ***Computer Vision***.

EDUCATION

Purdue University — West Lafayette, IN, USA

PhD in Electrical and Computer Engineering Technology; GPA: 4.00 — *Expected 2026*

Thesis: Medical Image Segmentation; Respiratory Audio Signal Classification

Dhaka University of Engineering Technology (DUET) — Gazipur, Bangladesh

Masters of Science in Computer Science and Engineering; GPA: 3.83 (Merit Position: First) — *Jan. 2017 - Sept. 2019*

Thesis: Abstractive Text Summarization using Peephole Convolutional LSTM

Patuakhali Science and Technology University (PSTU) — Patuakhali, Bangladesh

Bachelor of Science in Computer Science and Engineering; GPA: 3.85 (Merit Position: First) — *Jan. 2012 - Dec. 2015*

Thesis: Clustered and Smarter Web Mining Using Semantic Web

AWARDS

- Chancellor Gold Medal-2016 — *Bestowed by President of Bangladesh for securing 1^{st} position in B.Sc.*
- Prime Minister Gold Medal-2016 — *Obtained from Prime Minister of Bangladesh for being 1^{st} in B.Sc.*
- Dean's Merit Award-2015 — *Given by Faculty of Computer Science for outstanding B.Sc. Results in 2015*
- Dean's Merit Award-2014 — *Honored by Faculty of Computer Science for B.Sc. Results in 2014*

RESEARCH EXPERIENCE

Graduate Research Assistant — Aug 2022 - Present

Purdue University — *West Lafayette, IN*

- Design and develop **computer vision (CV)** models to classify **abnormalities** and predict **lung capacities** from **respiratory audio signals**. Identify the existing limitations in **medical image segmentation** and propose **novel architectures** to address those limitations. Work on a project using **CV** to detect, recognize, and identify **probable buyers from real-time surveillance** for a real estate company. Build **CV-based federated learning** models for **healthcare technologies**.

Research Assistant — Jan 2018 - Sept 2019

Dhaka University of Engineering and Technology — *Gazipur, Bangladesh*

- Identified the limitations of **Abstractive Text Summarization**, designed the study to solve those limitations, developed a convolutional LSTM-based model for summarizing the text, assessed the performance of our model over the Daily Mail dataset, and obtained the SOTA performance on that time.

WORK EXPERIENCE

Assistant Professor — Oct 2019 - Aug 2022

Chattogram Veterinary and Animal Sciences University — *Chattogram, Bangladesh*

Lecturer — Aug 2017 - Aug 2019

Chattogram Veterinary and Animal Sciences University — *Chattogram, Bangladesh*

Lecturer — Mar 2016 - Aug 2017

Dhaka International University — *Dhaka, Bangladesh*

Responsibilities:

- Taught computer science courses; Supervised students.
- Worked on several research projects where I developed DL models for predicting diabetes, Proposed NLP models for answer script evaluations, and built a deep learning model for predicting the cattle delivery date.

RESEARCH INTERESTS

Computer Vision: Image Segmentation, Image Classification; Audio Signal Processing; Healthcare Informatics

SKILLS

Programming Languages	Python (primary), C, C++, Java, Matlab, R, SAS
Libraries and Frameworks	PyTorch (primary), TensorFlow, OpenCV, Librosa, Matplotlib, Numpy, Pandas, Scikit Learn, Scipy, Pytest, Git

ACADEMIC SERVICES

Journal Review: Applied Artificial Intelligence, The Journal of Supercomputing, Natural Language Processing Journal, Earth Science Informatics, Knowledge and Information Systems, International Journal on Computational Intelligence and Applications

PROJECTS

A Machine Learning Approach for Real-Time Detection of Blood Glucose Concentration using IR. Introduced an attentional deep learning-based automated diabetes prediction model that outperformed the SOTA models.

An Automated Approach for Dairy Delivery Date Prediction using Artificial Intelligence. Developed an RNN using a variant of the LSTM model for predicting cattle delivery dates by analyzing their physical activities.

An Automated Banana Maturity Classification using Machine Learning with Genetic Algorithm. Proposed a computer vision model in combination with CNN and genetic algorithm for classifying banana maturity level.

SELECTED PUBLICATIONS

[1] **Md Motiur Rahman**, Dilshad Islam, Rokeya Jahan Mukti, and Indrajit Saha. A deep learning approach based on convolutional LSTM for detecting diabetes. *Computational Biology and Chemistry*, 88:107329, October 2020.

[2] **Md Motiur Rahman** and Fazlul Hasan Siddiqui. An Optimized Abstractive Text Summarization Model Using Peephole Convolutional LSTM. *Symmetry*, 11(10):1290, October 2019. Number: 10 Publisher: Multidisciplinary Digital Publishing Institute.

[3] **Md Motiur Rahman** and Fazlul Hasan Siddiqui. Multi-layered attentional peephole convolutional LSTM for abstractive text summarization. *ETRI Journal*, 43(2):288–298, 2021. _eprint: https://onlinelibrary.wiley.com/doi/pdf/10.4218/etrij.2019-0016.

[4] Ferdusee Akter, Shireen Akther, Afroza Sultana, **Md Motiur Rahman**, and Ujjwal Kumar Deb. Optimization of Drying Parameters for Total Phenolic Content of Papaya Using Response Surface Methodology. *International Journal of Food Science*, 2022:e4819725, December 2022. Publisher: Hindawi.

[5] Shireen Akther, Ferdusee Akter, **Md Motiur Rahman**, Md. Arif Uddin, Md. Mokhlesur Rahman, and Md. Abdul Alim. Computational and experimental studies to optimize the extraction of flavonoids from mango powder using response surface methodology. *Journal of Food Measurement and Characterization*, 15(4):3671–3682, August 2021.

[6] **Md Motiur Rahman**, Shiva Shokouhmand, Smriti Bhatt, and Miad Faezipour. MIST: Medical Image Segmentation Transformer With Convolutional Attention Mixing (CAM) Decoder. In *Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)*, pages 404–413, January 2024.

[7] **Md Motiur Rahman**, Miad Faezipour, Smriti Bhatt, and Sudip Vhaduri. AHP-CM: Attentional Homogeneous-Padded Composite Model for Respiratory Anomalies Prediction. In *2023 IEEE 11th International Conference on Healthcare Informatics (ICHI)*, pages 65–71, 2023.

[8] **Md Motiur Rahman**, Shiva Shokouhmand, Miad Faezipour, and Smriti Bhatt. Attentional Convolutional Neural Network for Automating Pathological Lung Auscultations Using Respiratory Sounds. In *2022 International Conference on Computational Science and Computational Intelligence (CSCI)*, pages 1429–1435, 2022.

REFERENCES

- Dr. Miad Faezipour, Associate Professor, School of Engineering Technology, Purdue University, West Lafayette, USA; mfaezipo@purdue.edu
- Dr. Smriti Bhatt, Assistant Professor, Department of Computer and Information Technology, Purdue University, West Lafayette, USA; bhatt32@purdue.edu
- Dr. Fazlul Hasan Siddiqui, Professor, Department of Computer Science and Engineering, Dhaka University of Engineering Technology (DUET), Gazipur, Bangladesh; siddiqui@duet.ac.bd