

Md Mahbubur Rahman, PhD[©]

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Education

Ph.D., Computer Science

University of Wyoming, Laramie, WY

January 2025 – Present

GPA: 3.67

- Graduate Research Assistant, AgBodied Lab, Department of Electrical Engineering and Computer Science
- Advisor: Dr. Yaqoob Majeed

M.Sc., Computer Science and Engineering

Mawlana Bhashani Science and Technology University (MBSTU), Bangladesh

2016 – 2020

GPA: 3.94/4.00, Ranked 2nd

B.Sc., Computer Science and Engineering

Mawlana Bhashani Science and Technology University (MBSTU), Bangladesh

2012 – 2016

GPA: 3.59/4.00, Ranked 5th

Research Experience

Graduate Research Assistant, AgBodied Lab

University of Wyoming. Advisor: Dr. Yaqoob Majeed

January 2025 – Present

- Developed TAHAF (Trait Adaptive Hierarchical Attention Fusion of RGB-D data), an attention based architecture estimating lettuce and microgreen morphological traits from RGB-D imagery. Published in *Computers and Electronics in Agriculture* (Elsevier, Q1), June 2026.
- Leading a leaf occlusion recovery project for mature lettuce canopies, using temporally revealed ground truth rather than synthetic occlusion, with an agentic, tool using vision language model for training label verification.
- Developing CLFM, a label efficient foundation model for lettuce phenotyping (DINOv2 backbone, LoRA adaptation), using image environment contrastive pretraining with greenhouse climate logs as a free supervisory signal.
- Shaping a digital twin proposal integrating 3D Gaussian Splatting perception, physics informed growth forecasting, and reinforcement learning (DQN) based microclimate control.
- Collaborating with InsightFarm (Loveland, CO) under a formal MOU operating two commercial hydroponic growing systems inside the lab.

Publications

30+ peer-reviewed publications across Elsevier Q1, Springer, and IEEE venues. Google Scholar: h-index 12, 600+ citations.

Full list: scholar.google.com/citations?user=yfkn1UAAAAJ

Journal Articles | Selected

- [1] Rahman MM, Majeed Y, et al. TAHAF: Trait Adaptive Hierarchical Attention Fusion of RGB-D data for automated lettuce phenotyping in hydroponic systems. *Computers and Electronics in Agriculture* (Elsevier, Q1), 2026, Article 112101. [\[DOI\]](#)
- [2] Biswas J, Hasan MN, Islam MM, Rahman MM, Torabi A, Gaihre S, Faruk MO, Majeed Y. Performance-optimized Alzheimer's detection using machine learning with SMOTE and randomized hyperparameter tuning. *Discover Artificial Intelligence* (Springer, Q1), Jan 2026. [\[Link\]](#)
- [3] Mim T, Rahman MM, Biswas J, Shafkat A, Uddin KM. FruitsMultiNet: Deep neural network for fruit identification through multi-scale feature fusion. *Journal of Agriculture and Food Research* (Elsevier, Q1), Jun 2025. [\[Link\]](#)
- [4] Oliullah K, Islam MR, Rahman MM, et al. FruVeg_MultiNet: A hybrid deep learning-enabled IoT system for fruit and vegetable identification. *Journal of Agriculture and Food Research* (Elsevier, Q1), Mar 2025. [\[Link\]](#)
- [5] Rahman MM, Nayeem ME, Ahmed MS, et al. AirNet: Predictive machine learning model for air quality forecasting. *Environmental Systems Research* (Springer Nature, Q1), Oct 2024. [\[Link\]](#)
- [6] Hasan MR, Rahman MM, Shahriar F, Khan SI, Uddin KM. Smart farming: Leveraging IoT and deep learning for sustainable tomato cultivation and pest management. *Crop Design* (Elsevier, Q1), Nov 2024. [\[Link\]](#)
- [7] Rahman MM, Nasir MK, Alam MNA, Khan MS. Hybrid feature fusion and CNN for melanoma skin cancer detection. *Journal of Pathology Informatics* (Elsevier, Q1), Oct 2023. [\[Link\]](#)
- [8] Rahman MM, Khan MS, Babu HMH. BreastMultiNet: Multi-scale feature fusion for breast cancer detection. *Array* (Elsevier, Q1), Dec 2022. [\[Link\]](#)

Conference Articles

- [9] Rahman MM, Majeed Y, et al. Attention-Based Task-Adaptive Fusion for Real-Time RGB-D Lettuce Morphological Analysis. *ASABE Annual International Meeting (AIM 2026)*, Indianapolis, IN. Presented, Jul 2026.
- [10] Mallik B, Yasar S, Shafkat A, Rahman MM, Sharmin S. Privacy and security threats of recommendation systems: Awareness and perspectives of users of Bangladesh. *IEEE NCIM 2025*, Jun 2025. [\[Link\]](#)
- [11] Shafkat A, Parvin K, Yasar S, Rahman MM, Mallik B, Mumenin N. Assessing the effectiveness of supervised learning models in predicting risks of diabetes and cardiovascular disease with explainability analysis. *ICDSAIA 2025, Springer CCIS vol 2682*, Jan 2026. [\[Link\]](#)

- [12] Alam MJ, Anawar JE, Uddin KM, **Rahman MM**. Machine learning techniques for predicting ovarian cancer in early stages using biomarkers. *IEEE ICEEICT 2024*, May 2024. [\[Link\]](#)

Under Review

- Torabi A, Gaihre S, **Rahman MM**, Majeed Y. CrispFormer: Weakly Supervised Segmentation with Dynamic Multi-Scale Fusion, Uncertainty-Guided Refinement, and Boundary-Aware Loss. State of the art 78.2 mIoU on PASCAL VOC (+5.9 over baseline) with only +1.8% FLOPs / +0.3ms latency overhead versus SegFormer-B5. *Under review, ECCV 2026* (co-author).

Professional Experience

Chief Executive Officer March 2023 – February 2025

Bemantech Ltd., Bangladesh

Assistant Professor August 2023 – March 2025

Bangladesh University of Business and Technology (BUBT)

Assistant Professor and Acting Chairman January 2022 – July 2023

Dhaka International University (DIU)

Lecturer September 2017 – December 2021

East West University, Bangladesh

- Nearly eight years of university faculty experience in Bangladesh prior to doctoral studies; supervised 40+ undergraduate and graduate thesis projects across these appointments

Technical Skills

- **Programming:** Python, C, C++, Java
- **Deep Learning:** PyTorch, TensorFlow, attention mechanisms, vision transformers (DINOv2), LoRA/PEFT adaptation, diffusion and physics-informed generative models, reinforcement learning (DQN)
- **Computer Vision:** RGB-D and multimodal sensor fusion, 3D reconstruction, 3D Gaussian Splatting, Open3D, OpenCV
- **Agentic and Tool-Using Systems:** vision-language model tool orchestration for data labeling and verification pipelines
- **Hardware and Sensors:** Intel RealSense D435i, Einstar 3D scanner, hyperspectral imaging, Jetson and Raspberry Pi platforms, SPI/MIPI sensor integration
- **Other:** Git, LaTeX, high-performance computing / SLURM job scheduling

Leadership and Service

- Former Vice President, ACM Student Chapter, University of Wyoming
- Former Vice President, International Students Association (ISA), University of Wyoming
- Peer reviewer for 20+ journals including *Computers and Electronics in Agriculture* and *Informatics in Medicine Unlocked*