Ocean Monjur

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Google Scholar
Linkedin
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Kaggle

Research Interests

AI interpretability, Hyperspectral Imaging, Computer Vision

Education

- **University of South Florida** — Tampa, FL, United States
  PhD. in Computer Science and Engineering Engineering — *Jan 2026 - Current*
  Advisor: Dr. Anshuman Chhabra

- **University of Illinois Urbana-Champaign** — Champaign, IL, United States
  M.Sc. in Agricultural and Biological Engineering;CGPA: 3.81 / 4.00 — *Jan 2024 - Dec 2025*
  Advisor: Dr. Mohammed Kamruzzaman
  Relevant Courses: *Machine Learning, Deep Learning for Computer Vision, Data Science for ABE, Advanced Topics in Security, Privacy and Machine Learning, Foundations of CyberGIS and Geospatial Data Science*

- **Islamic University of Technology** — Gazipur, Bangladesh
  B.Sc. in Computer Science and Engineering; CGPA: 3.57 / 4.00 — *Jan 2019 - May 2023*
  Thesis: Modifying the internal structure of object detector necks to improve detection and segmentation performance

Research Experience

- **University of South Florida** — Tampa, FL, United States
  Graduate Teaching Assistant — *Jan 2026 - Present*
  - **COP 3515 Advanced Program Design**: In charge of grading assignments, providing feedback to students, and assisting with course administration.

- **University of Illinois Urbana-Champaign** — Champaign, IL, United States
  Graduate Research Assistant — *Jan 2024 - Dec 2025*
  - **Hyperspectral Image Reconstruction**: Experimenting with different Hyperspectral Image Reconstruction models to convert RGB images into Hyperspectral Images for Agricultural Applications.
  - **Moisture Prediction using Optical Sensing and Machine Learning**: Using optical sensing i.e. Hyperspectral images and Machine Learning to detect current moisture level across different biological samples

- **University of Illinois Urbana-Champaign** — Champaign, IL, United States
  Remote Research Intern — *May 2023 - November 2023*
  - **Literature Review**: Performed a comprehensive literature review of Hyperspectral Image reconstruction models and selected methods suited for agricultural applications

- **Computer Vision Lab, Islamic University of Technology** — Gazipur, Bangladesh
  Student Researcher — *Nov 2021 - May 2023*
  - **Complementarity of ConvNets, Vision Transformers and MLP mixers**: Exploratory analysis of a large combinations of ConVNets,ViTs and MLP mixers to find complementarity characteristics which might increase performance when combined together. This project is supervised by Dr. Niamul Quader
  - **Object Detection and Segmentation**: Experimented with Object Detectors Necks to increase better feature fusion with lower-level high-resolution feature maps and higher-level semantic feature maps to improve performance on small objects.

- **Apurba Technologies Ltd** — Mohakhali, Dhaka
  Part-Time Machine Learning Engineer — *Mar 2023 - May 2023*
  - **Maintaining and Updating the OCR pipeline:**: My primary job is to keep the Core OCR pipeline operational. Commit changes to the pipeline when required and maintain the servers in which the OCR models operate.

Publications

1. **O.Monjur**, M. T. Ahmed, M. W. Ahmed, and M. Kamruzzaman. Agro-net: A convolution-attention fusion based hyperspectral model for agro-food quality assessment. In *Proceedings of the Computer Vision and Pattern Recognition Conference*, pages 474–481, 2025

2. **O. Monjur**, M. T. Ahmed, G. Chowdhary, and M. Kamruzzaman. Agro-hsr: The first large-scale agricultural-focused hyperspectral dataset for deep learning-based image reconstruction and quality prediction. *Computers and Electronics in Agriculture*, 239:111103, 2025

3. M. T. Ahmed, **O. Monjur**, A. Khaliduzzaman, and M. Kamruzzaman. A comprehensive review of deep learning-based hyperspectral image reconstruction for agri-food quality appraisal. *Artificial Intelligence Review*, 58(4):96, 2025

4. M. T. Ahmed, **O. Monjur**, and M. Kamruzzaman. Deep learning-based hyperspectral image reconstruction for quality assessment of agro-product. *Journal of Food Engineering*, 382:112223, 2024

5. M. T. Ahmed, M. W. Ahmed, **O. Monjur**, J. L. Emmert, G. Chowdhary, and M. Kamruzzaman. Hyperspectral image reconstruction for predicting chick embryo mortality towards advancing egg and hatchery industry. *Smart Agricultural Technology*, 9:100533, 2024

6. **O. Monjur**, R. B. Preo, A. B. Shams, M. Raihan, M. Sarker, and F. Fairoz. Covid-19 prognosis and mortality risk predictions from symptoms: A cloud-based smartphone application. *BioMed*, 1(2):114–125, 2021

Publications - Under Review/Preprints

1. M. Bashar, **O. Monjur**, S. Islam, M. G. Shams, and N. Quader. Exploring synergistic ensemble learning: Uniting cnns, mlp-mixers, and vision transformers to enhance image classification. *arXiv preprint arXiv:2504.09076*, 2025 **Submitted to a double blinded conference.**

2. A. B. Shams, M. Raihan, M. Sarker, M. Khan, M. Uddin, **O. Monjur**, and R. B. Preo. Telehealthcare and telepathology in pandemic: A noninvasive, low-cost micro-invasive and multimodal real-time online application for early diagnosis of covid-19 infection. *arXiv preprint arXiv:2109.07846*, 2021

Reviewing Experience

1. CVPR Workshops V4A 2024, 2025: 5 papers

Honors and Awards

1. CARD-IAB Meeting May 2024 Poster Presentation Award: 3rd Place

2. CARD-IAB Meeting October 2024 Poster Presentation Award: 2nd Place

3. CARD-IAB Meeting May 2025 Poster Presentation Award: Honorable Mention

Projects

- **Image Classification of Stroke Blood Clot Origin**: Developed an Ensemble of Classifiers of CoAtNet and ResNet-101 for the Kaggle competition. The dataset for this competition comprises over a thousand high-resolution whole-slide digital pathology images. Each slide depicts a blood clot from a patient that had experienced an acute ischemic stroke. Our task is to classify the etiology (CE or LAA) of the slides in the test set for each patient.
- **Automatic Speech Recognition**: Worked on fine tuning automatic speech recognition models to improve Bengali speech recognition for specific local dialects. Finished in the top-10 out of 54 competing teams.

Skills Summary

- **Programming Languages**: Python, C++, Matlab, SQL, Bash Scripting
- **Tools**: Pytorch, Tensorflow, Git, Docker
- **Frameworks**: Django, React