Mir Sazzat Hossain

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Education

Independent University, Bangladesh **Jan 2017 – May 2021**
Bachelor of Science in Computer Science and Engineering *Dhaka, Bangladesh*
Minor in Engineering Mathematics
*CGPA: **3.64 / 4.00***

Research Experience

Post-baccalaureate Research Assistant **Feb 2022 – Present**
Center for Computational & Data Sciences, Independent University, Bangladesh *Dhaka, Bangladesh*

- Working on several projects, including domain adaptation, multimodal-adapter, federated learning, and particle jet tagging using graph neural networks.
- Developed a recurrent neural network-based model for image super-resolution, published in ICIP.
- Implemented a semi-supervised equivariant CNN for radio galaxy classification as part of a project funded by the ICT Division, Government of Bangladesh, published in IJCNN 2023.
- Conducted tutorials and provided lab support for Programming, Data Structures, AI, and ML.
- Mentored undergraduate students on implementation and write-up for their final thesis projects.

Publications

- Team BD Lensing. "**Investigating the Relation Between Environment and Internal Structure of Massive Elliptical Galaxies Using Strong Lensing**" in Astronomy & Astrophysics (A&A), vol. 699, pp. A259, 2025, DOI: 10.1051/0004-6361/202453239. **[Q1 Journal]** [Paper] [Project]
- **Mir Sazzat Hossain**, Rakibul Hasan Rajib, Md Akil Raihan Iftee, Ovi Paul, Abu Bakar Siddik Nayem, Anis Sarker, Md. Ashraful Amin, Amin Ahsan Ali and A K M Mahbubur Rahman. "**BD Open LULC Map: High-resolution Land Use Land Cover Mapping & Benchmarking for Urban Development in Dhaka, Bangladesh**" accepted at the 2025 IEEE International Conference on Image Processing (ICIP). [Paper]
- **Mir Sazzat Hossain**, K M B Asad, Payaswini Saikia, Adrita Khan, Md Akil Raihan Iftee, Rakibul Hasan Rajib, A K M Mahbubur Rahman, Arshad Momen, Jewel Kumar Ghosh, Amin Ahsan Ali and Md. Ashraful Amin. "**RGC-Bent: a Novel Dataset for Bent Radio Galaxy Classification**" accepted at the 2025 IEEE International Conference on Image Processing (ICIP). [Paper] [Code]
- Rakibul Hasan Rajib, Md Akil Raihan Iftee, **Mir Sazzat Hossain**, A K M Mahbubur Rahman, Sajib Mistry, Md. Ashraful Amin, and Amin Ahsan Ali. "**FedCTTA: A Collaborative Approach to Continual Test-Time Adaptation in Federated Learning**" accepted at the International Joint Conference on Neural Networks (IJCNN 2025). [Paper] [Code]
- **Mir Sazzat Hossain**, AKM Mahbubur Rahman, Md. Ashraful Amin, and Amin Ahsan Ali. "**Lightweight Recurrent Neural Network for Image Super-Resolution**" 2024 IEEE International Conference on Image Processing (ICIP), Abu Dhabi, United Arab Emirates, 2024, pp. 1567-1573, DOI: 10.1109/ICIP51287.2024.10647844 [Paper] [Code]
- **Mir Sazzat Hossain**, Sugandha Roy, K M B Asad, Arshad Momen, Amin Ahsan Ali, Md. Ashraful Amin and AKM Mahbubur Rahman."**Morphological Classification of Radio Galaxies Using Semi-Supervised Group Equivariant CNNs**" in Procedia Computer Science, vol. 222, pp. 601-612, 2023, ISSN: 1877-0509, DOI: 10.1016/j.procs.2023.08.198. [Paper] [Code]

Preprints

- Fahim Mahafuz Ruhad, Md Fahim, **Mir Sazzat Hossain**, Md Fahad Monir, Md. Ashraful Amin, and Ashraful Islam, "**Beyond Classification: Benchmarking Object Detection Models for Efficient Tomato Leaf Disease Identification on a Real-World Dataset**" submitted to Elsevier Smart Agricultural Technology **[Q1 Journal]**[Paper]
- Md Akil Raihan Iftee, **Mir Sazzat Hossain**, Rakibul Hasan Rajib, A K M Mahbubur Rahman, Tariq Iqbal, Md Mofijul Islam, Md. Ashraful Amin, and Amin Ahsan Ali. "**SloMo-Fast: Slow-Momentum and Fast-Adaptive Teachers for Source-Free Continual Test-Time Adaptation**" submitted to the IEEE/CVF Winter Conference on Applications of Computer Vision (WACV 2026). [Paper] [Code]
- Md Fahim, Md Farhan Ishmam, **Mir Sazzat Hossain**, Md. Ashraful Amin, Amin Ahsan Ali, and A K M Mahbubur Rahman. "**R-MMA: Enhancing Vision-Language Models with Recurrent Adapters for Few-Shot and Cross-Domain Generalization**" submitted to the IEEE/CVF Winter Conference on Applications of Computer Vision (WACV 2026). [Paper]

- Newaz Ben Alam, Akm Moshiur Rahman Mazumder, **Mir Sazzat Hossain**, Mysha Samiha, Md Alvi Noor Hossain, Md Fahim, Amin Ahsan Ali, Ashraful Islam, Md. Ashraful Amin, and AKM Mahbubur Rahman. "**CMBan: Cartoon-Driven Meme Contextual Classification Dataset for Bangla**" submitted to the International Joint Conference on Natural Language Processing & Asia-Pacific Chapter of the Association for Computational Linguistics (AACL 2026). [Paper]
- Md Akil Raihan Iftee, **Mir Sazzat Hossain**, Syed Md. Ahnaf Hasan, Rakibul Hasan Rajib, Amin Ahsan Ali, AKM Mahbubur Rahman, Sajib Mistry, and Monowar Bhuyan. "**FedBalanceTTA – Federated Learning with Balanced Test Time Adaptation**" sumbitted to the Fortieth AAAI Conference on Artificial Intelligence (AAAI 2026). [Paper]

Selected Projects

Automated Website Vulnerability Scanner **June 2025**

- Worked in an automated website vulnerability scanning system that used `LangGraph` to manage task flow for reconnaissance, summarization, and data retrieval.
- Integrated the `browser-use` agent to simulate attacks (e.g., SQL injection, DDoS) and identify vulnerabilities through black-box testing.
- Added an LLM-based summarizer to condense outputs from tools like `nmap` and `nikto` into readable vulnerability reports.
- Mitigated LLM context length and token cost issues by storing detailed scan outputs in `PGVector`, with summaries referencing the full data when needed.

Predicting Restaurant Orders with USTGCN **January 2021**

- Built a tool to forecast the number of orders a restaurant would receive the next day based on the last 7 days of order data, using a unified spatio-temporal graph convolutional network. [Github]

RGC - Python Package **November 2020**

- Created a Python package for preprocessing radio signals received from radio telescopes to produce clean, noise-free images and classify them using established machine learning models. [Github]

Teaching Experience

Post-baccalaureate Teaching Assistant **May 2021 – Jan 2022**

Independent University, Bangladesh, Dept. of Computer Science and Engineering *Dhaka, Bangladesh*

- Redesigned the lab materials for the Numerical Methods course using Python.
- Provided programming support and addressed student queries during lab sessions for Neural Networks and Data Mining course.

Undergraduate Teaching Assistant **Oct 2019 – Apr 2021**

Independent University, Bangladesh, Department of Physical Sciences *Dhaka, Bangladesh*

- Offered one-on-one tutoring to struggling students from various disciplines at Math Tutorial Center.
- Worked with other tutors to manage the center and make sure students got the support they needed.

Awards and Honors

- Received the **IEEE Signal Processing Society Travel Grant** of **US $1,000** for joining the **2024 IEEE ICIP** in Abu Dhabi, UAE (October 27-30). [Credentials]
- Placed on the Vice Chancellor's List at IUB three times (Spring 2021, Autumn 2020, Summer 2020) for maintaining a GPA of 3.50 or above for three consecutive semesters. [Credentials]
- Made the Dean's Merit List at IUB in Spring 2020 for achieving a CGPA of 3.50 or higher for two consecutive semesters. [Credential]
- Achieved a spot on the Dean's List at IUB in Autumn 2019 for obtaining a CGPA of 3.50 or more in that semester. [Credential]

Extracurricular Activities

- Represented IUB in The 2019 ICPC Asia Dhaka Regional Contest. [Credential]
- Winner of the Intra IUB Tech Fest Programming Contest, Summer 2019. [Credential]
- Winner of the 2019 Intra IUB ACM Week Code Debugging Contest. [Credential]
- Actively participated in various workshops, programming contests, and Olympiads. [Credentials]

Relevant Coursework

Artificial Intelligence, Machine Learning, Image Processing, Numerical Methods, Linear Algebra and Differential Equation, Multivariable Calculus, Ordinary Differential Equation, Boundary Value Problem

Standardized Tests

- **IELTS**: Overall 7.0 (Reading - 6.5, Listening - 8.5, Speaking - 6.5, Writing - 6.0)

Technical Skills

- **Languages**: Python, C++, C, JavaScript
- **Libraries**: PyTorch, PyTorch-Lightning, Hugging Face, Flower, TensorFlow, Scikit-learn, Keras
- **Web Frameworks**: NextJs, React, Django, Laravel
- **Miscellaneous**: Git, Docker, Apptainer, HTCondor, Slurm, MATLAB, LaTeX