A. Q. M. Sazzad Sayyed

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Ph.D. Candidate, Electrical Engineering | Northeastern University

Research Interests

▪ Computer Vision ▪ Out-of-Distribution Detection ▪ Anomaly Detection ▪ Machine Unlearning

Selected Research Projects

ENCORE: Improving OOD Detection via Neural Collapse Insights
Reinterpreted energy-based OOD detection through the theoretical lens of neural collapse, leading to a 3% performance improvement over state-of-the-art methods.
CLUE: Efficient but Effective Class Unlearning
Established a connection between unlearned classes and OOD data and utilized it to design a class-unlearning approach, enabling efficient forgetting with 4.7% performance gain and 68% power savings.
Boundary Aware Training for Selective Classifier
Introduced a confidence-calibrated training method linking prediction certainty to decision boundary geometry, achieving substantial risk reduction under coverage constraints.

Selected Publications

- **A. Q. M. Sazzad Sayyed**, Francesco Restuccia. *ENCORE: A Neural Collapse Perspective on Out-of-Distribution Detection in Deep Neural Networks.* **IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)** (accepted).
- **A. Q. M. Sazzad Sayyed**, Nathaniel D. Bastian, Michael J. De Lucia, Ananthram Swami, Francesco Restuccia. *CLUE: Bringing Machine Unlearning to Mobile Devices.* **IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)** (accepted).
- **A. Q. M. Sazzad Sayyed**, Francesco Restuccia. *SINF: Semantic Inference in Neural Networks with Semantic Subgraphs.* **ICML 2025 Workshop on Machine Learning for Wireless Communication and Networks (ML4Wireless)**. [OpenReview link].
- **A. Q. M. Sazzad Sayyed**, Jonathan Ashdown, Michael De Lucia, Ananthram Swami, Nathaniel D. Bastian, Francesco Restuccia. *Resilient Wireless Communications with Selective Deep Neural Network Classification.* **IEEE Military Communications Conference (MILCOM)**, 2025.
- Tanvir Mahmud, **A. Q. M. Sazzad Sayyed**, Shaikh Anowarul Fattah, Sun-Yuan Kung. *A Novel Multi-stage Training Approach for Human Activity Recognition from Multimodal Wearable Sensor Data Using Deep Neural Network.* **IEEE Sensors Journal**, vol. 21, no. 2, pp. 1715–1726, 2020.

Education

- **Ph.D. in Electrical Engineering**, Northeastern University, Boston, MA *2023 – Present*
- **M.S. in Electrical Engineering**, Northeastern University, Boston 2023 – 2025
- **B.S. in Computer Engineering**, BUET, Dhaka 2013 – 2018

Relevant Courses

▪ Wireless Sensor Networks ▪ Reinforcement Learning ▪ Deep Learning and Edge Computing in Wireless Networks

Technical Skills

Programming: Python, MATLAB, SQL, TCP/IP, HTTP, Socket Programming (Python)
Tools: Git, LaTeX, Linux, Flask, Wireshark, Docker
Libraries: Pytorch, scikit-learn, timm, torchvision, HuggingFace