

RESEARCH INTERESTS

Deep Learning | Computer Vision | AI Efficiency | AI Security

EDUCATION

State University of New York (SUNY) Binghamton PhD in Computer Science CGPA: 4.0/4.0	Binghamton, New york Jan 2023–Present
University of California Riverside (UCR) MS in Electrical Engineering CGPA: 3.96/4.0	Riverside, California Sep 2021–Dec 2022
Bangladesh University of Engineering and Technology (BUET) B.Sc. in Electrical and Electronic Engineering Major: Communication and Signal Processing	Dhaka, Bangladesh Feb 2015–Apr 2019

WORK EXPERIENCE

SONY AI Research Intern, Efficient Vision Foundation Model	Binghamton, New York (Remote) Aug 2024–Current
SUNY Binghamton Graduate Research Assistant, ML Security Lab	Binghamton, New York Jan 2023–Current
REVE Systems Machine Learning Engineer	Dhaka, Bangladesh Feb 2020–Aug 2021

RESEARCH EXPERIENCE

Developed novel attention mechanism to improve efficiency of ViTs Internship work at SONY AI <ul style="list-style-type: none">– Developed a mixed attention approach that improves efficiency of ViTs.– Provides on par performance compared to softmax attention while improving inference speed by 15-30% at edge.	Aug 2024–Nov 2024
Developed Novel Compression Method for ViT PhD Research <ul style="list-style-type: none">– Developed novel algorithm for extreme ViT compression (15 – 20×) with high performance.– Developed novel strategy to minimize inference time on edge devices.	Jan 2024–Present
Improving Safety of Source-Free Domain Adaptation PhD Research <ul style="list-style-type: none">– Developed Secure Source-Free Domain Adaptation (SSDA), an efficient defense mechanism against backdoor attacks.	Jan 2023–Current

PUBLICATIONS

1. **Sabbir Ahmed**, Jingtao Li, Weiming Zhuang, Chen Chen, Lingjuan Lyu, “MixA: A Mixed Attention approach with Stable Lightweight Linear Attention to enhance Efficiency of Vision Transformers at the Edge” (submitted to ICCV 2025).
2. **Sabbir Ahmed**, Mamshad Nayeem Rizvee, Abdullah Al Arafat, Jacqueline Liu, Rahim Hossain, Mohaiminul Al Nahian, Adnan Siraj Rakin, “Unified Alignment Protocol for Generalized Semi-Supervised Federated Learning” (submitted to ICCV 2025).
3. **Sabbir Ahmed**, Abdullah Al Arafat, Deniz Najafi, Akhlak Mahmood, Mamshad Nayeem Rizve, Mohaiminul Al Nahian, Ranyang Zhou, Shaahin Angizi, Adnan Siraj Rakin, “DeepCompress-ViT: Rethinking Model Compression to Enhance Efficiency of Vision Transformers at the Edge” (accepted at CVPR 2025).
4. **Sabbir Ahmed**, Ranyang Zhou, Shaahin Angizi, Adnan Siraj Rakin, “Deep-TROJ: An Inference Stage Trojan Insertion Algorithm through Efficient Weight Replacement Attack”, 2024 Computer Vision and Pattern Recognition (CVPR 2024).
5. **Sabbir Ahmed**, Abdullah Al Arafat, Mamshad Nayeem Rizvee, Rahim Hossain, Zishan Guo, Adnan Siraj Rakin, “SSDA: Secure Source-Free Domain Adaptation”, 2023 International Conference of Computer Vision (ICCV 2023).
6. **Sabbir Ahmed**, Uday Kamal, Md. Kamrul Hasan, “DFR-TSD: A Deep Learning Based Framework for Robust Traffic Sign Detection Under Challenging Weather Conditions”, IEEE Transactions on Intelligent Transportation Systems.

SKILLS

- **Programming Languages:** Python, MATLAB, C, C++, Intel-8086 Assembly
- **Simulation & Design Tools:** PSpice, Simulink, AutoCAD, Verilog
- **Machine Learning Libraries:** PyTorch, vllm, triton, mmdetection, Scikit-Learn

RELEVANT GRADUATE COURSE-WORKS

Machine Learning | Deep Learning | Reinforcement Learning | Design and Analysis of Algorithm

AWARDS AND HONORS

- **Ebay 2024 University ML Competition**, Team leader of team “*Bing NeuraNest Returns*” that won 2nd runner up position.
- **Ebay 2023 University ML Competition**, Team leader of team “*Bing NeuraNest*” that won 2nd runner up position.
- **Clog Loss: Advance Alzheimer’s Research with Stall Catchers**, Team leader of team “*acoustic_user*” that won 6th place among 922 teams from the whole world.
- **Bengali Handwritten Digit Recognition Competition**, Won 5th position among 57 teams from the whole country.
- **Kaggle APTOS 2019 Blindness Detection**, Team leader of team “*cholo model re shikhai*” that won 38th place among 2,943 teams from the whole world.
- **Kaggle Human Protein Atlas Image Classification**, Member of team “*The Unseens*” that won 98th place among 2,169 teams from the whole world.
- **IEEE Signal Processing Cup 2019**, Member of team “*Maverick*” that won 6th place among 24 teams from the whole world.
- **Serving as Reviewer**, at CVPR 2025 and ICCV 2025.