

CURRICULUM VITAE/RESUME

Google Scholar ◊ Github ◊ LinkedIn ◊ Personal Website
Anas Mohammad Ishfaqul Muktadir Osmani

EDUCATION

B.Sc. in Computer Science and Engineering (CSE)

Fall 2020 - Fall 2024

United International University (UIU)

GPA: 4.0/4.0

Pearson Edexcel International Advanced Level (A-level)

May 2020

Islamic International School and College

Grades: 1 A* and 2 A.

Pearson Edexcel International GCSE (O-level)

January 2018

Islamic International School and College

Grades: 4 A*, 2 A and 1 C.

RESEARCH INTERESTS

My interest lies in the intersection of **Machine Learning** (ML) and **Cyber Security**. I am curious about how to make ML systems secure and using ML to enhance Cryptosystems. More specifically, I am interested on **Adversarial ML** and **Distributed ML**. Currently, I am exploring the following topics; **Federated Learning**, **Homomorphic Encryption**, **Large Language Models**, **Cyber attack simulation** and **develop corresponding defence mechanisms** to mitigate vulnerabilities.

WORK EXPERIENCE

Undergraduate Teaching Assistant

Summer 2023

Course: Computer Networks (CSE 3712)

Grader

Spring 2023 - Summer 2023

Course: Artificial Intelligence (CSE 3811)

RESEARCH EXPERIENCE

VoltaVision [1]

Sep 2023 - Jan 2024

Supervisor: Prof. Salekul Islam

Paper, Github repo.

- Proposed a light weight Convolutional Neural Network Model to classify three types of electronic components using Transfer Learning.
- Made a hypothesis that transferring knowledge from a model trained on a similar task distribution as the target task instead of a general distribution is more effective.
- Found experimental results that are convincing to state that the null hypothesis is plausible under certain conditions.

FHEFedTL [2]

Sep 2023 - present

Supervisor: Prof. Salekul Islam

Github repo.

- Proposed a privacy preserving federated learning framework using fully homomorphic encryption for resource constraint device.
- Evaluated the framework using two labeled datasets from the MedMNIST dataset collection with Raspberry Pi 4 Model B as the client devices.
- Benchmarked the framework against two other training settings having the same classification tasks.

- Measured external hardware metrics like CPU usage, RAM usage, CPU temperature and Power consumption for each experiments.

BrailleSense [3]

Supervisors: Prof. Dewan Farid

Sep 2023 - Oct 2023

Github repo.

- Constructed a Braille character classifier for the english alphabet's braille patterns.
- Trained and evaluated the custom model in a Raspberry Pi 4 Model B.
- Rendered a 3D prototype of a glove that integrates the IoT device, a camera and a speaker module to deploy the model for inference.

ElectroCom61 [4]

Supervisors: Mr. Raiyan Rahman and Prof. Salekul Islam

Jan 2024 - May 2024

Preprint

- Created an object detection dataset for 61 electronic components consisting of 2071 images.
- Images were captured in the UIU project lab and annotated manually using Roboflow; a web-based annotation tool.
- Evaluated the dataset using the YOLOv8 and YOLOv9 object detection models.

Benchmarking FHE libraries [5]

Supervisors: Prof. Salekul Islam, Prof. Mohammad Shahariar Rahman and Mr. Mir Moynuddin Ahmed Shibly

May 2024 - July 2024

UIU

- Compared the performance of three Fully Homomorphic Encryption (FHE) libraries for basic homomorphic operations of three FHE schemes in Raspberry Pi 4 Model B.
- Measured external hardware metrics like CPU usage, RAM usage, CPU temperature and Power consumption for each experiments.
- Analysed serialization of ciphertext per scheme per library by measuring size of ciphertext and time taken to serialize.

PUBLICATIONS

- [1] **A. M. I. M. Osmani**, T. Rahman, and S. Islam, "Voltavision: A transfer learning model for electronic component classification," in *The Second Tiny Papers Track at ICLR 2024*, 2024. [Online]. Available: <https://openreview.net/forum?id=JHTqFvmVYz>.
- [2] **A. M. I. M. Osmani**, T. Rahman, and S. Islam, "Priv-fedtl: Privacy preserving federated transfer learning for resource constrained devices," Preparing for IEEE Internet of Things Journal.
- [3] M. F. A. Sayeedi, **A. M. I. M. Osmani**, and D. M. Farid, "Braillesense: Deep learning for braille character classification," in *2024 6th International Conference on Electrical Engineering and Information Communication Technology (ICEEICT)*, 2024, pp. 681–686. DOI: 10.1109/ICEEICT62016.2024.10534500.
- [4] M. F. A. Sayeedi, **A. M. I. M. Osmani**, T. Rahman, J. F. Deepti, R. Rahman, and S. Islam, "Electrocom61: A multiclass dataset for detection of electronic components," Available at SSRN 4858132, Under review in Data in Brief Journal.
- [5] T. Rahman, **A. M. I. M. Osmani**, M. S. Rahman, M. M. A. Shibly, and S. Islam, "Benchmarking fully homomorphic encryption libraries in iot devices," in *Proceedings of the 11th International Conference on Networking, Systems, and Security*, ser. NSysS '24, Association for Computing Machinery, 2025, pp. 16–23, ISBN: 9798400711589. DOI: 10.1145/3704522.3704546. [Online]. Available: <https://doi.org/10.1145/3704522.3704546>.

ACHIEVEMENTS

100 % Scholarship awarded for academic excellence by UIU (Fall 2020 - Summer 2024)

2nd Runner-Up in Programming for Beginners Season 3 organized by UIU App Forum

2nd Runner-Up in CSE Project Show Summer 2022 (Course: Electronics Laboratory)

1st Runner-Up in CSE Project Show Fall 2022 (Course: Database Management Systems)

1st Runner-Up in Intra University AI contest Fall 2022 organized by UIU App Forum

Champion in CSE Project Show Spring 2023 (Course: Microprocessor and Microcontroller Laboratory)

1st Runner-Up in CSE Project Show Fall 2023 (Final Year Design Project poster category)

CERTIFICATES

Introduction to Cybersecurity issued by Cisco Networking Academy

Cybersecurity Essentials issued by Cisco Networking Academy

SKILLS/HOBBIES

| | |
|-------------------------------|------------------------------------|
| Programming Languages | Python, C, C++, Java |
| Scripting Languages | BASH, HTML, PHP, CSS, Latex |
| Machine Learning Tools | Sklearn, Pandas, Matplotlib, Numpy |
| Deep Learning Tools | Pytorch, Tensorflow, Keras |
| Hobbies | Soccer, Drawing and Traveling |