

# CURRICULUM VITAE/RESUME

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

## EDUCATION

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

*February 2025 (expected)*

United International University (UIU)

GPA: 3.98/4.0

### **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

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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

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### **Undergraduate Teaching Assistant**

*Summer 2023*

Course: Computer Networks (CSE 3712)

### **Grader**

*Spring 2023 - Summer 2023*

Course: Artificial Intelligence (CSE 3811)

## RESEARCH EXPERIENCE

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### **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**

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- [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," Accepted in NSysS 2024.

## **ACHIEVEMENTS**

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**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

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**Introduction to Cybersecurity** issued by Cisco Networking Academy

**Cybersecurity Essentials** issued by Cisco Networking Academy

## SKILLS/HOBBIES

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