Samiul Alam

✉ samiul272@gmail.com | 🏠 samiul272.github.io | 💻 samiul272 | 💼 samiul-alam | Ⓢ samiul272

"Perpetually Convalescent: Learning & Evolving"

RESEARCH INTERESTS

Federated Learning, Distributed ML, Edge AI, TinyML, Differential Privacy

EDUCATION

Ohio State University *Columbus, Ohio*

PHD IN COMPUTER SCIENCE AND ENGINEERING *May. 2023 - May 2026(Expected)*

- Will rejoin Dr. Zhang's new lab at OSU after completion of MS.

Michigan State University *East Lansing, MI*

MS. IN COMPUTER SCIENCE AND ENGINEERING, GPA: 3.75 *Jan. 2022 - May 2023(Expected)*

- I joined MLSys lab under the supervision of Prof. Mi Zhang.
- Current research focus on Edge AI with a specific focus on federated learning on heterogeneous distributed edge systems.

Bangladesh University of Engineering and Technology (BUET) *Dhaka, Bangladesh*

B.SC. IN ELECTRICAL AND ELECTRONIC ENGINEERING, GPA: 3.67 *Feb. 2013 - Sept. 2017*

- Major in Electronics; Minor in Communication
- Awarded Dean's List Distinction in session 2012-2013

WORK EXPERIENCE

Michigan State University *Eat Lansing, Michigan*

RESEARCH ASSISTANT *Jan 20222 - Present*

- Worked as Graduate assistant at Michigan State University
- Primary focus is Privacy-preserving deep learning

Samsung Research, Bangladesh *Dhaka, Bangladesh*

ENGINEER I, MOBILE APPLICATIONS *April 2018 - May 2021*

- Worked on Samsung's Wearable App.
- Developed controller app for Samsung's 5G smart router.
- Developed SDK for interfacing Samsung's cloud service.
- Earned Professional Certification in Samsung's software certification exam.

PUBLICATIONS

- Tuo Zhang, Tiantian Feng, **Samiul Alam**, Sunwoo Lee, Mi Zhang, Shrikanth S. Narayanan, Salman Avestimehr, "A Benchmark For Audio Tasks With Federated Learning" Under review.

- **Samiul Alam**, Luyang Liu, Ming Yan, Mi Zhang. "FedRolex: Model-Heterogeneous Federated Learning with Rolling Sub-Model Extraction" In 36th Conference on Neural Information Processing and Systems (NeurIPS 2022). Dec 2022. Acceptance Rate: 25.6%

- Jingwei Sun, Ang Li, **Samiul Alam**, Mi Zhang, Hai Li, Yiran Chen. "FedSEA: A Semi-Asynchronous Federated Learning Framework for Extremely Heterogeneous Devices" In 20th ACM Conference on Embedded Networked Sensor Systems (SenSys 2022), Nov 2022. Acceptance Rate: 25%

- **Samiul Alam** , Tahsin Reasat, Asif Shahriyar Sushmit, Sadi Mohammad Siddique, Fuad Rahman, Mahady Hasan, Ahmed Imtiaz Humayun. "A Large Multi-Target Dataset of Common Bengali Handwritten Graphemes". In International Conference on Document Analysis and Recognition, Sept 2021

- Irfan Al-Hussaini, Ahmed Imtiaz Humayun, **Samiul Alam**, Shariful Islam Foysal, ..., and Mohammad Ariful Haque. "Predictive real-time beat tracking from music for embedded application." In *2018 IEEE Conference on Multimedia Information Processing and Retrieval (MIPR)*. IEEE, Apr 2018.

- **Samiul Alam**, Tahsin Reasat, Rashed Mohammad Doha, and Ahmed Imtiaz Humayun. "NumtaDB - Assembled Bengali Handwritten Digits". *arXiv e-prints*, arXiv:1806.02452, Jun 2018.

AWARDS

July 2022 Community Competition Creator Prize *July, 2022*
KAGGLE *Bengali.AI*
Awarded the Community Competition creator prize by Kaggle for collecting data and organizing the speech transcription competition 'DL Sprint' collaboratively with BUET CSE department.

SEMI FINALIST *MARCH 26, 2017*
INTERNATIONAL FUTURE ENERGY CHALLENGE 2017 *Team BUET*
Designed, simulated and prototyped a high efficiency, high density DC/DC converter as part of International Future Energy Challenge 2017(IFEC 2017) with a 7-member team. [Link]

HONORABLE MENTION *MARCH 5, 2017*
IEEE SIGNAL PROCESSING CUP 2017 *Team Impulse*
Designed a real time musical beat tracking system in Raspberry Pi and tested various methods including dynamic programming and neural networks as part of IEEE Signal Processing Cup 2017 (SP-Cup 2017) with an 8-member group.
[Link]

PROJECTS

Federated Continual Learning *Ph.D. Research Project*
MLSYS LAB LED BY PROF. MI ZHANG AT MSU *2022 - Current*
Working on developing a continual-learning-based federated learning algorithm for stable and efficient training of large deep learning models on federated data.

Federated Learning for Heterogeneous Edge Devices *Ph.D. Research Project*
MLSYS LAB LED BY PROF. MI ZHANG AT MSU *2022 - Current*
Lead a project on developing a federated learning framework to enable model-heterogeneous federated learning on IoT devices with heterogeneous networking bandwidth as well as computational and memory resources.

Predicting Generalization in Deep Learning *NeurIPS Workshop*
PGDL COMPETITION, NEURIPS *2020*
Developed a method to predict generalization in neural networks. More details about the competition can be found here and the leaderboard can be seen here

5G Smart Router Interfacing *Commercial Project*
SAMSUNG RESEARCH *2020*
Worked on interfacing for 5G smart router project and developed its AR capabilities that included showing mesh network strength and optimum router placement.

SKILLS

Deep Learning	In-depth knowledge of statistics, machine learning, and deep learning; Worked extensively with PyTorch, TensorFlow.
Hardware Platforms	Worked on Raspberry pi to deploy machine learning based real-time musical beat detection algorithm. Also worked on Atmel and dsPIC microcontrollers to develop hardware projects.
Computer Vision	Worked with openCV to detect facial landmarks and object recognition. Developed YOLO, RCNN and FRCNN models.
Data Visualization	Worked on both text and numerical data using Python using pandas, bokeh and dash.