

KHANDAKER MAMUN AHMED

Personal Website: <https://sites.google.com/view/mamunahmed>

Address: 11200 SW 8th St ECS 354, Miami, FL 33199, USA ◊ Email: kahme011@fiu.edu

Website: <https://solidlab.network/people>

EDUCATION

Ph.D. in Computer Science

Aug. 2019 - Present

Knight Foundation School of Computing and Information Sciences

Sustainability, Optimization, and Learning for InterDependent networks laboratory (**solid lab**)

College of Engineering and Computing, Florida International University

Ph.D. Advisor: **Dr. M. Hadi Amini**

Ph.D. Dissertation Topic: Federated Deep Learning: Theory and Applications

Bachelor of Science in Software Engineering

2012 - 2016

Institute of Information Technology, University of Dhaka

HONORS AND RECOGNITION

1. Awarded **Travel grant** from Florida International University's (FIU) Graduate and Professional Student Committee (GPSC).
2. Awarded **Travel grant** from IEEE International Conference on Bioinformatics and Biomedicine (BIBM), 2021.
3. Awarded Graduate Teaching Assistantship and Graduate Research Assistantship from Knight Foundation School of Computing and Information Sciences at Florida International University.

HIGHLIGHTS

- Working on design and analysis of experiments to investigate deep learning models on heterogeneous edge-devices in federated settings, COVID-19 detection, and house detection.
- Track record of publications in peer-reviewed conferences and journals.
- Served as the course instructor, course coordinator and moderation committee member of several undergraduate courses: Algorithms, Data Structures, Operating Systems, Database Systems, System Analysis and Design.

RESEARCH INTERESTS

- **Distributed Machine Learning** (Federated Deep Learning, Transfer Learning, Zero-shot Learning).
- **Computer Vision** (Image Classification, Video Processing, Object Detection, Robotic Navigation, Cognitive Vision, Biological Vision).
- **Machine Learning and Data Mining** (Supervised and Unsupervised Learning, Deep Learning, Reinforcement Learning, Bayesian Networks).

SELECTED PROJECTS (DURING PHD)

Agent-based Learning to Utilize Local Data for Activity Recognition: The purpose of this project is to develop an agent-based distributed learning method that can leverage local computational resources to identify anomalous events or unusual behaviors using local data.

Federated Deep Learning for Heterogeneous Edge Computing: In this project, we design and simulate a federated transfer learning (FTL) model considering clients' heterogeneity in terms of their available computing resources and model architecture to optimize the computational time in the training phase.

Towards Real-time House Detection in Aerial Images Using Faster-RCNN: In this project, we formulate the dataset and demonstrate the effectiveness of detecting various types of houses in aerial images using Faster Region-based Convolutional Neural Network (Faster-RCNN).

TECHNICAL STRENGTHS

Programming language	Python, Java, C, C++, C#
Web based skills	ASP.NET, jQuery, JavaScript, bootstrap, CSS, HTML
Database Management Systems	Oracle, Microsoft SQL Server, MySQL
Development tool	PyCharm, Spyder, Microsoft Visual Studio, Eclipse, NetBeans
Other App	MATLAB, LATEX, Jupyter Notebook, Git, Selenium, Excel

WORK EXPERIENCE

Sustainability, Optimization, and Learning for InterDependent networks laboratory [solid lab] January 2021 - Present

Graduate Research/Teaching Assistant

- Leading the distributed agent-based decision-making in autonomous vehicle simulation project.
- Contributed to generating preliminary results for proposal writings.

Florida International University Aug 2019 - Dec 2021

Graduate Teaching Assistant

- Conducted COP 4534 - Algorithmic Techniques (Fall 2021), COP 3337 - Programming II (Summer 2021), COP 2210 - Programming I (Summer 2020), COP 2250 - Java Programming (Fall 2019, Spring & Fall 2020, Spring 2021).

Brac University Jan 2018 - July 2019

Lecturer

- Courses Instructed: Operating Systems, System Analysis and Design, Data Structures, Introduction to Computer Science, Programming Language I, Programming Language II.
- Labs Instructed: Operating Systems, Algorithms, Data Structures, Programming Language I, System Analysis and Design.

Southtech Limited Jan 2016 - June 2016

Intern Software Engineer

- Developed a web-based Customer Relationship Management(CRM) software in ASP.NET MVC 5 framework. Requirements gathering, software design and development is done by communicating with the clients.

SELECTED PUBLICATIONS (DURING PHD AT FIU:)

1. **Khandaker Mamun Ahmed**, Ahmed Imteaj, and M. Hadi Amini. "Federated Deep Learning for Heterogeneous Edge Computing." 2021 20th IEEE International Conference on Machine Learning and Applications (ICMLA). IEEE, 2021.
2. **Khandaker Mamun Ahmed**, Taban Eslami, Fahad Saeed, and M. Hadi Amini. "DeepCOVID-Net: Deep Convolutional Neural Network for COVID-19 Detection from Chest Radiographic Images." In 2021 IEEE International Conference on Bioinformatics and Biomedicine (BIBM), pp. 1703-1710. IEEE, 2021.

3. **Khandaker Mamun Ahmed**, Farid Ghareh Mohammadi, Manuel Matus, Farzan Shenavarmasouleh, Luiz Manella Pereira, Ioannis Zisis, and M. Hadi Amini. "Towards Real-Time House Detection in Aerial Images Using Faster Region-Based Convolutional Neural Network." Preprint Available at SSRN 3994191.

PROFESSIONAL ACTIVITIES (DURING PHD AT FIU)

Lead Machine Learning Researcher: Working as the lead machine learning researcher at solid lab to design federated computer vision algorithms for suspicious activities detection in a distributed fashion.

Organizer: Publicity Chair in AML-IoT FLAME 2021 [[Link](#)], Volunteer at 9th International Conference on Computational Advances in Bio and Medical Sciences (ICCABS) 2019, NSF MERIF workshop 2020 on Future Experimental Research Infrastructures and ICPC North America 2019 regional contests.