

Md Tahsin Mostafiz

📍 West 20, 3527 SW 20th Avenue, Gainesville, FL 32607

✉ m.tahsinmostafiz@ufl.edu • 🌐 tahsin314.github.io

Mohammad Tahsin Mostafiz • Researchgate • in tahsin314

Technical Skills

Programming Languages: C, C++, MATLAB, JAVA, Python

Python Frameworks: OpenCV, BeautifulSoup, Pandas, Numpy

Machine Learning Frameworks: Scikit-Learn, Tensorflow, Keras, PyTorch, Pytorch-Lightning, Fast.ai

Integrated Development Environment : PyCharm, Android Studio, IntelliJ IDEA, Visual Studio, Arduino

Hardware Description Languages: VHDL

Hardware Design Tool: MODELSIM, Vivado

Hardware: Arduino, Raspberry Pi, AVR Microcontrollers

Honors and Awards

Competition expert in Kaggle 🏆 2020

Discussion expert in Kaggle 🏆 2020

Divisional Champion, 1st Runner-up, 2nd Runner-up, Bangladesh Mathematical Olympiad 2006-2008

Research & Work Experiences

Graduate Research Assistant, FICS Lab, University of Florida 🏆 Jan 2021

- Head and Neck Cancer staging via lymph node segmentation using Convolutional Neural Network (CNN) and volumetric CT images.
- Computed Tomography (CT) image reconstruction for Printed Circuit Boards (PCB) with semi-supervised denoising and artifact suppression techniques.
- Counterfeit IC detection from SEM images of IC backsides using image processing and CNN.
- Working on exposing the vulnerability of logic locking system in a FPGA and prevention measures against it.

Machine Learning Engineer, AI Samurai Japan Limited 🏆, Dhaka, Bangladesh Dec 2019- Dec 2020

- Worked on semi-supervised anomaly detection task with metric learning loss.
- Developed android application for object detection task.
- Worked on natural language processing (NLP) based sentiment analysis task using transformer language models.

Research Assistant, mHealth Laboratory 🏆, BME Department, BUET Oct. 2019- December 2019

- Worked on disease classification and abnormality localization in X-ray and CT images.

Machine Learning Researcher, Semion Limited 🏆, Dhaka, Bangladesh March 2017- May 2019

- Developed deep learning (DL) based models for disease classification from chest X-ray images.
- Developed Amazon echo skills and android app for differential disease analysis.

Research Interests

Machine Learning, Deep Learning, Computer Vision

Education

PhD Student, Electrical and Computer Engineering, University of Florida, Gainesville, USA Jan 2021-
Current CGPA: 3.76

Master of Science, Electrical and Electronic Engineering June 2019-December 2020
Bangladesh University of Engineering and Technology (BUET)

Bachelor of Science, Electrical and Electronic Engineering Feb 2017
Bangladesh University of Engineering and Technology (BUET)

Research Articles

- “EVHA: Explainable Vision System for Hardware Testing and Assurance - An Overview” MD Mahfuz Al Hasan, **Tahsin Mostafiz**, Thomas An Le, Jake Julia, Nidish Vashistha, Shayan Teheri, and Navid Asadizanjani, Submitted at ACM JETC preprint [↗](#)
- “A Web-based Assistive Tool for Emergency Physicians in Diagnosing Intracranial Hemorrhage Subtypes from 2D Brain CT Images” **Tahsin Mostafiz**, Rifat Jahan Azad, Nawsabah Noor, Shajib Ghosh, Haris Sair, Paul Nagy, Taufiq Hasan, Society for Imaging Informatics in Medicine (SIIM) 2020 Annual Meeting, June 2020, Austin, Texas, USA (abstract) [↗](#)
- “Pathology Extraction from Chest X-Ray Radiological Reports: A Performance Comparison” **Tahsin Mostafiz**, Dr. Khalid Ashraf [↗](#)
- “Retinal Blood Vessel Segmentation using Residual Block Incorporated U-Net Architecture and Fuzzy Inference System” **Tahsin Mostafiz**, Ismat Jarin, Dr. Shaikh A. Fattah and Dr. Celia Shahnaz; *IEEE WIECON-ECE 2018*.[↗](#)

Professional Projects & Experiences

- **Algorithm**
 - Development of a semi-supervised object detection pipeline for electric pole detection from car dashboard camera images using *Fast-RCNN* with *Resnet50* backbone and *YoloV4*.
 - Co-development of a semi-supervised CNN model for abnormality detection in dairy product images.
 - Backend deep learning algorithm development of **RadAssist** [↗](#), a web application for the detection and localization of *Intracranial Hemorrhage* from brain CT images.
- **Tool**
 - Co-development of a flutter based android app for electric pole detection from images captured using car dashboard cameras.
 - Co-development of **SemRad**, an inference tool and a class activation mapping (CAM) Tool Using *ResNet101* for Detection and Localization of Abnormalities in Chest X-ray Images for this software.
 - **semDDX**, an Android app was designed to help the users navigate the vast landscape of differential diagnoses (DD) and help medical students to learn DD easily.
 - **Differential Diagnoses**, an Amazon Alexa skill was designed to help the users find all differential diagnoses for a symptom.
 - **Symptom Checker** an Amazon Alexa skill was designed to help the users detect disease from symptoms.
- **Deep Learning Competitions**
 - Silver Medal in **APTOS 2019 Blindness Detection** [↗](#)
 - Bronze Medal in **SIIM-ISIC Melanoma Classification** [↗](#)
- **Student Supervising**
 - Mentored an undergraduate student in his thesis work titled “*COVID Infection Analysis via Lung Lobe Segmentation using Deep Learning*”.
 - Supervised two high-school students to get them familiar with research work in hardware security and machine learning under the *Student Science Training Program (SSTP)*.

Relevant Courses

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| • Fundamentals of Machine Learning | • Pattern Recognition |
| • Image Processing and Computer Vision | • Linear Algebra |
| • Probability and Statistics | • Reconfigurable Computing |