Md Tahsin Mostafiz

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Education

***PhD Student**, Electrical and Computer Engineering* *Jan 2021-*
University of Florida, Gainesville, USA

***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)

Honors and Awards

Competition expert in Kaggle 2020

Discussion expert in Kaggle 2020

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

Research & Work Experiences

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

- Working on counterfeit IC detection from SEM images of IC backsides using image processing and convolutional neural network (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 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*.

Research Interests

Machine Learning, Deep Learning, Computer Vision

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

Professional Projects & Experiences

- **Algorithm**
  - Co-development of a semi-supervised CNN model for abnormality detection in sweet images.
  - Backend deep learning algorithm development of **RadAssist**, a web application for the detection and localization of *Intracranial Hemorrhage* from brain CT images.
  - Identification of Risk Factors for Heart Disease from *i2b2* dataset Using a Bidirectional LSTM network with 50 Dimensional Glove Word Embedding.
- **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

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

References

Prof. Dr. Navid Asadi
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Prof. Dr. Mark Tehranipoor
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