Md Abu Sayed

msayed@nevada.unr.edu | sayedcseku.github.io | github.com/sayedcseku

Education

University of Nevada, Reno — Reno, NV
Doctor of Philosophy in Computer Science and Engineering — *Aug. 2021 – Current*

- *Major Courses:* Introduction to Machine Learning, Fundamentals of Deep Learning, Mass Detection in Mammograms, and Autonomous Mobile Manipulation, etc.

Khulna University — Khulna, Bangladesh
Bachelor of Science in Computer Science and Engineering — *Dec. 2014 – Jan 2019*

- *Major Courses:* Structured Programming, Data Structure, Algorithms, Object-Oriented Programming
- Database, Software Engineering, Computer Networks, Microprocessor & Micro-controllers
- Artificial Intelligence, Image Processing, Computer Graphic, Data Mining , Pattern Recognition, Applied Probability & Queuing Theory

Experience

Graduate Research Assistant — Aug. 2021 – Present
University of Nevada, Reno — *Reno, NV*

- Intent Recognition for Adversarial Groups in Naval Domain
- This project aims to develop a framework for detecting and identifying adversarial intentions performed by groups of multiple coordinated agents (red) against an own team (blue), consisting of either one or multiple agents.
- In this project, we aim to expand our work along several directions in order to: 1) design a more realistic agent model that includes systems for sensing and defense, and their structured coverage areas, 2) recognize intent in the presence of coordinated groups/swarms of adversarial agents, 3) enable detection of both overt and deceptive intent, and 4) provide recommendations for actions that minimize/reduce potential threats.

Graduate Teaching Assistant — Aug. 2021 - Present
University of Nevada, Reno — *Reno, NV*

- CS 477/677: Analysis of Algorithms [Fall 2021, Spring 2022]
- Assisting with the grading of homework, exams, and/ or written assignments Holding office hours and meeting with students
- Holding office hours and meeting with students

Lecturer — June 2019 – July 2021
The Millennium University, Department of Computer Science and Engineering — *Dhaka, Bangladesh*

- *Instructed undergraduate courses:* Structured Programming, Data Structure, Artificial Intelligence & Neural Networks, Object-Oriented Analysis & Design, Software Engineering, etc.
- *Responsibilities:* Lecture planning, taught and instructed courses, assessing students, holding office hours, invigilating examinations, supervising application development projects, etc.
- Course Coordinator of the Department since December 2019
- Spokeperson of the Sports Teams in "The Bangabandhu Sports Tournament 2020"

Publications

1. Md Abu Sayed, Sajib Saha, GM Atiqur Rahaman, Tanmai K Ghosh, and Yogesan Kanagasingam. An innovate approach for retinal blood vessel segmentation using mixture of supervised and unsupervised methods. *IET Image Processing*, 15(1):180–190, 2021

2. Md Abu Sayed, Sajib Saha, GM Rahaman, Tanmai K Ghosh, Yogesan Kanagasingam, et al. A semi-supervised approach to segment retinal blood vessels in color fundus photographs. In *Conference on Artificial Intelligence in Medicine in Europe*, pages 347–351. Springer, 2019

3. Tanmai K Ghosh, Sajib Saha, GM Rahaman, Md Abu Sayed, Yogesan Kanagasingam, et al. Retinal blood vessel segmentation: A semi-supervised approach. In *Iberian Conference on Pattern Recognition and Image Analysis*, pages 98–107. Springer, 2019

Research Interest

Machine Learning, Deep Learning in Computer Vision, Medical Image Analysis, and Health-care, etc.

Research & Projects

Automated method to segment retinal blood vessels from color fundus photographs. 2018

- ***Bachelor Thesis*** || *MATLAB* || *Manuscript PDF*
- *Supervisor*: Professor Dr. G M Atiqur Rahaman, *Co-supervisor*: Dr. Sajib Saha (CSIRO, Australia)
- In this thesis, we propose a method to segment retinal blood vessel in presence of pathological lesion. The proposed method is also able to overcome the most of the other challenges such as segmentation in presence of central vessel reflex, crossover and bifurcation regions etc. To extract trainable feature, we propose a descriptor and compare the descriptor with a novel descriptor (SURF). We get nearly identical performance for the proposed descriptor respect to SURF descriptor.

Deep Learning Projects | *Python, Tensorflow, Keras, Pytorch* June 2020 – Present

- Implementing CNN, RNN from Scratch with Python
- Multiple diseases detection from Chest X-ray using single DenseNet
- Brain Tumour auto-segmentation from 3D MRI images using U-Net
- Sentiment Analysis of Review Posts with LSTM
- Image Captioning with CNN and Bi-directional LSTM

Local Haar Pattern (LHP): A Feature Descriptor for Biomedical Images | *MATLAB*— Project Page 2018

Medical College Store Management | *Php, Javascript, MySQL — Github* 2017

- Digitalized a hospital store, its equipment, ledger of incoming and outgoing items, and other things
- Implemented software engineering concepts to build this website

Transportation Management System for Khulna University | *Simtier (Php), Javascript, MySQL* 2017

- Keep track of all university transports, employees, routes, and schedule
- An advanced searching system for employees to find any existing route and time schedule faster

University File Folder System Automation | *Asp.net, Javascript, MySql* — Github 2016

- Digitalized any kind of notifications, report, applications, files are issued manually
- Followed the existing file folder issuing and storing methods by maintaining employee hierarchy.

Technical Skills

ML, CV, NLP: [Python, OpenCV, Keras] (Proficient), [MATLAB , Tensorflow, Pytorch] (Familiar)
Problem Solving: C/C++ (Proficient), [Java, C#] (Familiar)
Web Development: [PHP, MySQL] (Proficient), [JavaScript, SQL] (Familiar)
Developer Tools: Git, VS Code, Spyder, Anaconda, Jupyter Notebook, Visual Studio

MOOCS & Trainings

Deep Learning Specialization (5 Courses) by Andrew NG | *deeplearining.ai* May 2020 - Oct. 2020

- Courses: Neural Network and Deep Learning, Hyperparameter Optimization,
- Structuring Machine Learning Projects, Convolutional Neural Networks, Sequence Models (NLP)

Mathematics for Machine Learning Specialization | *Imperial College, London; Coursera* 2020

- Courses: Linear Algebra

Generative Adversarial Networks (GANs) | *DeepLearning.ai, Coursera* 2021

- Courses: Build Basic Generative Adversarial Networks (GANs)

AI for Medicine | *DeepLearning.ai, Coursera* 2021

- Courses: AI for Medical Diagnosis, AI for Prognosis

Machine Learning A-Z: Hands-On Python & R In Data Science | *Udemy, 41.5 hrs* 2020

- Certificate Link