MD ANIS SARKER

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PROFESSIONAL EXPERIENCE

AinoviQ IT Ltd.
Artificial Intelligence Engineer *Feb. 2022 - Present*

- Studying related literature on the generative adversarial networks, computer vision and state-of-the-art virtual try-on researches.
- Using python libraries like selenium, scrapy and chrome driver to scrape data.
- Created a PyQt5 desktop software for aligning target and reference images to sort and categorize and to clean the data.
- Running and changing codes for our projects of machine learning tools like densepose from facebookresearch for human pose estimation, openpose for body keypoints, graphonomy for human body parsing and computer vision tools to remove background so that we could pre-process our data and finally prepare the datasets for each networks that we are using.
- Designing and implementing the procedure and workflow of the whole project from data scraping to deployment using flask api.
- Leading and managing the team to get continue updates and maintenance.

Center for Computational & Data Sciences
Research Assistant *Feb. 2020 - Dec. 2021*

- Working with state-of-the-art deep learning models, analyzing the whole architecture, and finding ways to optimize the system to obtain a better result.
- Collecting satellite and aerial images for pre-processing and post-processing procedure for the data set.
- Creating pipelines for the whole procedure and doing continuous integration and maintenance.
- Staying up-to-date with recent publications in the relevant field as well as writing scientific papers and documentation.

TechDojo
Software Engineer Intern (Part time) *October. 2019 - March. 2020*

- Preparing and delivering ideas and codes to design and implement android application using reactjs, firebase.
- Was responsible for working on a cross-platform house rental application.

RESEARCH EXPERIENCE

Independent University, Bangladesh(IUB)
Research Assistant *July. 2018 - January. 2020*

- Collecting spatial data or satellite images of Sentinel-2, Landsat-8 satellites from USGS earth explorer.
- Search for benchmark dataset like Gaofen-2, ISPRS Potsdam Benchmark datset and create training ready dataset.
- Find and study previous and state-of-the-art GIS study of classification, segmentation for time series analysis, deforestation, urbanization.
- Writing code of FCN-8 and VGG-19 for the data and train/test deep-learning model to improve accuracy and performance.
- Writing and submitting manuscripts to conferences for publications.

KEY RESEARCH

Remote sensing data to develop deep learning models for Land Use Land Cover semantic segmentation **AGenCy Lab**
Supervisor - Amin Ahsan Ali, PhD (Independent University, Bangladesh)
Supervisor - Dr. AKM Mahbubur Rahman (Independent University, Bangladesh)

-Automate the process of creating label data for both aerial and satellite imagery using DeepLabV3+, a deep learning model by Google Inc. which uses the Atrous convolution for semantic segmentation and ResNet-101 for the back-end. To automate the labeling process and to perform Land Use Land Cover analysis in the context of Bangladesh. The experiments showed accuracy of 82% to 96%.

Satellite data to develop deep learning models for Building Categorization **H-U Tokyo Lab & DnDLab**
Supervisor - Prof. Ryosuke Shibasaki (University of Tokyo)
Supervisor - Dr. Moinul Islam Zaber (University of Dhaka)

-Finding the efficacy of a novel urban categorization framework based on deep learning, and a novel categorization method customized for cities in the global south. Each urban space was divided into four socioeconomic categories: (1) highly informal area; (2) moderately informal area; (3) moderately formal area, and (4) highly formal area. The model can segment the test part of every city with an average accuracy of 91.57%.

Land use and Land cover segmentation using Deep Neural Network **Undergrad Thesis**
Supervisor- Dr. Amin Ahsan Ali (Independent University, Bangladesh)

TEACHING EXPERIENCE

Independent University, Bangladesh *Teaching Assistant*

- Assigned courses were CSC101 - Introduction to Programming, CSC204 - Data Structure, CSC317 - Numerical Method
- Taking lab classes and extra programming classes on C++ and Matlab
- Preparing questions and marking for quiz and assignments

EDUCATION

Bachelor of Science in Computer Science **CGPA: 3.14/4.00**
Independent University, Bangladesh
Major: Computer Science, Minor: Management Information System
January, 2015 - April, 2019

TECHNICAL SKILLS

- **Programming Language:** Python, Matlab, C++, Java, Javascript
- **Framework:** Pytorch, Tensorflow, Keras, Flask, Electron, Nodejs, Reactjs
- **Library:** Opencv, Pillow, Numpy, GDAL, Scikit-learn, Matplotlib, Seaborn, Scrapy
- **GIS Tool:** QGIS, eCognition, ArcGIS, SAS Planet
- **Other Tools:** Latex, Git, Selenium, Markdown, Android

PUBLICATIONS

- O. Paul, ABS Nayem, **A. Sarker**, Md.A. Amin, A.A. Ali, AKM M. Rahman, "BD-Sat: High-resolution Land Use Land Cover Dataset with Benchmark Results for Developing City of Dhaka, Bangladesh".(Proceedings)
- Q. Cheng, AKM M. Rahman, **A. Sarker**, ABS Nayem, O. Paul, A.A. Ali, Md. A. Amin, R. Shibasaki, M. Zaber, "A Deep-learning framework customized for novel categorization method to classify cities of the developing world," Sensors Journal, MDPI, 2021.
- F.F. Niloy, Arif, ABS Nayem, **A. Sarker**, O. Paul, Md.A. Amin, A.A. Ali, AKM M. Rahman, "A Novel Disaster Image Data-set and Characteristics Analysis using Attention Model," 25th International Conference on Pattern Recognition (ICPR), Milano, Italy, 2021.
- Q. Cheng, AKM M. Rahman, **A. Sarker**, ABS Nayem, O. Paul, A.A. Ali, Md. A. Amin, R. Shibasaki, M. Zaber, "Deep-learning coupled with novel categorization method to classify the urban environment of the developing world," 2nd International Conference on Signal Processing and Machine Learning (SIGML 2021), Zurich, Switzerland, 2021.
- ABS Nayem, **A.Sarker**, O. Paul, A. Ali, Md. A. Amin, AKM M. Rahman, "LULC Segmentation of RGB Satellite Image Using FCN-8," 3rd SLAAI-International Conference on Artificial Intelligence (ICAI), Belihuloya, Sri Lanka, 2019.

PROJECTS

- **Keepin** A mern web application to store and keep safe credentials like login information, and credit/debit card information.
- **Npra** Pill/medicine recognition android application using react-native and in the server-side flask was used to implement the computer vision program such as identifying the pill or any medicine and sending it to the client side.
- **Luvmusic** An online web-based music application built with nodejs and mongodb, dropbox api.
- **Houserent** An android application built in android studio and firebase authentication.
- **Crime Map** A web-based heat map that showed in which regions crimes like mugging happened. It was implemented using JavaScript, nodejs and openstreetmap api.

RELEVANT COURSES

- Machine Learning
- Image Processing
- Linear Algebra
- Numerical Analysis
- Software Engineering

EXTRACURRICULAR ACTIVITIES

- Volunteer for social activities (Agrodhabon).
- Volunteered for 5th International Conference on Advances in Electrical Engineering (ICAEE).
- Organized programming contest as part of the IEEE club.
- Organizing competitive programming classes as part of the IUB ACM Student Chapter.
- Travelling
- Football
- Trekking