Md Sajid **Ahmed**

AI/ML Engineer · Computer Vision Engineer

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Education

North South University

Dhaka, Bangladesh

B.Sc. in Computer Science and Engineering *Jan. 2016 – Aug. 2019*

- Relevant Coursework: Pattern Recognition and Neural Networks, Natural Language Processing, Computer Organization & Architecture

Professional Experiences

Altersene Limited

Dhaka, Bangladesh

Machine Learning Enginner *Oct. 2022 - Present*

- Proposed and designed an overall service architecture for industrial process automation systems in the RMG sector.
- Developed multiple machine learning models for RMG worker's activity monitoring and improved the average precision accuracy by 30 %.
- Developed a continuous CI/CD ML model validation pipeline to ensure the trained model's reliability and scalability in production.
- Built and tested semi-automated ML pipelines on distributed servers for containerized applications using Docker and Kubernetes

Dept. of CSE, North South University

Dhaka, Bangladesh

Lab Instructor *Sep. 2019 - Dec. 2022*

- Prepared and delivered lab manuals for each course to conduct lab assessments in every class
- Delivered lectures on topics to grasp the knowledge of lab sessions better
- Courses Taught - CSE311L- Database Systems Lab, Computer Architecture Lab, Digital Logic Design Lab, Object Oriented Programming Lab

Research Experiences

Fatima Fellowship, Sponsored by HuggingFace

Massachusetts, USA (remote)

Fellow with Dr. Abdulrahman Mahmoud *June. 2022 - August 2023*

- Proposed a new application towards emerging number formats in DNN Accelerators
- Improved performance on object detection-based networks ML runtime performance over fault injections

TnR Lab, North South University

Dhaka, Bangladesh

Research Assistant Intern with Prof. Tanzilur Rahman *Nov. 2019 - Dec 2020*

- Proposed a Smartphone video-based Blood Glucose level prediction model with PPG signal processing and Biomedical Feature Engineering.
- Developed a PPG signal-based Feature Engineering algorithm to generate relevant features for the blood glucose level prediction model.
- Built a machine learning model to predict blood glucose level from human fingertip video collected from a regular smartphone camera (Paper accepted in MDPI Applied Sciences'21)

ECE Department, North South University

Dhaka, Bangladesh

Undergraduate Research Assistant with Prof. Mohammad Ashrafuzzaman Khan *Aug. 2018 - April 2019*

- Proposed a FCN-based Road Segmentation Model with real-time web interface and mobile application
- Improved performance over model's accuracy with a fine-tuned ResNet50 backbone pre-trained on imagenet
- Modified pre-trained VGG16 model and used transpose convolution to upsample the images like and encoder-decoder architecture.

Teaching

Depatment of ECE, North South University

Dhaka, Bangladesh

Undergraduate Teaching Assistant (TA) *Feb. 2019 - Aug. 2019*

- Assisting faculty members in the Digital Logic Design and Computer Architecture Course.
- Conducting tutorial sessions for students.
- Performing invigilation in exam halls.
- Evaluating home-works, assignments, and projects.

ACM R&D Group, NSU *Dhaka, Bangladesh*

Instructor *Jun. 2018 - Dec. 2018*

- Conducted weekly tutorial and lecture sessions for R&D group members and assisted students and members in their projects and presentations.

Skills

Programming Python, C/C++, Java, Bash-Script, LaTeX, Markdown

Framework PyTorch, OpenCV, NumPy, Pandas, SciPy, PIL, Matplotlib, Seaborn, Scikit-learn, Streamlet, NLTK

Web **Backend:** FastAPI, REST Framework, **Databases:** Redis Stream, ZMQ, MySQL, MongoDB, **Scraping:** Beautiful-Soap, Selenium

Utilities Git, Docker, FFMPEG, Redis-Insight, Label-Studio, MS Office, Draw.io

Languages Bangla, English

Selected Publications

Md Sajid Ahmed*, Tanvir Tazul Islam*, Md Hassanuzzaman, Syed Athar Bin Amir, and Tanzilur Rahman. 2021. **Blood Glucose Level Regression for Smartphone PPG Signals Using Machine Learning.** *Journal, Applied Sciences*, Vol. 11, Issue 2, pp. 618, MDPI.

Mahbuba Tasmin*, Taoseef Ishtiak*, Sharif Uddin Ruman, Arif Ur Rahaman Chowdhury Suhan, NM Shihab Islam, Sifat Jahan, **Md Sajid Ahmed***, Md Shahnawaz Zulminan, Abdur Raufus Saleheen, and Rashedur M. Rahman. 2020. **A Comparative Study of Classifiers on Human Activity Recognition by Different Feature Engineering Techniques.** *2020 IEEE 10th International Conference on Intelligent Systems (IS)*

Md Sajid Ahmed*, Taoseef Ishtiak*, Mehreen Hossain Anila, and Tanjila Farah. 2019. **A Convolutional Neural Network Approach for Road Anomalies Detection in Bangladesh with Image Thresholding.** *2019 Third World Conference on Smart Trends in Systems Security and Sustainability (WorldS4)*

*** denotes equal contribution**

Selected Projects

A Complete Road Health Monitoring System: Road Crack Detection using Instance Segmentation with Driving Assistance and Real-time Feedback [GitHub] *Dhaka, Bangladesh*

Bachelor's Thesis/Capstone Project *Summer 2019*

- Proposed an application and Real-time feedback-based model on image segmentation to detect road cracks and anomalies.
- Used YOLACT to label the pixels of a road in images.

Unsupervised Neural Machine Translation (Bangla to English, English to Bangla) [GitHub] *Dhaka, Bangladesh*

CSE495 - NLP Assignment Project *Summer 2019*

- Proposed unsupervised machine translation using monolingual corpora and trained with relevant monolingual data.
- Used fast text word embeddings to generate crosslingual translation.

ConvoCraft-AI-Powered-Dialogue-Generator-with-GPT-2-Language-Model [GitHub] *Dhaka, Bangladesh*

CSE495 - NLP Term Project *Summer 2019*

- Proposed a neural network to generate dialogues related to the characters in the Game of Thrones series.
- Used GPT-2 to generate relevant texts and used pre-generated texts to generate dialogues.

Sensor Data-based Human Activity Recognition with various Feature Engineering Techniques [GitHub] *Dhaka, Bangladesh*

Data Mining Course Project *Fall 2018*

- Proposed a model to classify human activities and achieved nearly perfect accuracy (96.5).
- Used UCI Repository HAR time series data to classify human activities & with feature engineering.

Honors & Awards

Academic

2019 **Champion**, NSU ACM SC Capstone Innovation Challenge Season 8

2018 **2nd Runner up**, IEEDAY PES 2018 Project Showcase Competition, IEEE PES

2017 **50 % Scholarship on Tuition Fees**, Recognition of Excellent Academic Performances