Nuraiyad Nafiz Islam

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PROFESSIONAL EXPERIENCE

Spectrum Software & Consulting (Pvt.) Ltd. **Feb 2023 - Present**

ML Engineer *June 2023 - Present*

- Developed a production-grade license plate detection and recognition system which is deployed at different toll plazas in Bangladesh. The developed system uses transformer based architecture instead of traditional convolutional OCR systems.
- Research on documentAI. Development of information extraction model from unstructured documents.
- Finetune and hyper parameter tuning of various document understaning models for information extraction.
- Finetune LLM and VLM for various documentAI related tasks (Document classification, information extraction, layout analysis)
- Successfully deployed these models as a **web service** and integrated with tolling software and Fintech software.
- Development of Python(PyQt) based desktop application for controlling Bangladesh's first bomb disposal ROV Smart Soinik. Reduced video stream delay, allowing the operators to interact with the connected ROV in real-time.
- Developing and implementing algorithm for vehicle routing problem.

ML Engineer Intern *Feb 2023 - May 2023*

- Worked in R&D with Machine Learning team

EDUCATION

Bangladesh University of Engineering and Technology(BUET) **July 2023 - Present**
M.Sc. in Computer Science and Engineering(Pursuing)

Bangladesh University of Engineering and Technology(BUET) **Mar 2018 - May 2023**
B.Sc. in Computer Science and Engineering

New Govt. Degree College, Rajshahi **July 2015 - July 2017**
H.S.C. - Science

Govt. Laboratory High School, Rajshahi **Jan 2007 - June 2015**
S.S.C. - Science

Skills Summary

Languages: C, C++, Java, Python, JavaScript, Bash, 8086 Assembly
Frameworks and Libraries: Django, Flask, JavaFX, Numpy, Pandas, Matplotlib, OpenCV, Seaborn, Transformers, Pytorch, PyQt
Tools and IDE: PyCharm, CLion, IntelliJ IDEA, WebStorm, Netbeans, Visual Studio, Atmel Studio, VS Code, Atom, Jupyter Notebook, Google Colab, Docker, MLflow
Databases: SQL, Oracle, SQlite, PostgreSQL
Operating Systems: Windows, Linux
Hardware: Arduino, ATmega32
Others: HTML, CSS, Bootstrap, Latex, Git, Github, Gitlab, Figma, Selenium

Coursework [selected]

● Structure Programming and OOP (C,C++, Java) ● DS & Algorithms ● Operating Systems ● Networking & Security ● Database Management System(DBMS) ● Artificial Intelligence ● Machine Learning

Projects

River Learning ☑ — C, C++, iGraphics   2018

A single player learning game for kids. The game has four type of puzzles. As the game progresses, the response time for the gamer reduces. The main objective of this project was to utilize basic programming knowledge.

Bus Ticket Booking Desktop Applicaton ☑ — Java, JavaFX   2019

A Desktop GUI based bus ticket booking application. The aim of this project was to get familiar with Java, OOP, Socket Programming(Networking), Multi-threading and GUI based framework JavaFX.

Restaurant Management System ☑ — Django, JavaScript, HTML, CSS, Bootstrap, Oracle   2020

This was a website to handle costs, employees and online/offline orders of a single specific restaurant. This project was done under the Database course and the objective was to utilize SQL and oracle database.

Location Based Dynamic Advertisement System ☑ — ATMega32, Arduino, GPS Module   2021

This was a hardware project implemented in our Micro-controller sessional course using ATMega32, Arduino, 16x2 LCD display, GPS module, Android device. The project was based on this Paper.

Flexible Random Early Detection ☑ — Python, C++, NS3   2022

RED(Random Early Detection) is a classic algorithm to ease congestion and then to improve the quality of service of the network. To improve the performance of linear approach of RED, a nonlinear approach is proposed in the Paper. The idea of this paper was implemented in Network Simulator 3.

DoctorZone ☑ — Django, JavaScript, HTML, CSS, Bootstrap, SQlite   2022

Dockzone is a online platform for Appointment Management between doctor and patient and Medicine delivery system.

FingerCount ☑ — Python, OpenCV, Mediapipe   2021

Python based computer vision desktop application to detect the number of fingers. Mediapipe,a cross-platform pipeline framework to build custom machine learning solutions for live and streaming media, was used for the detection part. And then the hand gesture is detected.

[Road Sign Detection](#) ☑ — Python, OpenCV, YOLOv8 **2023**

This project uses YOLOv8 for road sign detection, trained on a dataset of road sign images. The model is built using PyTorch and is capable of detecting and classifying various types of road signs, with evaluations done using precision, recall, and F1 score metrics.

EXTRACURRICULAR

Badhan, Buet Zone **2018 - 2023**

Vice President *2022 - 2023*

President(RH Unit) *2022 - 2023*

Treasurer *2021 - 2022*

Badhan is a campus based voluntary blood donors' organization. In last four years, as a team, Badhan BUET Zone created more than 1200 new blood donors and managed more than 6000 units of blood for the patients in different hospitals. Initiating social movement to build up a healthy society through motivating voluntary blood donation, donating blood voluntarily and others services and awareness programs.

CERTIFICATION

- **Machine Learning Foundations: A Case Study Approach** (Coursera)
- **Neural Networks and Deep Learning** (Coursera)
- **LinkedIn assessment :** C++, Python, OOP(Object Oriented Programming)

RESEARCH EXPERIENCE

Detecting and Decoding: A YOLO-Transformer Hybrid Model for Bangla License Plate Recognition
Accepted at 11th International Conference on Networking, Systems, and Security
Nuraiyad Nafiz Islam, Sadia Afroz, Dr. A.B.M. Alim Al Islam, Dr. Faizul Bari

Human-Machine Collaboration at the Tollbooth: Perceptions and Requirements of Toll Workers in the Age of AI and IoT
Accepted at 11th International Conference on Networking, Systems, and Security
Nuraiyad Nafiz Islam, Dr. A.B.M. Alim Al Islam

AWARDS AND ACHIEVEMENTS

- Two times national and five times regional winner of Bangladesh Physics Olympiad(BdPho)

- Four times regional winner of Bangladesh Mathematical Olympiad(BMO)

- Board Scholarship by Govt. Bangladesh for outstanding performance in PSC, JSC, SSC, HSC

REFERENCES

- **Prof. Dr. Md. Monirul Islam**
  Professor, Department of Computer Science and Engineering
  Bangladesh University of Engineering & Technology, Dhaka-1000 , Bangladesh
  Email: mdmonirulislam@cse.buet.ac.bd

- **Prof. Dr. A.B.M. Alim Al Islam**
  Professor, Department of Computer Science and Engineering
  Bangladesh University of Engineering & Technology, Dhaka-1000 , Bangladesh
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