Meher Afroz

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EDUCATION

- **Bangladesh University of Engineering and Technology (BUET)** — Dhaka, Bangladesh
  Bachelor of Science in Computer Science & Engineering; CGPA: 3.76/4.00 — *Feb 2017 - May 2022*
  (Academic Session Delay Due to COVID-19 Pandemic)
  Courses: *Operating Systems, Data Structures, Analysis Of Algorithms, Artificial Intelligence, Machine Learning, Networking, Database*

- **Holy Cross College** — Dhaka, Bangladesh
  Higher Secondary Certificate, GPA: 5.00/5.00 (A+ in all subjects) — *2014 - 2016*

- **A.K. High School** — Dhaka, Bangladesh
  Secondary School Certificate, GPA: 5.00/5.00 (A+ in all subjects) — *2008 - 2014*

RESEARCH INTEREST

- Computer Security
- Machine Learning
- Artificial Intelligence
- Deep Learning
- Computer Networks
- Software Engineering
- Computer Graphics
- Bioinformatics

RESEARCH EXPERIENCE

- **On Feature Selection Algorithms for Effective Botnet Detection** — March 2021- May 2022

  The 2022 International Conference on Ubiquitous Networking
  Status: *Accepted for Oral Presentation on Sep 17, 2022*
  Supervisor: Dr. A.K.M. Ashikur Rahman (BUET)

  ○ We analyzed networks flow from pcap file using Wireshark and extracted flow based features.
  ○ We proposed several heuristics to select the best features from a handful of possible features to detect botnet considering various performance metrics.

  Tech: Python, Machine Learning Numpy, Pandas, Scikit Learn, Wireshark

- **Breast Ultrasound Image Segmentation** — 2022-Current

  Supervisor: Dr. Mohammad Saifur Rahman (BUET)

  ○ We built a model for accurate ultrasound image segmentation using MultiResUNet.

  Tech: Python, Keras, Numpy, MultiResUNet, Deep Learning

- **Dhaka Sim (Heterogeneous Traffic Simulator)** — Jan 2021-Dec 2021

  Supervisor: Dr. A. B. M. Alim Al Islam (BUET)

  ○ We have implemented a simulator to analyze traffic data in case of heterogeneous traffic system like Dhaka city.
  ○ I have converted the previous 2D model into 3D model to add 3D structures like flyover, metro rail etc.

  Tech: Java, Swing, Google Map, Graph

WORK EXPERIENCE

- **IQVIA** — North Carolina, United States
  DATA SCIENCE ENGINEER (Remote) — *May 2022 - Present*
  Tech: Python, SQL, Snowflake, Docker Dekstop

- **MAINFRAME LABS LTD** — Dhaka, Bangladesh
  SOFTWARE ENGINEERING INTERN (Remote) — *Dec 2021 - March 2022*
  Tech: NodeJS, Express, React, Bootstrap, CSS, HTML, MongoBD

Skills Summary

- **Languages**: Python, C++, JavaScript, C, JAVA, Assembly, HTML, CSS, LATEX
- **Frameworks**: NodeJS, ReactJs, Bootstrap, JavaFX
- **Databases**: Oracle, PostgreSQL, SQL, MongoDB
- **Tools/Software**: Git, Docker Desktop, PyCharm, IntelliJ IDEA, CodeBlocks, Oracle SQL Developer, Emu8086, Jupyter Notebook, Atmel Studio, Cisco Packet Tracer, Wireshark, Proteus, MATLAB
- **Libraries**: Pandas, Numpy, Keras, Matplotlib, OpenCV, Scapy, OpenGL
- **Platforms**: Linux, Web, Windows
- **Soft Skills**: Leadership, Event Management, Writing, Public Speaking, Time Management

Projects

- **TCP reset attack on video streaming**:
  Stopped on going TCP connection on video streaming by forging a spoofed packet which pretended to be the one coming from the original video streaming server.
  Tech: Linux, Cpp, WireShark, Bash

- **HealthWay-Online Diagnostic and Consultation Center**:
  A website with online diagnostic facilities and hassle free online appointments with doctors from different hospitals.
  Tech: NodeJS, Express, React, Bootstrap, CSS, HTML, MongoBD

- **Automatic Exam Scheduler**:
  Automatic Exam Scheduler withdraws the well known complexity of the exam scheduling process. It solves the constraints placed by students, allowing you to stop wasting countless hours preparing a working exam schedule for your Institution.
  Tech: Java, Artificial intelligence, Graph-Coloring

- **Hidden Markov Model with Viterbi Algorithm**:
  Hidden Markov Model (HMM) implemented with the viterbi which can find most estimated path of events
  Tech: Python, Numpy

- **Logistic Regression and AdaBoost for Classification**:
  Implemented a logistic regression classifier and used it in the AdaBoost algorithm for classification.
  Tech: Python, Numpy, Pandas, Scikit Learn

- **Advanced Encryption Standard(AES) Algorithm**:
  AES algorithm that converts input into cipher in encryption step and cipher into normal text using 128 bit key.
  Tech: Python, BitVector, Bash

- **Convolutional Neural Network(CNN)**:
  Implemented Convolutional Neural Network(CNN) architecture from scratch and classify hand written digits of MNIST dataset.
  Tech: Python, Keras, Numpy

- **Networking Projects**:
  1. Implemented HTTP File server of application layer
  2. Distance Vector Routing of network layer
  3. Implemented a Reliable Transport Protocol of transport layer
  4. Implementation of Data Link Layer: Sliding window protocol, piggybacked acknowledgement, timer based re-transmission, error control using CRC.
  5. Implemented network simulator (NS2)
  Tech: Cpp, Java, Bash, Linux

- **Raster Based Graphics Pipeline Implementation**:
  Implemented graphics rasterisation that takes 3d objects in form of vector format (shapes) and converting it into a raster image
  Tech: Java

- **Ray Tracing**:
  Implemented ray casting and ray tracing using phong lighting model and generate image from any position
  Tech: Cpp, OpenGL

- **Online Blood Bank**:
  A platform to donate blood and collecting blood easily
  Tech: Java, JavaFX, Threading, Multi-programming

- **Shohoz Ride Sharing App**:
  Ride-sharing services that connect people who want to share rides with people who need a ride.
  Tech: Java, PostgreSQL

Honors and Awards

Selected Academic Honor :

- **Dean's List Scholarship (2018-2022)**:
  Awarded for outstanding performance in academic Level-II, Level-III Level-IV

- **Higher Secondary School Certificate Scholarship (2016)**:
  General Scholarship

- **Secondary School Certificate Scholarship (2014)**:
  Talent Pool Scholarship

Extra-curricular Achievements :

- **Ada Lavelace Datathon by BDOC (2022)**:
  Second Runner UP
  Developed a machine learning model to predict taxi count to help analyzing traffic data.

INVOLVEMENTS

- Member at BWCSE - Bangladeshi Women in Computer Science and Engineering (2017 - Present)

- Member at IEEE BUET Branch (2017 - 2022)

- Sports Leader, Spartans, Holy Cross College (2014-2016)

REFERENCES

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