Rezuan Chowdhury Rifat

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Education

North South University Dhaka, Bangladesh
Bachelor of Science in Computer Science & Engineering June 2024

- CGPA: 3.08/4.0 (84%)

Research Experience

Research Assistant July 2023 – June 2024

Supervisor: Dr. Mohammad Abdul Qayum, North South University

- Applied contrastive and self-supervised learning on medical imaging.
- Conducted performance analysis of Shor's and Grover's algorithm.
- Proposed an improved dressed quantum network that outperformed regular dressed quantum network in accuracy and training time.

Undergrad Thesis July 2023 – June 2024

Thesis title: *Drug Repurposing for Covid-19 using Graph Neural Network*
Supervisor: Dr. Mohammad Ashrafuzzaman Khan, North South University

- Extracted and analyzed data from various relevant sources and studies.
- Built a knowledge graph using a Graph Neural Network and utilized transfer learning to enhance the knowledge graph.
- A multi-layer perceptron and quantum variational classifier was used as a drug ranking model trained on embeddings derived from the knowledge graph.

Publication

Enhanced Hybrid Quantum Neural Network for Breast Cancer Detection November 2024
(Accepted)

Rezuan Chowdhury Rifat, Md. Tahmid - Ul Islam Tonmoy, Rifa Tasniya Aziz, Mohammad Abdul Qayum

27th International Conference on Computer and Information Technology

Conference

Oral Presentation - **Enhanced Hybrid Quantum Neural Network for Breast Cancer Detection**, *27th International Conference on Computer and Information Technology* December 20-22, 2024

Projects

Tooth Segmentation

- Designed a root canal monitoring and segmentation system utilizing the Segment Anything Model (SAM) and YOLOv5.
- Data noise was handled through the BM3D algorithm.
- A classwise data balancing technique was applied to address data imbalance.
- Achieved 91.9% detection mAP.

SETI Signal Classification

- Employed various machine learning techniques and architecture to detect extraterrestrial radio signals.
- Transfer learning on EfficientNet and Transformer models generated better accuracy and lower training time.

Robot Trajectory Tracking

- Simulated trajectory of a robot with and without noise using MATLAB.

Bangla Sign Language Recognition

- Implemented SVM, logistic regression, decision tree, random forest, and K-NN on Bangla sign imaging.

National COVID-19 Vaccine Registration System

- Developed a COVID-19 vaccine registration website using Django where users must verify using NID and OTP for security concerns.
- An encryption method was employed to secure the database.

Technical Skills

Programming Languages: Python, C\C++, Java, JavaScript, SQL

Frameworks and libraries: PyTorch, TensorFlow, Qiskit, OpenCV, SciKit-learn, NumPy, Pandas, Matplotlib, Django.

Tools & Technologies: Git, MATLAB, Arduino, JIRA, LaTeX

Co-Curricular Activities

Problem Solving Bootcamp December 2020 - Jan 2021
NSU Problem Solvers, North South University

- Participated in a boot camp focused on data structure and algorithms using C++.

ICPC Preliminary Contest April 2021

- Participated in the *International Collegiate Programming Contest (ICPC) 2021* preliminary contest, competing with over 1200 teams nationwide.

Professional Membership

IEEE Student Member 2020