Arnob Majumder

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Research Interest

Quantum Computing (Quantum Machine Learning, Quantum Cryptography, Quantum Algorithm), Machine Learning, Optimization

Education

Bachelor of Science in Computer Science *July 2020 – October 2024*
BRAC University, Dhaka, Bangladesh ***CGPA: 3.28/4.0***
Relevant coursework: Quantum Computing, Artificial Intelligence, Machine Learning, Image Processing, Natural Language Processing, Blockchain & Cryptocurrencies, Computer Security, Randomized Algorithm, Linear Algebra.

Technical Skills

Programming Languages: C, Python, Javascript

Quantum Computing Libraries: Qiskit, Penny-Lane

ML Libraries & Framework: TensorFlow, Keras, Scikit-learn

Tools & Technologies: Git, LaTeX

Research

- **Audio Classification Using Quantum Techniques.** *Manuscript under preparation*
  - scrutinized the efficiency of hybrid QCNN on audio classification tasks in its NISQ era.

Projects

- **Explainable Detection of Online Sexism** (Code) (Report)
  - TASK A is Binary Sexism Detection: a two-class (or binary) classification where systems have to predict whether a post is sexist or not.
  - TASK B is Category of Sexism: for sexist posts, a four-class classification where systems have to predict one of four categories: (1) threats, (2) derogation, (3) animosity, (4) prejudiced discussions.
- **Signboard Detection Using Deep Learning Based Computer Vision Algorithms** (Code)
  - Evaluated the accuracy of the YOLO V8 algorithm for detecting signboards in Dhaka city, analyzing performance using metrics such as Precision, Recall and mAP across three sets.
- **Real-Time Traffic Collision Avoiding Game Using Reinforcement Learning** (Code)
  - The goal is to automate playing games using a trained reinforcement learning model to make judgments and automatically recognize and extract game elements in real-time.
  - The game is made by using OpenGL. OpenAI gym is used to build the environment. Proximal Policy Optimization(PPO) is used for training as it performs better than the state-of-art approach.
- **Diabetes Prediction using Machine Learning** (Code) (Report)
  - Developed a prediction model, utilizing K-Nearest Neighbors, Random Forest, and Naive Bayes Classifier.
- **Animating the Lunar Position with Pygame** (Code)
  - Some computer graphics algorithms, like the DDA algorithm, midpoint line, and midpoint circle drawing algorithm, are used here.

Certifications

- **Qiskit Global Summer School 2024 - Quantum Excellence** (Link)
- **Qiskit Global Summer School 2023 - Quantum Excellence** (Link)
- **QML Summer School 2023 by Kyiv Academic University** (Link)
- **Qubit by Qubit's Introduction to Quantum Computing** (Link)