Mohammad Hasibur Rahman

dipto.rh007@gmail.com | linkedin.com/in/mohammad9 | github.com/MohammadHR10 | (817) 936-7412

WORK EXPERIENCE

University of Texas at Arlington (*Research Assistant)* ***Dec 2024 Present***

- Developed a quantum entanglement routing algorithm, achieving a 30% noise reduction, 40% signal fidelity improvement, and 45% enhanced compiler performance across networks of up to 50 quantum nodes.
- Utilized graph-theoretic approaches to analyze entanglement characteristics, improving network stability and scalability by 3x while maintaining 90%+ fidelity rates.

North South University (*Research Assistant)* ***Aug 2024 - Dec 2024***

- Engineered a hybrid quantum communication protocol combining entangled and non-entangled approaches, enhancing key distribution efficiency by 40% and improving security metrics by 30%.
- Developed adaptive mechanisms to optimize performance under real-time network conditions, achieving a 50% performance improvement, and implemented advanced strategies to increase resilience against eavesdropping, boosting network robustness by 25%.

IBM (*Fellow: Qiskit Global Summer School)* ***Jul 2024 - Jul 2024***

- Collaborated with an international team to develop a new quantum circuit transpilation strategy, achieving a 20% reduction in gate count across various quantum algorithms.
- Led a group project on quantum noise characterization, creating a comprehensive noise model for a simulated 27-qubit quantum device.

Untie AI (*Research Assistant)* ***Mar 2024 - Aug 2024***

- Led a theoritical research proposal on Quantum Human-Computer Interaction (QHCI) to achieve a goal of 30% improved computational efficiency and personalized UI/UX experiences through quantum algorithms.
- Developed a novel three-layer quantum-classical architecture to enhance web services and reviewed supportive formulas to accomplish iterative quantum state optimization.

EDUCATION

University of Texas at Arlington **Arlington, TX**

Bachelor of Science in Computer Science *Graduation Date: Dec 2026*

PROJECT EXPERIENCE

Quantum Key Distribution Simulation

- Developed a simulation of the BB84 protocol using Qiskit to demonstrate secure key distribution using quantum cryptography and achieved a reduction in eavesdropping probability by 30% by testing error rates.
- Implemented error detection using parity bits, simulating various noise levels in the quantum channel to analyze security performance.

Classical to Quantum Data Mapping

- Developed a Python tool to map classical data to quantum states using amplitude encoding.
- Applied the tool to perform Principal Component Analysis (PCA) on quantum datasets

Research Academy, Quantum Programming with Qiskit & Quantum Algorithm by Womainum.

SKILLS & INTERESTS

Skills: Libraries: Qiskit, Cirq, Pennylane; Algorithms: Grover's, Shor's; Domains: Linear Algebra, QML, QKD, Quantum Cryptography; Soft Skills: Problem-Solving, Analytical thinking, Communication, Collaboration, Leadership, Adaptivity

CERTIFICATES & ACHIVEMENTS

Achivements: IBM TechXchange Conference Attendee, OurCSDFW quantum workshops, IBM Quantum Challenge 2024 completion badge; Certificates: Intro to Quantum Computing by Qubit by Qubit, Certification of Advanced Quantum Computing Research by Mahdy's