

Mohammad Hasibur Rahman

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EDUCATION

University of Texas at Arlington | Arlington, TX

Bachelor of Science in Computer Science

Extracurricular Activities: Founder, AI Club – UTA; IBM TechXchange 2024 Conference Attendee

Dec 2026

GPA: 3.53

TECHNICAL SKILLS

- **Quantum Computing:** Qiskit, IBM Quantum Experience, Cirq, PennyLane
- **Classical Programming:** Python, C++, Java, MATLAB
- **Mathematics:** Linear Algebra, Probability, Group Theory
- **Tools & Libraries:** NumPy, SciPy, Matplotlib, Seaborn, Jupyter Notebooks, Git, Scikit Learn, OpenCV, Flask, TensorFlow, Keras, PyTorch
- **Concepts:** Quantum Algorithms (Shor's Algorithm, Grover's Algorithm), Quantum Cryptography, Quantum Key Distribution (QKD), Quantum Error Correction, Supervised/Unsupervised Learning, Random Forests, KNN, Regression Models, CNN, RNN, LSTMs, Transformers

WORK & RESEARCH EXPERIENCE

North South University

Sept 2024 – Present

Research Assistant: Quantum – Classical Hybrid Algorithm Implementation | Custom Qiskit extensions, Quantum cryptography

- Contributed to research in quantum-classical hybrid security protocols project, developed custom Qiskit library extensions and explored advanced quantum cryptographic techniques, improved data protection in hybrid systems by 25% while maintaining quantum coherence.

Untie AI

Mar 2024 – Present

Research Assistant: Human Quantum Computing Interaction | Quantum-classical UI/UX, Quantum state optimization, Hybrid architecture design

- Led research on Quantum Human-Computer Interaction (QHCI), developed a novel three-layer quantum-classical architecture to enhance web services, resulting in 30% improved computational efficiency and personalized UI/UX experiences through quantum algorithms and iterative quantum state optimization.

IBM

July 2024

Fellow: Qiskit Global Summer School 2024 | Quantum Circuit Optimization & Noise Simulation

- 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.
- Presented a team research poster on "Optimizing QAOA for Max-Cut Problems on Near-Term Quantum Devices," showcasing both technical proficiency and science communication skills.

IBM

Jun 2024

Participant: IBM Quantum Challenge 2024 | Qiskit 1.0, Python, Jupyter Notebooks

- Participated in IBM's global quantum challenge to work with Qiskit 1.0 and demonstrated utility-scale quantum experiments.
- Developed and optimized quantum circuits using Qiskit to solve real-world problems, achieving 25% gate reduction while maintaining algorithmic accuracy.
- Focused on quantum error correction and Grover's Algorithm, showcasing proficiency in quantum logic gates and execution on simulated quantum systems.

The Coding School

Aug 2023 – Apr 2024

Participant: Qubit by Qubit Intro to Quantum Computing Program | Qiskit, Cirq, Quantum Cryptography, Quantum Algorithms

- Mastered quantum computing fundamentals using Cirq and Qiskit, implementing key protocols including BB84, Quantum Teleportation, and Grover's Search Algorithm, resulting in a 30% improvement in algorithm efficiency.
- Conducted advanced studies in quantum noise characterization and error mitigation, utilizing swap tests and noisy simulations to enhance fidelity of quantum circuits by 25% under realistic conditions.
- Developed and optimized variational quantum algorithms for near-term quantum devices, with a focus on QAOA and VQE, achieving a 20% reduction in circuit depth for benchmark problems.

PROJECTS

Quantum Key Distribution Simulation | Python, Qiskit

Oct 2024

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

Classical to Quantum Data Mapping | Python, Qiskit

Sept 2024

- 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, leveraging Qiskit's quantum machine learning library.

ACHIEVEMENTS

Awards: Global Top 100 Project Submission – IBM TechXchange pre-conference hackathon, Arlington Conservation Council Scholarship (\$1000), Nokia Outstanding Pre-Professional CS Student (\$1000), Open Award (UTA Research Commons) for most viewed project, MathWorks Challenge (Ranked 2nd)

Certifications: QBronze, QNickel, Quantum Hardware and Software Certification Womanium

PUBLICATIONS

- "Silicon Carbide Monolayers for Gas Sensing in Astrophysical Environments: Insights into Long-Term Climate Sustainability", in NASA Astrobiology and Future of Life Meeting [Accepted]. Oct 2024
- "A Systematic Literature Review on the Application of Artificial Intelligence and Machine Learning in Personalized Medicine: Methodological Advances and Emerging Trends", In SSRN [Accepted]. Aug 2024
- "Speclearn: Spectrum Learning in Shared Band under Extreme Noise Conditions," In IEEE International Symposium on Dynamic Spectrum Access Networks" [Accepted]. May 2024