


# MD SHAWMOON AZAD

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## PROFILE SUMMARY

I am a researcher in Quantum-Secure Systems and XAI, focusing on hybrid quantum-classical frameworks in Cybersecurity and eXplainable AI in Healthcare. I have published **5 Q1**-indexed journal papers (Cumulative **IF:23+**), supervised **20+** research projects, contributed to **4** grants, and collaborated across multidisciplinary research groups to advance quantum-resilient communication and intelligent security frameworks. **My Research Interest(s):**

(I) **NIST-Aligned Hybrid Quantum-Classical Cryptography**      (II) **Post Quantum Communication Protocols**  
(III) **Efficient QML for Constrained Hardware**              (IV) **Translational Quantum × AI Applications**

## EDUCATION

**Cleveland State University (CSU)** Aug 2025 – Present  
Ph.D. in Engineering - Computer Science Cleveland, OH

**North South University (NSU)** Jan 2019 – Jun 2023  
B.Sc. in Computer Science and Engineering Dhaka, BD  
Distinction: *manga cum laude*  
CGPA: 3.74/4.00 ( $\approx$  93.5% marks)

## EXPERIENCE

**Graduate Research Assistant** Aug 2025 – Present  
Intelligent Secure Cyber-Systems and Applications Research Lab, CSU Cleveland, OH.

- Currently, working on designing and implementing Hybrid Post Quantum TLS for Quantum Safe Cloud.

**Quantum Research Assistant** (1 year 9 month) Oct 2023 – Jul 2025  
NSU Optics-Quantum & AI lab, NSU Dhaka, BD.

- Developed secure hybrid Quantum-Classical security protocols using QKD (BB84, B92, E91, W-state) and classical cryptography for imperfect communication channels.
- Completed QKD integrated **4** research projects (**3 Q1 publication, Cumulative Impact: 14.9**)
- Co-supervised undergraduate quantum computing projects.
- Supported research proposal writing for Google Research Grant 2025 and World Bank HEAT Project.
- Delivered **3** NSU CTRGC grant-funded research projects;

**AI Research Assistant** (1 year) Jan 2024 – Jan 2025  
Dept. of Electrical and Computer Engineering, NSU Dhaka, BD

- Designed data collection pipelines while maintaining ethical data guidelines.
- Built AI framework predicting consumer behavior (91% accuracy) using TPB + ML models.
- Developed mental health analysis tool (99.14% accuracy) with NLP and explainable AI features.
- Fine-tuned BERT-based LLMs, engineered prompts on Gen AI, and applied ensemble + statistical ML techniques.
- Published **2 Q1 journal** papers as  $1^{st}$  author, Total Impact: 8.2; Led 1 NSU CTRGC grant-funded research project.

**Quantum & AI Research Instructor** Jan 2024 – Present  
Mahdy Research Academy Remote

- Delivered research training to **800+** students on ML and Quantum Cryptography.
- Conducted workshops on QKD protocols and Post-Quantum schemes (i.e., BB84, E91, Kyber PQC).
- Supervised **10+** student-led projects across Quantum Security and Applied ML.

**Teaching Assistant** (2 years) Jun 2022 – Jun 2024  
Dept. of Electrical and Computer Engineering, NSU Dhaka, BD

- Operating Systems (CSE323):** Covered OS structures, process and memory management, and security.
- Programming Language I (CSE115):** Focused on C programming fundamentals.
- Mentored over **400** students across **25** sections; developed assessments and review materials.

1. **“Quantum Secure Image Transmission: A Chaos-Assisted Quantum Key Distribution Approach Using Entanglement.”** *IET Quantum Communication*, 6(1), e70016. <https://doi.org/10.1049/qtc2.70016>  
Equal Contribution 1<sup>st</sup> Author • Q2 Scopus Indexed • Impact Factor: 3.3
2. **“Multi-layered Security System: Integrating Quantum Key Distribution with Classical Cryptography to Enhance Steganographic Security.”** *Alexandria Engineering Journal*, 121, 167–182. <https://doi.org/10.1016/j.aej.2025.02.056>  
2<sup>nd</sup> Co-author • Q1 Scopus Indexed • Impact Factor: 6.2
3. **“QSAC: Quantum-assisted Secure Audio Communication using Quantum Entanglement, Audio Steganography, and Classical Encryption.”** *Engineering Science and Technology*, 70, 102167.  
<https://doi.org/10.1016/j.jestch.2025.102167>  
Co-Supervised • Q1 Scopus Indexed • Impact Factor: 5.4
4. **“SAD: Self-assessment of Depression for Bangladeshi University Students Using Machine Learning and NLP.”** *Array*, 100372. <https://doi.org/10.1016/j.array.2024.100372>  
1<sup>st</sup> Author • Q1 Scopus Indexed • Impact Factor: 4.5
5. **“Predictive Modeling of Consumer Purchase Behavior on Social Media: Integrating the Theory of Planned Behavior and Machine Learning for Actionable Insights.”** *PLOS ONE*, 18(12), e0296336.  
<https://doi.org/10.1371/journal.pone.0296336>  
1<sup>st</sup> Author • Q1 Scopus Indexed • Impact Factor: 3.7
6. **“Explainable AI for Predicting Problematic Internet Use Among Bangladeshi University Students: The Role of Loneliness, Low Self-Esteem, and Psychological Distress.”** *Under Review in PLOS ONE*.  
Co-Supervised • Q1-Submission • Under Review
7. **“Enhancing Cloud Storage Security with Quantum Key Distribution and Post-Quantum Cryptography Using Custom Proxy Re-Encryption.”** *Under Review in Quantum Information Processing*.  
Co-Supervised • Q1-Submission • Under Review

PROJECTS

- **Undergraduate Thesis:** Towards Accurate AI-Driven ItihashQA: Developed Bangladeshi history-focused QA system using RAG & LLMs (92% accuracy, mitigated hallucinations). [\[Paper Link\]](#) Spring 2023
- **Undergraduate Capstone Project Showcase:** A Secure Image Transmission Scheme Using Chaotic System and Quantum Entanglement. [\[Poster Link\]](#) Spring 2023

SELECTED CERTIFICATIONS

- **Quantum Mechanics & Quantum Computing:** Theory, COMSOL simulation, and IBM QISKIT learning. [\[Certificate Link\]](#)

SKILLS

• <b>Quantum Tools:</b> QISKIT, TensorFlow Quantum, NumPy.	• <b>DevOps:</b> GitHub, Trello.
• <b>Programming Languages :</b> Python, C/C++.	• <b>Writing Tools:</b> Latex and Office Suits
• <b>Machine Learning Tools:</b> PyTorch, Scikit-learn.	• <b>Language:</b> English (Professional), Bangla (Native).

HONORS & AWARDS

• <b>Magna Cum Laude</b> , awarded by North South University.	Dec 2024
• <b>Top 10</b> (of 104 teams), Innovation Challenge 13, NSU ACM.	Spring 2023
• <b>50% Merit-Based Scholarship</b> for Academic Excellence.	Spring 2020 – Fall 2022
• <b>NSU CTRGC Grant</b> funding across four research projects.	Oct 2023 – Present

REFERENCES

Dr. Mahdy Rahman Chowdhury, Professor, North South University <a href="mailto:mahdy.chowdhury@northsouth.edu">mahdy.chowdhury@northsouth.edu</a>	Dr. Sifat Momen, Professor, North South University <a href="mailto:sifat.momen@northsouth.edu">sifat.momen@northsouth.edu</a>	Dr. Sathis A.P. Kumar Professor, Cleveland State University <a href="mailto:s.kumar13@csuohio.edu">s.kumar13@csuohio.edu</a>
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