

# Md Mojibur Rahman Redoy Akanda

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## EDUCATION

### Doctor of Philosophy in Computer Science

Spring 2022–Current

Advisor: Dr. Nitesh Saxena

Texas A&M University, College Station, TX

### Bachelor of Science in Computer Science and Engineering

2015–2018

Thesis: Eye-Line: A voice controlled assistant for blind peoples

Daffodil International University, Dhaka, Bangladesh

## PROFESSIONAL EXPERIENCE

### Graduate Assistant - Research, Department of Computer Science and Engineering

Jan. 2022 – Present

Texas A&M University, College Station, Texas

- Led research projects that focused on discovering the accessibility and vulnerabilities of digital systems with novel solutions in cybersecurity, ensuring project milestones were met and results were effectively communicated through reports and presentations.
- Collaborated with research teams on various research initiatives, contributing to grant proposals and academic publications.
- Mentored undergraduate students and new research assistants, providing guidance in research methodologies and supporting their academic and project development.

### Lecturer, Department of Computer Science and Engineering

Sept. 2019 – Dec. 2021

Prime University, Dhaka, Bangladesh

- Designed and delivered lectures, tutorials, and curriculum, while creating and assessing assignments, tests, and exams to maintain high academic standards.
- Conducted and supervised research, including publishing articles and supervising final-year undergrad students' thesis and projects.
- Represented the department in various academic committees and events.
- *Courses Instructed:* Cryptography & Network Security, Computer Networking, Design and Analysis of Algorithms, Data Mining.

### Student Prefect (TA), Department of Computer Science and Engineering

Sept. 2017 – Aug. 2018

Daffodil International University, Dhaka, Bangladesh

- Assisted in conducting lab classes, providing hands-on guidance to students by addressing coding challenges, debugging errors, and ensuring a practical understanding of programming concepts.
- Conducted supplementary lectures to clarify complex topics, ensuring that students had a deeper and more comprehensive grasp of course materials.
- Administered lab tests, evaluated student performance, and provided constructive feedback to support their learning and skill development.
- *Courses Assisted:* Computer Graphics Lab, Data Structure and Algorithm Lab (C Programming Language).

## RESEARCH EXPERIENCE

### Accessibility and Security of Digital Systems

2022 – Current

- Analyzed academic research papers on authentication methods tailored for blind and visually impaired users, identifying critical vulnerabilities and highlighting gaps where researchers have overlooked the specific needs and behaviors of these users.
- Conducted analysis for the vulnerability and accessibility of real-life 2FA and MFA methods, focusing on visually impaired users.
- Executed diverse attacks in authentication scenarios involving visually impaired users, such as concurrency and fatigue attacks against push-2FA, real-time phishing attacks targeting OTP-based methods, and cross-service and downgrading attacks on FIDO-MFA to investigate vulnerabilities.

### Security of AR/VR Devices

2022 – Current

- Developed **FaceReader**, a method to unobtrusively reconstruct vital signs from AR/VR device motion sensors.
- Demonstrated the application of FaceReader in advanced attacks, including Body Fat Ratio Estimation, User Re-identification, and Gender Recognition.
- Designed **SAFARI**, an acoustic spoofing and mimicking-resistant voice authentication system using viseme-based facial biometrics derived from AR/VR motion sensors during voice commands.

- Proposed a seamless authentication in XR devices using natural vital sign-induced vibrations like heartbeat and breathing patterns, captured by motion sensors.

#### **IoT and Deep Learning-Based Secure Smart Healthcare**

**2020 – 2022**

- Developed an IoT and deep learning-based smart healthcare system for accurate detection of skin lesions, enhancing early diagnosis and real-time patient monitoring.
- Integrated strong security measures to protect sensitive health data within the IoT framework, ensuring secure data transmission and storage.

#### **Smart Devices in Human Behavior Manipulation**

**2020 – 2021**

- Conducted a systematic analysis to identify different methods used by smart devices to collect user data and influence human behavior and explored how vendors and third-party entities utilize collected data for targeted marketing and behavior manipulation.
- Performed an exploratory user study to assess awareness of data collection and behavior manipulation by smart devices. The survey results reveal the significant impact of smart devices on user behavior and highlight a general lack of understanding regarding data privacy and potential data leakage risks.

#### **Secured GSM-Based Smart Home Systems**

**2019 – Current**

- Developed a GSM-based smart home system with multilayered security.
- Implemented multiple layers of security using Arduino, employing logic-based approaches to prevent unauthorized access.

#### **Network-Based Intrusion Prevention System Inspired By Apoptosis**

**2016 – 2019**

- Developed a novel model for a network-based intrusion prevention system inspired by the biological process of apoptosis.
- Trained machine learning models for real-time intrusion detection.
- Conducted attack generation and analysis on the system using packet sniffing techniques.

#### **Smart Assistant with Vehicle Detection for Blind People**

**2017 – 2018**

- Developed a voice-controlled smart assistant (Android application) tailored for blind and visually impaired users.
- Designed and implemented a real-time accessible vehicle detection algorithm within the app to enable independent travel for visually impaired users.

## **RESEARCH INTERESTS**

Accessibility and Security of Digital Systems, Secure Accessible Authentication, Security of AR/VR Devices, Accessibility and Security for Diversity Groups, Security and Accessibility of Blind and Visually Impaired Users, Application of Machine Learning in Critical Systems.

## **PUBLICATIONS (CITATIONS: 55, H-INDEX: 4, I-IO INDEX: 2)**

### **Conference Papers**

- C4. [WWW 2025] **Md Mojibur Rahman Redoy Akanda**, Ahmed Tanvir Mahdad, Nitesh Saxena, “*Broken Access: On the Challenges of Screen Reader Assisted Two-Factor and Passwordless Authentication*,” In Proceedings of the 2025 ACM Web Conference (WWW) [Acceptance Rate: 19.8%].
- C3. [CCS 2024] Tianfang Zhang, Qiufan Ji, Zhengkun Ye, **Md Mojibur Rahman Redoy Akanda**, Ahmed Tanvir Mahdad, Cong Shi, Yan Wang, Nitesh Saxena, and Yingying Chen. “*SAFARI: Speech-Associated Facial Authentication for AR/VR Settings via Robust Vibration Signatures*,” In Proceedings of the 2024 ACM SIGSAC Conference on Computer and Communications Security (CCS) [Acceptance Rate: 16.9%].
- C2. [CCS 2023] Tianfang Zhang, Zhengkun Ye, Ahmed Tanvir Mahdad, **Md Mojibur Rahman Redoy Akanda**, Cong Shi, Yan Wang, Nitesh Saxena, and Yingying Chen, “*FaceReader: Unobtrusively Mining Vital Signs and Vital Sign Embedded Sensitive Info via AR/VR Motion Sensors*,” In 2023 ACM SIGSAC Conference on Computer and Communications Security (CCS) [Acceptance Rate: 19.87%].
- C1. [ICAECT 2019] **Md Mojibur Rahman Redoy Akanda**, Mohammad Masum Khandaker, Tushar Saha, Jahidul Haque, Anup Majumder, and Aniruddha Rakshit, “*Voice-Controlled Smart Assistant and Real-Time Vehicle Detection for Blind People*,” In Advances in Electrical and Computer Technologies: Select Proceedings of ICAECT 2019 (ICAECT).

### **Journal Publications**

- J3. [Wiley ITEES] Prateem Pan, Rajib Kumar Mandal, **Md Mojibur Rahman Redoy Akanda**, “*Fault Classification with Convolutional Neural Networks for Microgrid Systems*,” In International Transactions on Electrical Energy Systems, vol. 2022, no. 1, 2022, p. 8431450.
- J2. [IJESTY] **Md Mojibur Rahman Redoy Akanda**, Md Alamgir Hossain, “*Smart-Devices in Human Behavior Manipulation: Process Diagram with Exploratory Assessment*,” In International Journal of Engineering, Science and Information Technology (IJESTY), vol. 1, issue 3, 2021.

- J1. [IJESTY] Sworna Akter, Md Alamgir Hossain, **Md Mojibur Rahman Redoy Akanda**, “A Noble Security Analysis of Various Distributed Systems,” In International Journal of Engineering, Science and Information Technology (IJESTY), vol. 1, issue 2, 2021.

### Book Chapter

- B1. [CRC Press] Khairul Islam, Zahidul Islam, Al Amin, **Md Mojibur Rahman Redoy Akanda**, Shabuj Hossen, Feroza Naznin, and Mohammad Ali Moni, “IoT and Deep Learning-Based Smart Healthcare with an Integrated Security System to Detect Various Skin Lesions,” In Artificial Intelligence for Disease Diagnosis and Prognosis in Smart Healthcare, CRC Press, 2023.

### Poster Publications

- P1. [MobiHoc 2023] Tianfang Zhang, Zhengkun Ye, Ahmed Tanvir Mahdad, **Md Mojibur Rahman Redoy Akanda**, Cong Shi, Yan Wang, Nitesh Saxena, and Yingying Chen, “Poster: Unobtrusively Mining Vital Sign and Embedded Sensitive Info via AR/VR Motion Sensors,” In Proceedings of the 24th International Symposium on Theory, Algorithmic Foundations, and Protocol Design for Mobile Networks and Mobile Computing, pp. 308-309, 2023.

### Under Review

- [U3] **Md Mojibur Rahman Redoy Akanda**, Nitesh Saxena, (2025). Exploits via Inaccessibility: A Stealthy User Space Attack Framework to Defeat Screen Reader Assisted 2FA and Passkey-based Authentication.
- [U2] **Md Mojibur Rahman Redoy Akanda**, Amanda Lacy, Nitesh Saxena, (2025). SoK: Inaccessible & Insecure: An Exposition of Authentication Challenges Faced by Blind and Visually Impaired Users.
- [U1] Tianfang Zhang, Qiufan Ji, **Md Mojibur Rahman Redoy Akanda**, Zhengkun Ye, Ahmed Tanvir Mahdad, Cong Shi, Yan Wang, Nitesh Saxena, and Yingying Chen, (2025). Harnessing Vital Sign Vibration Harmonics for Effortless and Inbuilt XR User Authentication.

## SERVICE

### Reviewer

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|--|----------------|
| [2] The Web Conference (formerly known as the International World Wide Web Conference (WWW)) | 2025           |
| [1] Journal of Future Artificial Intelligence and Technologies (FAITH)                       | 2024 - Present |

### Sub-reviewer

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| [1] Annual Computer Security Applications Conference (ACSAC) | 2024 |
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## STUDENT SUPERVISING/ MENTORING

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|---|---------------------------|
| [12] <b>Saharab Rashidi George</b> [B.Sc. in CSE Final Year Thesis]<br>Prime University, Dhaka, Bangladesh        | Summer, 2021 - Fall, 2021 |
| [11] <b>Md. Shahinur Rahman</b> [B.Sc. in CSE Final Year Thesis]<br>Prime University, Dhaka, Bangladesh           | Summer, 2021 - Fall, 2021 |
| [10] <b>Md. Abu Saleh</b> [B.Sc. in CSE Final Year Thesis]<br>Prime University, Dhaka, Bangladesh                 | Summer, 2021 - Fall, 2021 |
| [9] <b>Jahidul Islam</b> [B.Sc. in CSE Final Year Thesis]<br>Prime University, Dhaka, Bangladesh                  | Summer, 2021 - Fall, 2021 |
| [8] <b>Ahmed Alamin</b> [B.Sc. in CSE Student, Independent Research]<br>Prime University, Dhaka, Bangladesh       | Spring, 2020 - Fall, 2021 |
| [7] <b>Md Khairul Islam</b> [B.Sc. in ICE Student, Independent Research]<br>Islamic University, Dhaka, Bangladesh | Spring, 2020 - Fall, 2021 |
| [6] <b>Shabuj Hossen</b> [B.Sc. in EEE Student, Independent Research]<br>Prime University, Dhaka, Bangladesh      | Spring, 2020 - Fall, 2021 |
| [5] <b>Alvi Rahman</b> [B.Sc. in CSE Final Year Thesis]<br>Prime University, Dhaka, Bangladesh                    | Fall, 2020 - Spring, 2021 |
| [4] <b>Farhana Jabin Ritu</b> [B.Sc. in CSE Final Year Thesis]<br>Prime University, Dhaka, Bangladesh             | Fall, 2020 - Spring, 2021 |
| [3] <b>Anish Basak</b> [B.Sc. in CSE Final Year Thesis]<br>Prime University, Dhaka, Bangladesh                    | Fall, 2019 - Spring, 2020 |
| [2] <b>Sabrina Akter</b> [B.Sc. in CSE Final Year Thesis]<br>Prime University, Dhaka, Bangladesh                  | Fall, 2019 - Spring, 2020 |
| [1] <b>Ahammad Ali</b> [B.Sc. in CSE Final Year Thesis]<br>Prime University, Dhaka, Bangladesh                    | Fall, 2019 - Spring, 2020 |

## AWARDS AND HONORS

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[5] <b>Graduate Leadership Excellence Award</b> Texas A&M University, College Station, TX	2024
[4] <b>Oneway Travel Support for Higher Education in the USA</b> Bangladesh Sweden Trust Fund	2023
[3] <b>Vice Chancellor's List</b> Daffodil International University, Dhaka, Bangladesh	2015-2018
[2] <b>University Merit Scholarship</b> Daffodil International University, Dhaka, Bangladesh	2015-2018
[1] <b>1st Runners-up, STEP Skills Competition</b> Narsingdi Polytechnic Institute, Narsingdi, Bangladesh	2014

## TRAINING, WORKSHOPS, AND CERTIFICATIONS

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[11] <b>Jr Penetration Tester</b> TryHackMe	Ongoing
[10] <b>The Academy for Future Faculty</b> Funded by NSF, Center for Teaching Excellence (CTE), Texas A&M University, College Station, TX	Apr. 2025
[9] <b>Introduction to Cyber Security</b> TryHackMe	Sept. 2023
[8] <b>Workshop on Outcome-Based Education (OBE) for University Teachers</b> University Grants Commission (UGC), Dhaka, Bangladesh	Nov. 2021
[7] <b>MikroTik Certified Routing Engineer</b> MikroTik	Feb. 2019
[6] <b>MikroTik Certified Network Associate</b> MikroTik	Dec. 2018
[5] <b>Workshop on Android Apps Development</b> DIUCPC, Daffodil International University, Dhaka, Bangladesh	Dec. 2015
[4] <b>2nd Youth Parliament on Right to Food</b> Youth Against Hunger, Dhaka, Bangladesh	Oct. 2015
[3] <b>Workshop on Journey for a Beautiful Life</b> Daffodil International University, Dhaka, Bangladesh	Aug. 2015
[2] <b>Internship on Programmable Logic Control</b> Habib Technical Training Center, Narsingdi, Bangladesh	Sept.-Nov. 2014
[1] <b>National Mobile Application Development Awareness &amp; Capacity Building Program</b> Ministry of ICT, Bangladesh	Mar. 2014

## MEMBERSHIP AND LEADERSHIP EXPERIENCE

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[8] <b>Professional Membership</b> , Association for Computing Machinery (ACM) [Member No.: 2704394]	Jan. 2024 – Present
[7] <b>President</b> , Computer Science & Engineering Graduate Student Association (CSEGSA) Texas A&M University, College Station, TX	Sept. 2023 – Present
[6] <b>General Secretary</b> , Bangladesh Student Association (BSA) Texas A&M University, College Station, TX	May 2023 – April 2024
[5] <b>Member</b> , Texas A&M Cybersecurity Club Texas A&M University, College Station, TX	Aug. 2023 – Present
[4] <b>Faculty Advisor</b> , Computer Programming Club Prime University, Dhaka, Bangladesh	Sept. 2019 – Dec. 2021
[3] <b>Member</b> , Cyber Crime Awareness Foundation Dhaka, Bangladesh	Sept. 2018 – Present
[2] <b>Member</b> , Internet Society Bangladesh Dhaka Chapter Dhaka, Bangladesh	Jan. 2018 – Present
[1] <b>Class Representative</b> , Department of Computer Science and Engineering Daffodil International University, Dhaka, Bangladesh	Jan. 2016 – Oct. 2018