Munshi Rejwan Ala Muid

Ph.D. Student, Department of Computer Science, Virginia Tech

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https://rezwan-muid.github.io

Research Interests

Applied Cryptography and Network Security, focusing on the design and implementation of efficient and privacy-preserving infrastructures using cryptographic protocols such as Zero-Knowledge Proofs, Cryptographic Accumulators, Private Information Retrieval (PIR), and Secure Multiparty Computation (MPC). Applications include improving the security, privacy, and transparency of Web PKI, Email PKI, RPKI, and DNS.

Education

- **Ph.D. in Computer Science** *Aug 2023 – Present*
  Virginia Tech, Blacksburg, VA
  GPA: 3.96/4.00
  Selected Courses: Blockchain Technologies, Advanced Topics in Systems (Network Security), System and Software Security, Fundamentals of Information Security (Cryptography), Data and Information Systems, Advanced Topics in HCI (User Privacy), Social Computing and CSCW, Ethics and Professionalism in CS, Statistics in Research.
- **B.Sc. in Computer Science and Engineering** *Jan 2017 – Mar 2021*
  Islamic University of Technology (IUT), Gazipur, Bangladesh
  GPA: 3.82/4.00 (First Class Honors)

Publications

- Manuscript under submission to USENIX Security 2026 on post-quantum DNSSEC.
- **Munshi Rejwan Ala Muid**, Taejoong Chung, Thang Hoang. ***AccuRevoke: Enhancing Certificate Revocation with Distributed Cryptographic Accumulators***, *IEEE Symposium on Security and Privacy (Oakland'25)*, San Francisco, USA, May 2025.
- **Munshi Rejwan Ala Muid**, Afrin Jubaida, Mehedi Hasan Onik, Hamim Hamid. ***Cloud-based Electronic Health Record Sharing and Access Controlling Blockchain Architecture using Data De-identification Method***, *International Journal of Medical Engineering and Informatics*, Volume 16, Pages–4, July 2024.
- Riasat Azim, Shulin Wang, Shoaib Ahmed Dipu, Nazmin Islam, **Munshi Rejwan Ala Muid**, Md Fazla Elahe, Mei Li. ***A patient-specific functional module and path identification technique from RNA-seq data***, *Computers in Biology and Medicine*, Volume 158, Pages 106871, May 2023.

Awards and Honors

- **CCI Southwest Virginia Cyber Innovation Scholar**, Competitive innovation award and professional development funding *2026*
- **Bitshares Fellowship**, CS@VT – Research on Zero-Knowledge Proofs and decentralized certificate revocation *2025–2026*
- **Phi Kappa Phi Honor Society**, Virginia Tech – Recognizing top 10% of Ph.D. students *2024, 2025*
- **First Class Honors Graduate**, Islamic University of Technology (IUT) *2021*

Research Experience

- **Graduate Research Assistant**, Virginia Tech, Blacksburg, VA *May 2024 – Present*
  - Designing a scalable distributed TLS certificate revocation framework using bilinear pairing–based cryptographic accumulators.
  - Developing a privacy-preserving email system that hides metadata using S/MIME, OAuth2, and zero-knowledge authentication and membership proofs.
  - Developed "AccuRevoke" using PBC, NTL, and ZeroMQ for MPC-based secure computation.
  - Contributed to research on post-quantum–ready authoritative DNS architectures and deployment considerations.

Teaching and Professional Experiences

- **Graduate Teaching Assistant**, Virginia Tech, Blacksburg, VA
  - **Courses:** Database Management Systems (Fall 23, Spring 24), Intermediate Software Design (Fall 24), Fundamentals of Information Security (Cryptography) (Spring 24)
  - Assisted with grading, mentoring, and instructional support.
- **Lecturer**, United International University, Bangladesh *Jan 2023 – Jul 2023*
  - **Courses:** Structured Programming (C), Discrete Mathematics, Digital Logic Design, Structured Programming Lab (C), Simulation and Modelling Lab, Theory of Computation.
- **Lecturer**, Northern University Bangladesh *Apr 2021 – Dec 2022*
  - **Courses:** Mathematical Analysis for Computer Science, Software Engineering, Database Management Systems, Database Management Systems Lab, Algorithms, Algorithms Lab, Communication Engineering, Web Programming.
- **Contractual Lecturer**, BRAC University, Bangladesh *Sep 2022 – Dec 2022*
  - **Courses:** Programming Language-1 (Python)
- **Part-time Lecturer**, Islamic University of Technology (IUT), Bangladesh *Nov 2021 – Mar 2022*

  - **Courses:** Peripherals and Interfacing Lab, Software Validation and Verification Lab, Visual Programming Lab (Java)

- **Part-time Lecturer**, Ahsanullah University of Science and Technology, Bangladesh *Jul 2021 – Oct 2021*
  - **Courses:** Database Management System Lab
- **On-campus Industrial Attachment (Cyber Security)**, Beetles Cyber Security Ltd., Bangladesh *Nov 2019 – Dec 2019*
  - **Supervisor:** Shahee Mirza, Chief Cyber Operations Officer, Beetles Cyber Security Ltd.
  - Conducted vulnerability analysis using Nmap, Metasploit, Wireshark, and Nessus, achieving a 98% threat identification rate.
  - Implemented MITRE ATT&CK model strategies, achieving a 0% breach rate in simulated cyber attacks.

Talks and Presentations

- **"AccuRevoke: Enhancing Certificate Revocation with Distributed Cryptographic Accumulators"**, Presented at IEEE Symposium on Security and Privacy (S&P), San Francisco, May 2025.

Professional Service

- Reviewer, **IEEE Transactions on Mobile Computing (TMC)**, 2026

Technical Skills

- **Programming Languages:** C, C++, Java, Python, JavaScript, PHP, Minizinc, Solidity, CUDA.
- **Software and Platforms:** AWS, Postfix, Dovecot, Keycloak, Nginx, AutoCAD, XAMPP, Packet Tracer, Google Colab, SQL, Dig(DNS lookup).
- **Cryptographic Libraries:** OpenSSL, NTL, PBC, ZMQ (for MPC), CGBN.

Projects

- **Research:**
  - AccuRevoke – New TLS certificate revocation strategy using distributed cryptographic accumulators. [Source Code]
- **Other Academic Projects:** Developed departmental management tools, an e-commerce platform, and an automated attendance system (C/C++, Java, PHP, Arduino). [GitHub Profile]