

Md. Mazharul Islam

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Dhaka, Bangladesh

CAREER OBJECTIVE

Prospective PhD researcher with a strong background in cyber-physical systems, AI security, and cloud-based infrastructure, seeking doctoral training in the safety and resilience of AI-driven critical infrastructure. My research interests focus on trustworthy and robust AI for cyber-physical systems, including digital twin-based validation, anomaly detection, and secure deployment of intelligent systems in dynamic, safety-critical environments. I am particularly motivated by developing methods for real-time assurance, resilience, and regulatory-aligned AI systems for applications such as smart grids and intelligent infrastructure.

EDUCATION

- North South University *Graduated: Summer 2020*
Dhaka, Bangladesh
Master of Science in Computer Science and Engineering (MSc)
 - CGPA: 3.97 / 4.00 (approx. 99 / 100; first-class standing)
 - Thesis: *"A Practical Framework for Storing and Searching Encrypted Data on Cloud Storage"* — focused on cloud security, privacy-preserving storage, and efficient search over encrypted data.

- North South University *Graduated: Summer 2018*
Dhaka, Bangladesh
Bachelor of Science in Computer Science and Engineering (BSc)
 - CGPA: 3.24 / 4.00 (approx. 81 / 100)

ACADEMIC EXPERIENCE

- Institute for Advanced Research (IAR) Lab *January, 2024 - Present*
Research Assistant United International University & North South University
 - Developed and deployed a blockchain-based health insurance system using smart contracts and cryptographic techniques to preserve patient privacy and detect fraud, resulting in a peer-reviewed publication in a reputable journal.
 - Leading research on machine learning-based fault detection and anomaly identification in healthcare systems using real-world building data, with a focus on reliable and secure operation of critical infrastructure.

- Cyber Physical System with Phasor Measurement Unit (CPS-PMU) Research Lab *February, 2022 – April, 2024*
Graduate Research Assistant North South University
 - Developed and tested a cyber-physical system (CPS) testbed using Node-RED for simulating smart grid environments with integrated data and power network flows to study security and reliability.
 - Utilized GridPACK, NS-3, and HELICS to model and synchronize communication and control layers on Linux-based simulations, enabling experiments on power grid resilience and cybersecurity.

- Department of Electrical & Computer Engineering (ECE) *July, 2023 – June, 2024*
Graduate Teaching Assistant North South University
 - Conducted supplemental instruction and review sessions for CSE411, CSE422, and CSE482, helping students strengthen their understanding of advanced database systems, simulation, and web technologies.
 - Supported faculty with grading, course logistics, and student consultations, ensuring effective delivery of course content and academic support.

PUBLICATIONS

C=CONFERENCE, J=JOURNAL, T=THESIS

- [J.1] **Md. Mazharul Islam**, Mubasshir Ahmed, Rajesh Palit, Mohammad Shahriar Rahman, Salekul Islam. Fraud Detection in Privacy Preserving Health Insurance System Using Blockchain Technology. *Engineering Reports* 7, no. 8 (2025): e70315, DOI: doi.org/10.1002/eng2.70315.
- [C.8] **Md. Mazharul Islam**, Mubasshir Rakib, Niaz Ashraf Khan. CPS-Guard: Defensive Architectures for Securing Large Language Models in Cyber-Physical Systems. *28th International Conference on Computer and Information Technology (ICCIT)*, Cox's Bazar, Bangladesh, 2025. (Accepted & Presented)
- [C.7] **Md. Mazharul Islam**, Mubasshir Ahmed, Md Redowan Zaman Anik, Mamunur Rashid Alex, Niaz Ashraf Khan. Federated Fine-Tuning of Large Language Models for Cybersecurity: Towards Privacy-Preserving and Secure AI. *16th International Conference on Computing Communication and Networking Technologies (ICCCNT)*, Indore, Madhya Pradesh, India, 2025. (Accepted & Presented)
- [C.6] **Md. Mazharul Islam**, Mubasshir Rakib, Niaz Ashraf Khan. A Blockchain-Based Medical Record Storage System for Healthcare Data Management. 4th International Conference on Advances in Communication Technology and Computer Engineering (ICACTCE'24). ICACTCE 2024. Lecture Notes in Networks and Systems, vol 1312. Springer. DOI: [10.1007/978-3-031-94620-2_24](https://doi.org/10.1007/978-3-031-94620-2_24)
- [C.5] **Md. Mazharul Islam**, Tahmid Ashraf Khan, Sunjare Zulfiker, A S M Jahid Hasan, Hafiz Abdur Rahman. Remotely Accessible Cyber-Physical System Testbed for Power Grid's Security and Reliability. in *8th International Conference on Smart Grid and Smart Cities (ICSGSC)*, Shanghai, China, 2024, pp. 436-441, DOI: [10.1109/ICSGSC62639.2024.10813893](https://doi.org/10.1109/ICSGSC62639.2024.10813893).
- [C.4] **Md. Mazharul Islam**, Mubasshir Ahmed, and Rajesh Palit. Fault Detection and Diagnostics of Air Handling Unit in Hospital Building Using Machine Learning. in *15th International Conference on Computing Communication and Networking Technologies (ICCCNT)*, Kamand, India, 2024, pp. 1-6, DOI: [10.1109/ICCCNT61001.2024.10724490](https://doi.org/10.1109/ICCCNT61001.2024.10724490).
- [C.3] **Md. Mazharul Islam**, Mubasshir Ahmed, and Rajesh Palit. Storage and Maintenance of Sensitive Data using Homomorphic Encryption. In *16th International Conference on Security of Information and Networks (SIN)*, Jaipur, India, 2023 Nov 20, pp. 1-6, DOI: [10.1109/SIN60469.2023.10474775](https://doi.org/10.1109/SIN60469.2023.10474775).
- [C.2] **Md. Mazharul Islam**, and Rajesh Palit. A Keyword Based Searching and Sharing Scheme on the Encrypted Cloud Data. In *14th International Conference on Computing Communication and Networking Technologies (ICCCNT)*, Delhi, India, 2023 Jul 6, pp. 1-6, DOI: [10.1109/ICCCNT56998.2023.10308309](https://doi.org/10.1109/ICCCNT56998.2023.10308309).
- [C.1] **Md. Mazharul Islam**, Rajib Imran, and Shazzad Hosain. The Evaluation of Enterprise Resource Planning using ISO 25010 Based Quality Model. In *2nd International Informatics and Software Engineering Conference (IISEC)*, Ankara, Turkey, 2021 Dec 16, pp. 1-6, DOI: [10.1109/IISEC54230.2021.9672349](https://doi.org/10.1109/IISEC54230.2021.9672349).
- [T.1] **Md. Mazharul Islam**, Rajesh Palit. A Practical Framework for Storing and Searching Encrypted Data on Cloud Storage. arXiv preprint arXiv:2306.03547, 2023 Jun 6. DOI: [10.48550/arXiv.2306.03547](https://doi.org/10.48550/arXiv.2306.03547)

SKILLS

- **Machine Learning and Data-Driven Modeling:** Applied ML for anomaly and threat detection, fault diagnostics, defect prediction, and security analytics in cybersecurity, healthcare, and cyber-physical systems; model design, feature engineering, and evaluation in Python.
- **Security and Threat Analysis:** Vulnerability assessment, penetration testing, intrusion detection systems (IDS), SIEM, network traffic analysis, DNS over HTTPS (DoH) threat detection.
- **Cryptography and Privacy:** AES, RSA, PKI, homomorphic encryption, blockchain-based protocols, privacy-preserving storage and search over encrypted data, federated learning for sensitive data.
- **Programming and Research Tools:** Python, Bash, Git, LaTeX; Linux-based experimentation and simulation pipelines.
- **Cloud Platforms and Infrastructure:** Oracle Cloud Infrastructure (OCI), AWS, Azure; infrastructure automation with Terraform, Docker, and Kubernetes.
- **Operating Systems and Virtualization:** Linux (Ubuntu, CentOS, Red Hat), KVM, Hyper-V.
- **Tools and Simulators:** Wireshark, Metasploit, NS3, Burp Suite, Nmap; GridPACK and HELICS for CPS and power grid studies.

PROFESSIONAL EXPERIENCE

- Bangladesh Data Center Company Limited (BDCL) [🌐]
Assistant Manager (Cloud)
 - Provision and manage Oracle Cloud Infrastructure (OCI) resources—including compute instances, storage, and databases—tailored to client requirements under Infrastructure as a Code (IaaS) model.
 - Deliver ongoing cloud support by troubleshooting and resolving client issues to ensure seamless service delivery and adherence to SLAs.April, 2024 - Present
Dhaka, Bangladesh
- Ethics Advanced Technology Limited (EATL) [🌐]
Cyber Security Instructor
 - Conducted hands-on cybersecurity training sessions for 50+ IT professionals from leading banks, using EC-Council's ICBT: Cybersecurity Essentials iLabs to enhance practical threat detection and mitigation skills.
 - Designed and managed interactive lab exercises, providing individual guidance to reinforce core concepts in network security, ethical hacking, and incident response.September, 2023 – November, 2023
Dhaka, Bangladesh
- One World Infotech Limited [🌐]
Solution Engineer
 - Supported enterprise clients in deploying multi-factor authentication (OneSpan) and conducting advanced threat and vulnerability assessments to strengthen cybersecurity posture.
 - Collaborated on incident response readiness, SOC transformation, and penetration testing initiatives, aligning technical solutions with organizational security frameworks and compliance needs.December, 2020 - May 2021
Gulshan-1, Dhaka, Bangladesh

HONORS AND AWARDS

- Vice-Chancellor's Gold Medal, 25th Convocation
*North South University, Bangladesh*December 2024
- Reviewer, International Conference on Data, Computation, and Communication (ICDCC-2024)
*VIT Bhopal University, India*November 2024
- Reviewer, International Conference on Innovations in Data Science (ICIDS-2024)
*Manipal University Jaipur, India*November 2024
- Huawei ICT Competition 2023–2024 (Network Track)
Huawei ICT Academy — Bangladesh, Indonesia, China
Placed 3rd in the National Round (Bangladesh).
Attended the Asia-Pacific award ceremony in Jakarta, Indonesia.
*Secured 2nd place as part of a 3-member team in the Global Final (Shenzhen, China).*Jan–May 2024

CERTIFICATIONS

- AWS Certified Practitioner (CLF-C02) [AWS]June, 2025
- AWS Certified AI Practitioner (AIF-C01) [AWS]June, 2025
- Certified Ethical Hacker (Master) [EC-Council]January, 2025
- Certified Ethical Hacker (ANSI) [EC-Council]January, 2025
- Certified Ethical Hacker (Practical) [EC-Council]December, 2024
- Oracle Cloud Infrastructure 2024 Certified AI Foundations Associate [Oracle Cloud]August, 2024
- Oracle Cloud Infrastructure 2024 Generative AI Certified Professional [Oracle Cloud]July, 2024

REFERENCES

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Relationship: PI of CPS-PMU Research Lab