

PRANTO HALDER

LECTURER | COMPUTER SCIENCE AND ENGINEERING | TEESTA UNIVERSITY, RANGPUR-5404, BANGLADESH.

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RESEARCH PROFILE

Computer Science researcher and lecturer focusing on secure, scalable IoT and next-generation networked systems. My work integrates Software-Defined Networking (SDN), blockchain-enabled trust, edge/AIoT systems, and machine learning to support collaborative DDoS detection, auditable mitigation, and resilient cyber-physical infrastructures. I am seeking PhD opportunities in IoT security, SDN-based network defense, blockchain-assisted cybersecurity, 5G/6G systems, and autonomous/self-adaptive network security.

RESEARCH INTERESTS

Trustworthy Digital Twin Networking, Beyond 5G/6G, Edge-Cloud AI, SDN-IoT Security, Auditable Network Defense, Adaptive DDoS Mitigation, Cyber-Physical Systems.

EDUCATION

Hajee Mohammad Danesh Science and Technology University, Dinajpur, Bangladesh - M.Sc. Engr. in CSE | 2026

- Thesis: Auditable and Collaborative SDN-Based Frameworks for DDoS Detection and Mitigation in IoT Networks.
- Research area: Internet of Things (IoT), security management of IoT devices, SDN, and collaborative network defense.
- Supervisor: Dr. Md. Abdulla Al Mamun, Professor, Department of Computer Science and Engineering.
- CGPA: 3.562/4.00; Session: July-December 2024.

North Western University, Khulna, Bangladesh - B.Sc. Engr. in CSE | 2021

- Thesis: A Comparative Study on the Prospects and Setbacks of 5G Wireless Access Migration in Developing Bangladesh.
- Research area: 5G technology, machine learning, and applications.
- Supervisor: M. Raihan, Assistant Professor, Department of Computer Science and Engineering.
- CGPA: 3.65/4.00; Session: May-Aug 2017

PUBLICATIONS

Journals

1. Optimizing Capsule Endoscopy via LIME–SHAP Perturbations and Optimal Data Distribution for Pancreatic Disease Classification (Accepted - **Journal of Intelligent Medicine and Healthcare (JIMH)**, Tech Science Press.)
2. M. S. Islam, **P. Halder**, S. R. Rahman, S. Shakil, N. S. Kamarudin, O. Zaman, M. S. Islam, M. A. Al Mamun, “Cross-language evaluation of sorting algorithms on various input patterns: A comparative study,” *Journal of Computer Languages*, vol. 2026, p. 101397, 2026, doi.org/10.1016/j.cola.2026.101397
3. **Halder, P.**, Sinha, . A., Hasan, . M. K., Kumar, A., Gulzar, J., Chauhan, A., Sharma, D., Singh, P., Singh, S., Tandon, . K., Ranjan, K. & Pandey, A. (2026) Resource-Efficient Conjunctivitis Screening Using MOGONET and VGG-Based Transfer Learning. *Eu J Comp Sci Informatics*, 3 (2), 67-82. [doi:10.5455/EJCSI.20251213060931](https://doi.org/10.5455/EJCSI.20251213060931)
4. Islam, M. S. & **Halder, P.** (2026) Unifying Algorithmic Performance: Insertion Sort Across Diverse Programming Paradigms. *Eu J Sci Res Rev*, 4 (1), 53-62. [doi:10.5455/EJSRR.20251025082011](https://doi.org/10.5455/EJSRR.20251025082011)
5. **Halder, P.**, & Islam, M. S. (2026) Quantum Machine Learning and Blockchain Integration for Enhanced Security and Efficiency in UGU, UAV, and Drone Networks: A Comprehensive Review. *Eu J Comp Sci Informatics*, 3 (2), 153-166. [doi:10.5455/EJCSI.20251115051912](https://doi.org/10.5455/EJCSI.20251115051912)
6. Islam, M. S., **Halder, P.** & Shakil, S. (2026) Language Aware Sorting: Empirical and ML Driven Performance Evaluation of Insertion Sort. *Eu J Sci Res Rev*, 4 (1), 14-28. [doi:10.5455/EJSRR.20251025063150](https://doi.org/10.5455/EJSRR.20251025063150)
7. **Halder, P.** & Islam, M. S. (2026) Challenges and Opportunities of 5G Integration in Bangladesh: Impacts on Education, Research, Business, and Healthcare. *Eu J Comp Sci Informatics*, 3 (1), 12-28. [doi:10.5455/EJCSI.20251026083831](https://doi.org/10.5455/EJCSI.20251026083831)
8. **Halder, P.**, Hassan, M. M., Z. Rasel Rahman, A. K., Akter, L., Ahmed, A. S., Khan, S., Chatterjee, S., & Raihan, M. (2023). Prospects and setbacks for migrating towards 5G wireless access in developing Bangladesh: A comparative study. *The Journal of Engineering*, 2023(10), e12319. <https://doi.org/10.1049/tje2.12319>

Book Chapters

1. IoT-Enabled Low-Cost Smart Home Security Framework with Multi-Hazard Sensing: Latency and Detection Accuracy Analysis (**Taylor and Francis Book**)

International Conferences

1. AIoT-Enabled Smart Agriculture: Edge Inference for Explainable Yield Estimation and Irrigation Recommendation Using the BIED Dataset-Accepted; Paper Id: 107; **ICEFrontT: IEEE International Conference on Engineering and Frontier Technologies 2026**

2. N. Z. Antor, P. Halder, M. I. Afjal and A. A. Mamun, "An Edge-Based IoT Video Streaming System with Bounded Buffering for Multi-Client Monitoring," *2026 IEEE 2nd International Conference on Quantum Photonics, Artificial Intelligence & Networking (QPAIN)*, Chittagong, Bangladesh, 2026, pp. 1-6, [doi: 10.1109/QPAIN69676.2026.11546550](https://doi.org/10.1109/QPAIN69676.2026.11546550).
3. M. S. Islam, N. K. Roy and P. Halder, "Interpretable Modeling of 5G mmWave Throughput and RTT Using Contextual Features: Measurement-Driven Analysis and Deployment Guidelines," *2026 IEEE 2nd International Conference on Quantum Photonics, Artificial Intelligence & Networking (QPAIN)*, Chittagong, Bangladesh, 2026, pp. 1-6, [doi: 10.1109/QPAIN69676.2026.11546140](https://doi.org/10.1109/QPAIN69676.2026.11546140).
4. The Business Landscape of 5G in Bangladesh: Opportunities and Challenges – *Accepted; Paper Id: 25; International Conference on Business Innovation and Sustainable Development (ICBISD 2026)*.
5. Cardiovascular Disease Prediction Using Modern Machine Learning Pipelines on the UCI Heart Disease Dataset – *Accepted; Paper Id: 205; 2nd Undergraduate Conference on Intelligent Computing and Systems (UCICS)*.

Symposiums

1. Challenges and Opportunities of 5G Integration in Bangladesh: Impacts on Education, Research, Business, and Healthcare, Submission ID. 32, 2025. (*Accepted; IEEE Computer Society Bangladesh Chapter Summer Symposium 2025*)
2. Analyzing the Impact of Data Types and Language Design on Merge Sort, Submission ID. 38, 2025. (*Accepted; IEEE Computer Society Bangladesh Chapter Summer Symposium 2025*).
3. Exploring the Algorithm-Paradigm Interface: Insertion Sort in Diverse Programming Models, Submission ID. 425, 2025. (*Accepted; IEEE Computer Society Bangladesh Chapter Summer Symposium 2025*)
4. Language Awa Sorting: An Empirical and ML-Driven Performance Evaluation of Insertion Sort (*Accepted; International Conference on Applied Statistics and Data Science 2025*)
5. The Business Landscape of 5G in Bangladesh: Opportunities and Challenges – *Accepted; Paper Id: 205; International Conference on Business Innovation and Sustainable Development (ICBISD 2026)*.

Manuscripts Under Review

1. ChainSDN-IoT: An Auditable SDN-Based Architecture for Confidence-Gated DDoS Detection and Autonomous Mitigation in IoT Networks – *IEEE Internet of Things Journal*
2. SecureD-GIoT: A Collaborative Flooding DDoS Mitigation Framework for Greenfield IoT Using Decentralized SDN and Public Blockchain - *International Conference on Signal Processing, Information, Communication and Systems 2026*
3. GraphShield-IoT: Counterfactual Safe Temporal Graph Reinforcement Learning for Risk-Bounded DDoS Mitigation in SDN-IoT - *Security and Communication Networks*
4. Blockchain and IoT-ML based secure hybrid Smart Agriculture model for potato crop yield prediction and potato crop monitoring using multi-faceted Information fusion - *Journal of Smart Internet of Things*
5. IDS-FS: A Feature Selection Framework for Enhanced Anomaly-Based Intrusion Detection in IoT Networks - *IET Cyber-Physical Systems: Theory & Applications*
6. A IoT-Enabled Smart Agriculture: Architectures, Applications, and Lightweight Security: A Systematic Review – *The Journal of Engineering*
7. Edge-AIoT Guava Leaf Health Monitoring: Deployment Oriented Dataset Characterization and Reproducible Baselines - *Computers and Electronics in Agriculture*
8. Enhancing IoT-Driven Crop Yield Prediction through Multi-Sensor Data Fusion and Explainable Machine Learning: A Smart Farming Perspective – *Journal of Sensors*
9. A Bias-Aware and Noise-Robust AIoT Framework for Four-Stage Litchi Maturity Assessment in Smart Orchards – *Advances in Agriculture*
10. SPAS-AIoT: Edge-First Risk-Aware Crop Recommendation and Stage-Aware Irrigation Advisory for Bangladesh Smallholders – *The Journal of Engineering*
11. Modeling Human Susceptibility to QR Code Phishing Attacks: Development and Validation of the QR Phishing Vulnerability Scale using QRVS 30 - *ICEFront 2026*
12. An Uncertainty-Aware Semantic Analysis Framework for Detecting Indirect Prompt Injection Attacks in Retrieval-Augmented Generation Systems - *IEEE International Conference on Signal Processing, Information, Communication and Systems 2026*
13. Secure and Programmable IoT Networking Through SDN, Blockchain, and NFV: A Comprehensive Review of Architectures, Trust Management, Service Orchestration, and Research Challenges - *Security and Communication Networks*
14. Blockchain-Assisted Software-Defined Internet of Things: A Comprehensive Review of Architectures, Security Control, Orchestration, and Future Research Directions – (*Under Process*)
15. Software-Defined and Virtualized Internet of Things: A Comprehensive Review of SDN, NFV, Edge Intelligence, and Security for Next-Generation IoT Networks – (*Under Process*)

RESEARCH EXPERIENCE

IoThink Lab — Trainee Researcher | July 2024-Present

- Designed SDN-blockchain integrated architectures for secure and distributed IoT environments.
- Proposed collaborative DDoS detection and mitigation frameworks using decentralized control planes.
- Contributed to auditable and autonomous security mechanisms for next-generation IoT systems.

IoTelligence Vision Lab — Researcher | June 2024-Present

- Lead research on 5G-enabled IoT systems with emphasis on performance-security trade-offs in large-scale deployments.

- Developed AIoT-based smart agriculture frameworks integrating edge sensing and machine learning for adaptive decision-making.
- Conducted empirical studies on algorithm-system interactions across heterogeneous computing environments.

SELECTED PROJECTS

ChainSDN-IoT: Blockchain-SDN Integrated IoT Security Framework — Python, Go

- Designed a hybrid SDN and blockchain architecture for distributed DDoS detection and mitigation in IoT environments.
- Enabled decentralized sharing of attack intelligence and autonomous mitigation strategies across network nodes.

SecureD-GIoT: Collaborative DDoS Mitigation Framework for Greenfield IoT

- Developed a decentralized IoT security framework using SDN controllers and public blockchain for real-time attack reporting.
- Evaluated effectiveness against flooding-based DDoS attacks in large-scale deployment scenarios.

GraphShield-IoT: Counterfactual Safe Temporal Graph Reinforcement Learning for SDN-IoT Defense

- Proposed a reproducible, audit-aware SDN-IoT defense framework integrating temporal graph state modeling and action-conditioned mitigation strategies.
- Introduced risk-bounded decision selection with tamper-evident audit logging for transparent DDoS mitigation.
- Reported detection performance of Accuracy 0.9948, F1 0.9948, ROC-AUC 0.9999, with approximately 4 ms controller latency.

TEACHING AND ACADEMIC APPOINTMENTS

Teesta University, Rangpur, Bangladesh — Lecturer, Department of CSE | Dec 2023-Present

- Faculty member in Computer Science and Engineering with responsibilities in teaching, academic coordination, student advising, and departmental service.
- Member, Academic Council, Department of Computer Science and Engineering.
- Advisor, Tech Tribe Computer Club, Teesta University, Rangpur (May 2024-Present).
- Coach, TU BinaryBeast at RDPC, HSTU CSE Fest.
- Member of university committees including journal editing/publication, winter fest organization, and sports management.

Ahsanullah Institute of Information & Communication Technology (AIICT) — Lecturer, Department of CSE | Jun 2023-Jan 2024

- Course Coordinator, CSE 5th Semester (01 Sep 2023-31 Dec 2023).

ACADEMIC SERVICE

Peer reviewer: IEEE Internet of Things Journal; Springer Nature - Journal of Optics; Wiley - The Journal of Engineering; Frontiers; Archives of Applied Sciences; European Journal of Computer Science and Informatics; European Journal of Scientific Research and Reviews.

TECHNICAL AND RESEARCH SKILLS

Research domains: IoT security, SDN, blockchain-enabled network security, DDoS detection/mitigation, 5G/6G systems, AIoT, edge intelligence, cyber-physical systems, temporal graph learning, reinforcement learning.

Programming/tools: Python, Go, machine learning pipelines, IoT system prototyping, backend engineering, cybersecurity analysis, empirical performance evaluation.

PROFESSIONAL, INTERNSHIP, AND VOLUNTEER EXPERIENCE

Code Alpha, Lucknow, Uttar Pradesh, India — Cyber Security Intern | May 2024-Jun 2024 | Remote

CodeMen, Khulna, Bangladesh — Backend Engineer Intern | Dec 2022-Mar 2023 | On-site

BOHUBRIHI Online Courses — Campus Ambassador | Jun 2020-Jun 2021

SELECTED LEADERSHIP AND RECOGNITION

- Participant, workshop on launching citizen services on the MyGov Platform, Bangladesh Veterinary Council, Dhaka, Bangladesh.
- ResearchGate-listed recognition among Top 100 Most-Cited Authors in The Journal of Engineering in December 2025, March 2026, and April 2026.
- ResearchGate-listed Top 100 Most-Read Author recognition in The Journal of Engineering.

REFERENCES

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