PRANTO HALDER

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

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Research Profile

My research focuses on secure and distributed IoT architectures, including SDN-enabled network defense, blockchain-based trust models, and lightweight security mechanisms for large-scale sensor and IoT deployments. I have worked on designing collaborative IoT DDoS mitigation frameworks, evaluating 5G deployment challenges, and studying the algorithm–architecture interface in classical sorting algorithms. My work has resulted in publications in a Q1 journal and multiple accepted symposium papers, along with extensive peer-review contributions. I am interested in advancing research on resilient IoT ecosystems, software defined networking, and autonomous security frameworks.

Research Lab Experience

IoTelligence Vision Lab – Researcher | Jun 2024 – Present | Focus: 5G Integration, IoT in Agriculture and Algorithm Optimization.

IoThink Lab - Trainee Researcher | Jul 2024 – Present | Focus: IoT, SDN, and autonomous security frameworks.

Research Interests

- Internet of Things
- SDN-IoT Security
- Auditable Network Defense
- Self-adaptive network security

Journal Review Experience

Reviewer – *IEEE Internet of Things Journal.*
Reviewer – Springer Nature Link - Journal of Optics
Reviewer - *Wiley – The Journal of Engineering*
Reviewer - *Frontiers*
Reviewer - Archives of Applied Sciences
Reviewer - *European Journal of Computer Sciences and Informatics*
Reviewer - *European Journal of Scientific Research and Reviews*

Education

Hajee Mohammad Danesh Science and Technology University, Dinajpur-5200, Bangladesh | Master's Degree, Computer Science and Engineering (M.Sc. Engr.) | (Thesis Ongoing)
Thesis Topic: Internet of Things (IoT), Security management of IoT devices.
Supervisor: Dr. Md. Abdulla Al Mamun, Professor, Dept. of Computer Science and Engineering, Faculty of Computer Science and Engineering, Hajee Mohammad Danesh Science and Technology University, Dinajpur-5200, Bangladesh.
Thesis Title: Auditable and Collaborative SDN-Based Frameworks for DDoS Detection and Mitigation in IoT Networks

Publications

- SecureD-GIoT: Collaborative DDoS Mitigation for Greenfield IoT Using SDN and a Permissioned Ledger (**Accepted**; Paper ID:64 - the 5th IEEE International Conference on Signal Processing, Information, Communication and Systems 2026)
- ChainSDN-IoT: A Hybrid Blockchain–SDN Architecture for Distributed DDoS Detection and Autonomous Mitigation in Greenfield IoT Deployments - (***Under Review*** – *IEEE Internet of Things Journal)*
- 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.

CGPA: **3.562** out of 4 (Session: July - December 2024)

Khulna University of Engineering and Technology, Khulna -9203, Bangladesh | Master's Degree, Computer Science and Engineering (M.Sc. Engr.)

Thesis Topic: Applied Cryptography, Information Security Protocol (E-Voting).
Supervisor: Dr. Kazi Md. Rokibul Alam, Professor, Dept. of Computer Science and Engineering, Faculty of Electrical and Electronic Engineering, Khulna University of Engineering and Technology, Khulna -9203, Bangladesh.
Thesis Title: An Anonymous Voting Scheme based on Pairs of Signatures.
CGPA: **3.50** out of 4 (Session: Jan - Jun 2022)

North Western University, Khulna-9200, Bangladesh | Bachelor's Degree, Computer Science and Engineering (B.Sc. Engr.) | Passing Year: 2021

Thesis Topic: 5G Technology, Machine Learning and Applications
Supervisor: M. Raihan, Assistant Professor, Dept. of Computer Science and Engineering, Faculty of Science and Technology, North Western University, Khulna -9100, Bangladesh.
Thesis Title: A Comparative Study on the Prospects and Setbacks of 5G Wireless Access Migration in Developing Bangladesh
Publications:

- **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

CGPA: **3.65** out of 4 (2017-2021)

Govt. M.M. City College, Khulna-9200, Bangladesh | Higher Secondary School Certificate (H.S.C) | Passing Year: 2015
Department: Science

GPA: **4.67** out of 5.00

ST. Joseph's High School, Khulna-9200, Bangladesh | Secondary School Certificate (S.S.C) | Passing Year: 2013
Department: Science
GPA: **5.00** out of 5.00

Achievements

- Recognized among the Top 100 Most-Cited Authors (April 2026) in *The Journal of Engineering*, as acknowledged by ResearchGate.
- Achieved high readership metrics for published research, resulting in a ranking among the Top 100 Most-Read Authors in the highly-rated The Journal of Engineering (Q1) Recognized by ResearchGate.
- Recognized as a Top 100 Most-Cited Author (December 2025) in The Journal of Engineering (Q1) Recognized by ResearchGate.
- Recognized as a Top 100 Most-Cited Author (March 2026) in The Journal of Engineering (Q1), recognized by ResearchGate.

Administrative Experience

Teesta University Rangpur | Head | July 2026 to (Till-date) | Department: CSE

Teaching Experience (3-years 2 months+)

Teesta University Rangpur | Lecturer and Faculty Member | Dec 2023 to (Till-date) | Department: CSE
Achievements

- Member, Academic Council, Dept. of Computer Science and Engineering, Teesta University, Rangpur.
- Participant, Workshop on launching citizen services on "MyGov Platform", Bangladesh Veterinary Council, Dhaka - 1000, Bangladesh.
- Coach, TU BinaryBeast at RDPC at HSTU CSE FEST.
- President, Tech Tribe Computer Club, Teesta University, Rangpur | July 2026 – Till Date
- Advisor, Tech Tribe Computer Club, Teesta University, Rangpur | May 2024 – July 2026
- Member, Let's Welcome Winter Fest organizing Committee.
- Member, "Teesta Troimasik" Journal Editing and Publication Committee.
- Member, Cricket Team Management Committee, Inter University Cricket Tournament (Sports Fest 2025)

Ahsanullah Institute of Information & Communication Technology (AIICT) | Lecturer and Faculty Member | Jun 2023 – Jan 2024 | Department: CSE
Achievements

- Course Coordinator: CSE 5th Semester (01.09.2023 – 31.12.2023)

Internship Experience (5 months)

Code Alpha | Cyber Security Intern | May 24 – June 24 | Lucknow, Uttar Pradesh, India (Remote).

CodeMen | Intern Backend Engineer | Dec 22 – Mar 23 | Khulna -9100, Khulna, Bangladesh (On-site).

Volunteer Experience (1 year)

- **BOHUBRIHI Online Courses | Campus Ambassador | June 2020 – June 2021**.

Training

- **Communication Skill and Leadership Development** | R.P.: Henri van het Erve (Trainer, PUM, Netherlands) | Institutional Quality Assurance Cell, Teesta University, Rangpur-5404, Bangladesh.
- **The Role of Officers in the Successful Operation and Overall Development of the University** | R.P.: Professor Dr. M. Abul Kashem (Director, IOAC, TU) | Institutional Quality Assurance Cell, Teesta University, Rangpur-5404, Bangladesh.
- **Teaching Methods and Techniques** | R.P.: Professor Dr. M. Abul Kashem, Vice-Chancellor, Professor Sanjib Chowdhury | Institutional Quality Assurance Cell, Teesta University, Rangpur-5404, Bangladesh.
- **Dire Need for Changing Human Values and Attitude in Attaining High Job Performance and Organizational Efficiency** | R.P.: Professor Dr. M. Abul Kashem | Institutional Quality Assurance Cell, Teesta University, Rangpur-5404, Bangladesh.

Participations

- IEEE-sponsored flagship AI Symposium organized by the Department of Computer Science, the University of South Dakota (held on April 11, 2024)
- IEEE-sponsored 7th AI Symposium with the inaugural South Dakota Biomedical Computation Consortium. Organized by the Department of Computer Science, University of South Dakota (held on 26-27 July, 2025)

Publications

Journals

1. Li, Jiahua, Rao, N. Rama, Kumar, Kumar, C. H. N. Santhosh, Rao, G. Madhukar, **Halder, Pranto**, Singh, Shakti, Keskin, Doğan. Quantum-classical hybrid learning framework for Parkinson's disease prediction using acoustic and clinical features. *Sci Rep* (2026). https://doi.org/10.1038/s41598-026-62606-z
2. 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.**)
3. 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
4. **Halder, P.**, Sinha, . A., Hasan, . M. K., Kumar, A., Gulzar, J., Chauhan, A., Sharma, D., Singh, P., Singh, 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
5. 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
6. **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
7. 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
8. **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
9. **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. SecureD-GIoT: Collaborative DDoS Mitigation for Greenfield IoT Using SDN and a Permissioned Ledger (**Accepted**; Paper ID:64 - the 5th IEEE International Conference on Signal Processing, Information, Communication and Systems 2026)
2. AIoT-Enabled Smart Agriculture: Edge Inference for Explainable Yield Estimation and Irrigation Recommendation Using the BIED Dataset-*Accepted; Paper Id: 107;* ***ICEFronT: IEEE International Conference on Engineering and Frontier Technologies 2026***

3. 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.
4. 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.
5. The Business Landscape of 5G in Bangladesh: Opportunities and Challenges – *Accepted; Paper Id: 25;* ***International Conference on Business Innovation and Sustainable Development (ICBISD 2026).***
6. 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).***

Projects

- SPAS-AIoT-Risk-Aware-Crop-Recommendation-and-Stage-Aware-Irrigation-Advisory: This project develops an Edge AIoT-based system that provides risk-aware crop recommendations and stage-aware irrigation advisory specifically tailored for smallholder farmers in Bangladesh, utilizing the SPAS (Soil-Plant-Atmosphere-System) dataset. It combines IoT sensor data with AI/ML models in a Jupyter Notebook to deliver smart, localized agricultural guidance — helping farmers make data-driven decisions on crop selection and irrigation scheduling to improve yield and reduce risk.
- AIoT-Enabled-Smart-Agriculture: This project combines Artificial Intelligence (AI) and IoT (Internet of Things) — collectively known as AIoT — to build a smart agricultural monitoring and automation system. It likely uses hardware sensors (such as soil moisture, temperature, and humidity sensors) alongside machine learning models to make intelligent decisions about irrigation, crop health, or environmental conditions. The goal is to help farmers improve crop yield and reduce manual effort through data-driven, automated farm management.
- An Efficient Model for Parkinson's Disease Prediction: This project applies Quantum Machine Learning (QML) techniques to predict and categorize Parkinson's disease, leveraging quantum computing principles to potentially improve classification accuracy over classical machine learning approaches. It uses a Jupyter Notebook to implement and evaluate the model on biomedical datasets, combining quantum algorithms with medical data analysis for early and efficient disease detection.
- Cardiovascular-Disease-Prediction : This project builds a cardiovascular disease prediction system using modern machine learning pipelines applied to the well-known UCI Heart Disease Dataset, implementing and comparing multiple classification algorithms to accurately identify patients at risk. The Jupyter Notebook covers the full ML workflow — including data preprocessing, feature engineering, model training, and evaluation — to deliver a robust and efficient diagnostic tool for early detection of heart disease.
- ChainSDN-IoT: ChainSDN-IoT is a research repository that integrates Software-Defined Networking with blockchain technology for IoT environments, providing code and data to reproduce the metrics, tables, and figures from its associated paper. It supports both offline and live reproduction modes, built primarily in Python and Go.
- SecureD-GIoT : SecureD-GIoT is a prototype security framework for Greenfield IoT that focuses on detecting and mitigating flooding-based DDoS attacks by combining decentralized SDN controllers with a public blockchain for sharing attack reports and mitigation rules.
- Network Intrusion Detection System: A simple Python-based Network Intrusion Detection System using Scapy to sniff live traffic, detect suspicious IPs and Telnet-related ports in real time, and log flagged events for monitoring and analysis.
- Basic Network Sniffer : This project is a basic Python network sniffer built with Scapy that captures a small number of live packets and prints their source and destination IP addresses. It also checks for TCP traffic and displays the related source and destination ports, making it a simple tool for monitoring and understanding network packet flow in real time.
- Doctor Appointment System : Golang-based doctor appointment management system built on microservice architecture with gRPC and PostgreSQL. It supports three roles — admins managing categories and users, doctors handling schedules, and patients booking appointments online.

- Golang QRUD: This project is a Go-based web application for academic management, built around users, faculty, classes, subjects, and student results. The routes and database schema show that it supports login/session handling and create, view, edit, and marks-management features backed by PostgreSQL tables for users, faculty, classes, and student-subject marks.
- Anonymous Authentication : This project is a small Python-based collection of utility scripts related to an anonymous authentication idea. It includes functions for SHA-256 password hashing with a random salt, binary conversion of values, and XOR operations, so it looks more like a set of experimental building blocks for an authentication workflow than a complete full system.
- Tamura's Scheme : This project is a Python implementation of an encryption and re-encryption workflow based on Tamura's scheme. The script generates public/private keys, encrypts a sample message, performs re-encryption through two authorities, and then decrypts the outputs to verify whether the original message can be recovered correctly.
- RSA Decryption Mixnet : This project is a Python implementation of an RSA-based mixnet experiment where multiple mix servers generate their own public/private keys and random values, then encrypt a message in layers. During decryption, the layers are removed in reverse order to recover the original plaintext, demonstrating the basic idea of mixnet-style layered encryption and decryption.
- Chaum's Blind Signature : This project is a Python implementation of Chaum's Blind Signature scheme, showing how a message can be blinded, signed by a signer, then unblinded and verified without revealing the original message during signing. It includes RSA-style key generation, blinding, signing, unblinding, and verification steps, making it a simple demonstration of privacy-preserving digital signatures.
- Multi-party-RSA : This project is a simple Jupyter Notebook implementation of a multi-party RSA demonstration in Python. It lets the user choose the number of parties, generates separate RSA public/private key pairs for each participant, and then shows encryption and decryption of the same message with each party's keys, so it works more like a learning or experimental cryptography notebook than a full application.
- ElGamal Decryption Mixnet : A Python Notebook demo of an ElGamal-style decryption mixnet where multiple mix servers jointly decrypt messages using shared private keys — an academic cryptography experiment.
- RSA Implementation for Big Integer : This project is a Python Notebook implementation of the RSA cryptosystem designed to work with very large integers. It takes large prime inputs, generates public and private keys, and demonstrates RSA encryption and decryption of a numeric message, so it serves mainly as a learning-focused cryptography demo.
- Substitution Cipher - Ceaser Cipher : This project is a Jupyter Notebook–based Python implementation of two classical cryptography techniques: the substitution cipher and the Caesar cipher. It appears to be a simple educational/demo project that demonstrates how these basic encryptions methods work rather than a full application.
- University Management System using CSharp : This project is a C# desktop application backed by an SQL database for managing common university records and workflows. The repository includes XAML screens for login and for adding, searching, updating, and deleting student, instructor, and advisor information, so it appears to be a basic academic administration system.
- Hotel-Management System using HTML-CSS-PHP : A simple web-based hotel management system built with HTML, CSS, PHP, and JavaScript, allowing users to browse room categories, view details, explore the restaurant, and make reservations online.
- Portfolio using HTML, CSS, PHP : This project is a personal portfolio-style website built mainly with HTML, CSS, and PHP. It includes pages for home, about, contact, skills, work, login, and registration, so it appears to be a simple multi-page portfolio site with some basic user authentication features.

COURSE CONDUCTED

- Algorithm
- Algorithm Lab
- Communication Engineering
- Technical Writing and Presentation
- Web Design and Development
- Web Design and Development Lab
- Introduction to Computer System

REFERENCES

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