

ISTIAQUE AHMED

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RESEARCH PROFILE

Research Scientist focused on developing secure and privacy-preserving systems, with research in AI Security (Agentic AI and LLMs), Distributed Ledger (Blockchain/Web3), Decentralized Identity (DID/SSI), and Zero-Knowledge Proofs (ZKPs). My doctoral research at Osaka Metropolitan University developed a privacy-preserving decentralized eKYC framework built on self-sovereign identity, decentralized identifiers and zero-knowledge proofs, with results published in *IEEE Internet of Things Journal*, *IEEE Access* and *IEEE Transactions on Sustainable Computing*. I have authored 10 peer-reviewed journal articles (first author on nine), 3 book chapters and 8 conference papers, and held a competitive JST SPRING doctoral fellowship. Alongside research, I have taught undergraduate and graduate computer science courses at four institutions in Bangladesh, South Korea and Japan, and currently co-supervise B.Sc. and M.Sc. thesis students at two universities.

RESEARCH INTERESTS

- **Security of AI systems:** LLM prompt safety and guardrails, agentic AI, self-sovereign identity for AI agents, explainable AI (XAI) for security decisions
- **Privacy-preserving systems:** self-sovereign identity (SSI), decentralized identifiers (DIDs), verifiable credentials, eKYC, zero-knowledge proofs and circuit design, secure multi-party computation
- **Blockchain systems and secure communication:** consensus algorithms, smart-contract security, post-quantum-safe design, Web3.0, DeFi and fintech infrastructure, decentralized applications

EDUCATION

March 2026	Doctor of Informatics (Ph.D.) Graduate School of Informatics, Osaka Metropolitan University, Japan Dissertation: <i>A Privacy-Preserving Decentralized eKYC Framework Leveraging SSI, DIDs, and Zero-Knowledge Proofs</i> CGPA 4.0 / 4.0; Outstanding Researcher Nomination for Convocation Representative, Graduate School of Informatics, Osaka Metropolitan University, Japan, March 2026. Supervisors: <i>Prof. Tadashi Nakano, Prof. Thi Hong Tran and Dr. Kentaroh Toyoda</i>
June 2015	M.Sc. in Computer Science and Engineering; University of Rajshahi, Bangladesh CGPA 3.438 / 4.00 · Merit position: 3 rd in cohort · Supervisor: <i>Prof. Md. Rokanujjaman</i>
Nov. 2013	B.Sc. in Computer Science and Engineering; University of Rajshahi, Bangladesh CGPA 3.570 / 4.00 · Merit position: 2 nd in cohort · Supervisor: <i>Prof. Md. Rokanujjaman</i>

ACADEMIC, RESEARCH, AND PROFESSIONAL APPOINTMENTS

Aug 2026 – present	Postdoctoral Researcher, ICT Convergence Research Center Kumoh National Institute of Technology, Gumi, Republic of Korea
Jul. 2026 – present	Visiting Researcher, Graduate School of Informatics Osaka Metropolitan University, Japan
Oct 2021 – May 2023	Research Scientist, Blockchain Economy Research Center / INFONET Laboratory Gwangju Institute of Science and Technology (GIST), Republic of Korea

Led blockchain research projects under *Prof. Heung-No Lee*, coordinated research activity across the team, and delivered graduate-level lectures.

- Feb 2019 – Jun 2021 **Senior Software Engineer**, RedDevs Ltd., Bangladesh
Led software development teams and coordinated multi-developer project delivery.
- May 2018 – Aug 2018 **Lecturer**, Department of Computer Science and Engineering
Bangladesh Army University of Science and Technology (BAUST), Saidpur Cantonment, Bangladesh
- Sep 2017 – Jan 2019 **Guest Lecturer**, National Academy for Computer Training and Research (NACTAR), Bogra, Bangladesh
- Jun 2015 – Aug 2017 **Lecturer**, Department of Computer Science and Engineering
Pundra University of Science & Technology (PUST), Bogra, Bangladesh
Responsibilities included departmental coordination, student support, and course and examination administration during the department's early development.

PROFESSIONAL MEMBERSHIPS

- Institute of Electrical and Electronics Engineers (IEEE) — Professional Member, Member No. 94617668
- Association for Computing Machinery (ACM) — Member, Member No. 9842411

TEACHING EXPERIENCE

Undergraduate teaching

Period	Institution and role	Courses taught
Jun 2015 – Aug 2017	Pundra University of Science & Technology (PUST), Bangladesh — Lecturer	Object-Oriented Programming; Data Structures and Algorithms; Database Management Systems; Operating Systems; Software Engineering; Web Programming; Image Processing; Computer Architecture; Artificial Intelligence
May – Aug 2018	Bangladesh Army University of Science and Technology (BAUST) — Lecturer	Data Structures and Algorithms; Object-Oriented Programming (Java); Database Management Systems; Artificial Intelligence
Sep 2017 – Jan 2019	National Academy for Computer Training and Research (NACTAR), Bangladesh — Guest Lecturer	Introduction to ICT (For the Teachers Training programme of Bangladesh Government)

Graduate teaching and teaching assistance

Period	Institution and role	Contribution
Oct 2021 – May 2023	Gwangju Institute of Science and Technology (GIST), Korea — Research Scientist	Delivered graduate lectures in Blockchain and Future Society; Information Theory; Especially practical part to assist <i>Prof. Heung-No Lee</i>
Doctoral period (2024, Spring, Fall)	Osaka Metropolitan University, Japan — Teaching Assistant	Class management, student support, and coordination of course activities with faculty <i>Prof. Thi Hong Tran</i>

STUDENT SUPERVISION AND MENTORING

- 2025 – present **Co-supervisor** — B.Sc. final-year and M.Sc. thesis students, BRAC University, Bangladesh; In collaboration with *Prof. Md Sadek Ferdous*

2025 – present **Co-supervisor** — undergraduate and postgraduate thesis students, University of Rajshahi, Bangladesh; In collaboration with *Prof. Shamim Ahmad*. Supervised student work has produced joint peer-reviewed publications (IEEE SPICSCON 2025).

RESEARCH FUNDING AND FELLOWSHIPS

From Apr. 2023 to Mar. 2026	Rhizome Fellowship, JST SPRING Programme — Japan Science and Technology Agency (JST), Japan ; Competitive national doctoral fellowship supporting research activity and living costs during the doctoral programme.
Research Fellowship- 2014 (1 Year)	Research Fellowship- 2014, Ministry of Post and Telecommunication, Bangladesh; Research Title: Gait-Based Person Identification Considering Clothing variations
Jan.-Mar. 2015	Hi-Tech Park Authority Scholarship , Bangladesh — funded an international training placement at Infosys Ltd., India

HONOURS AND AWARDS

Mar 2026	Outstanding Researcher nomination for convocation representative , Graduate School of Informatics (Core), Osaka Metropolitan University, Representative at the graduation ceremony.
June 2015	3rd merit position , M.Sc. cohort, Department of Computer Science and Engineering, University of Rajshahi
Nov. 2013	2nd merit position , B.Sc. cohort, Department of Computer Science and Engineering, University of Rajshahi

PUBLICATIONS

10 peer-reviewed journal articles (*first author on nine*) · **3** book chapters · **6** peer-reviewed conference papers · **2** further conference presentations · **2** manuscripts under review · **5** preprints. Own name shown in bold.

A. Peer-Reviewed Journal Articles

1. **Istiaque Ahmed**, K. Chowdhury, K. Toyoda, T. Nakano, and T. H. Tran, “Leveraging Blockchain and AI for Sustainable Recycling and Raw Materials Traceability in the Vehicle Industry,” *IEEE Transactions on Sustainable Computing*, vol. 11, no. 3, pp. 227–239, 2026. doi: 10.1109/TSUSC.2026.3672831
2. **Istiaque Ahmed**, K. Toyoda, T. Nakano, and T. H. Tran, “Efficient Verifiable Credential Aggregation with Blockchain Anchoring and zk-SNARKs,” *IEEE Access*, vol. 13, pp. 191863–191874, 2025. doi: 10.1109/ACCESS.2025.3627625
3. **Istiaque Ahmed**, K. Toyoda, T. Nakano, S. Kasahara, S. R. Goyal, and T. H. Tran, “A Systematic Review on Blockchain-Enabled eKYC: Leveraging SSI and DID for Secure and Efficient Identity Verification,” *IEEE Internet of Things Journal*, vol. 12, no. 21, pp. 44381–44401, 2025. doi: 10.1109/JIOT.2025.3597356
4. **Istiaque Ahmed**, K. Fumimoto, T. Nakano, and T. H. Tran, “Blockchain-Empowered Decentralized Philanthropic Charity for Social Good,” *Sustainability*, vol. 16, no. 1, art. 210, 2024. doi: 10.3390/su16010210
5. **Istiaque Ahmed**, Z. M. Zubraj, M. S. Ferdous, T. Nakano, and T. H. Tran, “APOLLO: Autonomous Predictive On-Chain Learning Orchestrator for AI-Driven Blockchain Governance,” *Digital*, vol. 6, no. 1, art. 3, 2026. doi: 10.3390/digital6010003
6. H. Tanise, Q. D. N. Nguyen, **Istiaque Ahmed**, and T. H. Tran, “A Reliable and Secure Crowdfunding Platform Using Decentralized Blockchain,” *REV Journal on Electronics and Communications*, vol. 14, no. 3, pp. 30–38, 2024. doi: 10.21553/rev-jec.365

7. **Istiaque Ahmed**, F. Morium, and G. M. F. Hossain, "Job Scheduling and Resource Planning in Wireless Sensor Networks," *Global Scientific Journal*, vol. 9, no. 1, pp. 650–653, 2021. doi: 10.11216/gsj.2021.01.47613
8. **Istiaque Ahmed**, Sk. M. Hasan, and F. Morium, "Crux in IoT Devices Access Control Modules Using Fingerprint and Overcome Approach," *International Journal of Advanced Research in Computer and Communication Engineering*, vol. 9, no. 12, pp. 61–67, 2020. doi: 10.17148/IJARCCCE.2020.91210
9. **Istiaque Ahmed**, M. Rokanujjaman, and A. F. Ahmad, "Server-Based Operating System Research Direction for the Future Smart World Using the Internet of Things," *Journal of Computer Technology & Applications*, vol. 8, no. 2, pp. 26–32.
10. **Istiaque Ahmed** and M. Rokanujjaman, "Gait-Based Person Identification Considering Clothing Variation," *International Journal of Innovations & Advancement in Computer Science*, vol. 5, no. 6, pp. 28–42.

B. Book Chapters

1. A. Agarwal, R. Trivedi, S. R. Goyal, and **Istiaque Ahmed**, "Seizure Detection by Analyzing EEG Signals Using Deep Learning Networks," in *Advances in Data-Driven Computing and Intelligent Systems*, S. Das, S. Saha, C. A. Coello Coello, and J. C. Bansal, Eds. Singapore: Springer Nature Singapore, 2024, pp. 65–76. doi: 10.1007/978-981-99-9524-0_6
2. M. Nagar, H. Bhattacharya, A. Gupta, S. R. Goyal, and **Istiaque Ahmed**, "Tracking of Lost Objects Using GPS and GSM," in *Intelligent Data Engineering and Analytics*, V. Bhateja, X.-S. Yang, J. C.-W. Lin, and R. Das, Eds. Singapore: Springer Nature Singapore, 2023, pp. 577–585. doi: 10.1007/978-981-19-7524-0_51
3. S. Bafna, A. Shedage, A. Agarwal, S. R. Goyal, and **Istiaque Ahmed**, "An Overview of Genomics and Frontiers in Genetics for the Smart Era," in *Privacy Preservation of Genomic and Medical Data*, A. K. Tyagi, Ed. Hoboken, NJ, USA: Wiley, 2023, ch. 2, pp. 19–43. doi: 10.1002/9781394213726.ch2

C. Peer-Reviewed Conference Papers

1. **Istiaque Ahmed**, T. Nakano, K. Toyoda, and T. H. Tran, "A Privacy-Preserving Selectively Disclosed eKYC System Using Merkle Tree and Zero-Knowledge Proofs," in *Proc. 30th Asia-Pacific Conf. on Communications (APCC)*, Osaka, Japan, 2025, pp. 1–6. doi: 10.23919/APCC64555.2025.11279937
2. S. A. Saha, M. S. Sinthia, S. Ahmad, and **Istiaque Ahmed**, "A Blockchain-Based ECDSA Framework for Drug Authentication and Traceability in Bangladeshi Healthcare," in *Proc. IEEE Int. Conf. on Signal Processing, Information, Communication and Systems (SPICSCON)*, Rajshahi, Bangladesh, 2025, pp. 81–86. doi: 10.1109/SPICSCON69221.2025.11504162
3. S. Ahmed, M. F. Yousuf, S. Ahmad, and **Istiaque Ahmed**, "Disaster-Proof File Management Using Blockchain and IPFS for Data Security," in *Proc. IEEE Int. Conf. on Signal Processing, Information, Communication and Systems (SPICSCON)*, Rajshahi, Bangladesh, 2025, pp. 87–92. doi: 10.1109/SPICSCON69221.2025.11504209
4. S. H. Rafat, M. N. Jarin, T. M. Mahdee, A. S. M. Miah, N. Haque, M. M. R. Tusher, J. Shin, and **Istiaque Ahmed**, "Lightweight Cryptographic Algorithm Analysis for Secure IoT Communication on ESP-32 Platforms," in *Proc. Int. Conf. on Quantum Photonics, Artificial Intelligence, and Networking (QPAIN)*, 2025, pp. 1–6. doi: 10.1109/QPAIN66474.2025.11171742
5. **Istiaque Ahmed**, Sk. M. Hasan, and F. Morium, "Information Security and User Concern in Smartphones," in *Proc. 2nd Int. Conf. on Sustainable Technologies for Industry 4.0 (STI)*, Dhaka, Bangladesh, Dec. 2020.
6. **Istiaque Ahmed**, "Gait Recognition Performance Enhancement Using Dynamic Parts Selection," in *Proc. Int. Conf. on Engineering Research, Innovation and Education (ICERIE)*, Bangladesh, 2017, paper ICERIE 2017_010, pp. 1–7.

D. Other Conference Presentations

1. **Istiaque Ahmed**, K. Fumimoto, T. Nakano, and T. H. Tran, "Decentralized and Transparent Charity Implementation in Ethereum," *IPSJ Kansai Branch Conference*, Kyoto, Japan, Sep. 2023, pp. 1–3.
2. R. S. M. Wahidur, M. A. Rathore, **Istiaque Ahmed**, and H.-N. Lee, "RNN-Based Prediction for Multi-Cryptocurrency Price Correlation," *Korea Information and Communications Facilities Society Fall Conference*, Republic of Korea, Nov. 2021.

E. Manuscripts Under Review

1. **Istiaque Ahmed**, M. S. Hossain, S. Kasahara, K. Toyoda, T. Nakano, and T. H. Tran, “Transparent Identity Verification Approach Using MPC and Efficient Credential Status Handling,” *Journal of Information Security and Applications* (Elsevier). Under review, round 1.
2. S. R. Goyal and **Istiaque Ahmed**, “The Role of Large Language Models in Cyber Security,” ch. 15 in *AI-IoT-6G Enabled Smart Environment for Industry 5.0 and Society 5.0*, A. K. Tyagi, Ed. CRC Press, Taylor & Francis. Submitted Nov. 2025.

F. Preprints

1. **Istiaque Ahmed**, A. A. Borsha, R. D. Prangon, A. F. Ahmad, and T. H. Tran, “Reflex-Guard: A Low-Latency Guardrail for LLM Prompt Safety Using Dense Semantic Embeddings,” arXiv:2608.17556 [cs.CR], 2026.
2. R. D. Prangon, **Istiaque Ahmed**, S. H. Naim, W. M. Zisan, and H. M. Shakhawat, “Transferable Low-Rank Convolutional Bases for Onboarding Unseen Medical Imaging Modalities,” arXiv:2607.16888 [cs.CV], 2026.
3. A. F. Ahmad and **Istiaque Ahmed**, “BARS: Benign-Anchored Ranking and Selection for False Alarm Reduction in Network Intrusion Detection,” arXiv:2607.13203 [cs.CR], 2026.
4. A. F. Ahmad and **Istiaque Ahmed**, “nCMD: Benign-Anchored Feature Selection for Imbalanced Network Intrusion Detection,” arXiv:2606.09934 [cs.LG], 2026.
5. A. F. Ahmad, M. S. Sayeed, K. Alshammari, and **Istiaque Ahmed**, “Impact of Missing Values in Machine Learning: A Comprehensive Analysis,” arXiv:2410.08295 [cs.LG], 2024.

INVITED TALKS AND SEMINARS

Jan 2023	“Blockchain Technology and Web3.0” — International Islamic University, Bangladesh
Dec 2022	“Blockchain Technology and Industrial Revolution 4.0” — Rajshahi Science and Technology University (RSTU), Bangladesh
June 2024	“Blockchain Technology Opportunities in Research & Development” — Golden Group of Institutions, Gurdaspur, India

ACADEMIC AND PROFESSIONAL SERVICE

Nov 2025	Session Chair , 30th Asia-Pacific Conference on Communications (APCC 2025), Osaka, Japan
June 2022	Jury Member , Blockchain Olympiad Bangladesh
Sep 2017 – Jan 2019	Curriculum Development Committee Member , National Academy for Computer Training and Research (NACTAR), Bangladesh

Professional membership — Member, Association for Computing Machinery (ACM), member no. 9842411

RESEARCH VISITS AND INDUSTRIAL PLACEMENTS

Oct 2024 – Feb 2025	Research Intern , Sapporo AI Dojo (CHOWA GIKEN Corporation), Japan Machine-learning-based performance analysis of athletes.
Apr – May 2024	Research Intern , Large-scale Systems Management Laboratory, Nara Institute of Science and Technology (NAIST), Japan; Details: eKYC, SSI and DID, under Prof. Shoji Kasahara.
Jan – Mar 2015	Trainee , Infosys Ltd., Mysore, India; Details: Development and maintenance of Java-based applications; scholarship funded by the Hi-Tech Park Authority, Bangladesh.

RESEARCH SYSTEMS AND SOFTWARE ARTEFACTS

2026	AgentRed — AI Agent Security Assessment Framework — Open-source red-teaming framework for automated security evaluation of AI agents, including prompt injection, tool
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	misuse, sensitive-data leakage, and system-prompt leakage. Role: Developer & Maintainer. License: MIT. GitHub: AgentRed
2026	LessonQ — Learning Management System — LessonQ, Bangladesh. Role: Project Lead.
2023	Customised Uniswap V2/V3 implementation on testnet — INFONET Lab, GIST, Republic of Korea
2022	Ethereum ETH-ECC private blockchain network on AWS — INFONET Lab, GIST, Republic of Korea; Network deployment, mining, MetaMask integration and transfer tooling; documented at infonet.gist.ac.kr.
2022	Bitcoin BTCECC private network and block explorer — INFONET Lab, GIST, Republic of Korea; Block parsing and processing pipeline for the customised network.
2022	Ethereum faucet dApp (React, Truffle, Web3.js) and ERC-20 / ERC-721 / ERC-1155 token implementations — INFONET Lab, GIST, Republic of Korea

TECHNICAL SKILLS

- **Programming languages** — Python, Solidity, Go, Java, C++, JavaScript
- **Cryptography and blockchain** — zk-SNARKs and ZK circuit design, Merkle-tree constructions, ECDSA, secure multi-party computation, SSI / DID / verifiable credentials, Ethereum, Hyperledger Fabric, smart contracts, Web3.js, Truffle Suite (Ganache), Remix, MetaMask, The Graph, Chainlink
- **Machine learning** — PyTorch, TensorFlow, Keras, scikit-learn, NumPy, pandas, SciPy, OpenCV, Matplotlib; LLM and agentic-AI frameworks including LangChain
- **Systems, web and cloud** — MERN stack and REST API development, Laravel; AWS (EC2, Route 53, load balancers, target groups, security groups, Elastic IP)
- **Embedded prototyping** — Arduino, Raspberry Pi, sensor and wireless-module integration

CERTIFICATIONS

- IBM Blockchain Essentials V2 — IBM Blockchain Foundation
- Professional short courses — Ethereum and the Web3.js library; Hyperledger Fabric v2.5 performance optimisation with Caliper and Tape; AI agents with LangChain and LLM applications

ACADEMIC MENTORS AND COLLABORATORS

- **Doctoral Supervisors:** Prof. Tadashi Nakano and Prof. Thi Hong Tran, Osaka Metropolitan University, Japan; Dr. Kentaroh Toyoda, Senior Scientist, A*STAR, Singapore.
- **Research Collaborators:** Dr. Kentaroh Toyoda, Director of GenAI Security Research, AIFT Enterprise, Singapore; Prof. Shoji Kasahara, Large-scale Systems Management Laboratory, NAIST, Japan.
- **Former Research Supervisor:** Prof. Heung-No Lee, INFONET Lab, GIST, Republic of Korea.
- **Undergraduate and Master's Supervisor:** Prof. Md. Rokanujjaman, University of Rajshahi, Bangladesh.