Rifat Al Mamun Rudro

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PROFESSIONAL AND RESEARCH INTERESTS

Blockchain Technology, Machine Learning (ML), Information Systems, Artificial Intelligence, Deep Learning, Internet of Things (IoT), and Renewable Energy.

EMPLOYMENT HISTORY

Lecturer
Department of Computer Science
American International University-Bangladesh February 2025 - Present

- Delivered lectures on undergraduate courses, preparing lectures, setting question papers, and grading answer scripts. Also involved in planning and implementing educational activities to enhance the learning experience. Actively implement Outcome-based Education (OBE) principles to ensure that course objectives align with student learning outcomes.

Instructor
Department of Computer Science
American International University-Bangladesh January 2024 - February 2025

- Delivered lectures on programming languages and computer fundamental courses to undergraduate students. In addition, conducted CISCO NetAcad certified courses.

ACADEMIC QUALIFICATION

Master of Science in Computer Science (MSc in CS) *2025*
American International University-Bangladesh
Specialized In Information Systems & Database Management
Number of Credits: 36
Thesis Tittle: *ProteinAngleFold: Multi-Head Attention Based Framework for Protein Structure Prediction.*
Advisor: Prof. Dr. Dip Nandi
CGPA: 4.00 out of 4.00

Bachelor of Science in Computer Science & Engineering (BSc in CSE) *2023*
American International University-Bangladesh
Major In Software Engineering
Number of Credits: 148
Thesis: *Utilization of machine learning strategies in the investigation of suspected credit card fraud.*
Advisor: Dr. S.M Hasan Mahmud
CGPA: 3.73 out of 4.00

Journal Articles

2024

1. **Rifat Al Mamun Rudro**, K. Nur, Md. F. A. A. Sohan, M. F. Mridha, S. Alfarhood, M. Safran, and K. Kanagarathinam, "SPF-Net: Solar panel fault detection using U-Net-based deep learning image classification," ***Energy Reports***, vol. 12, pp. 1580–1594, 2024. [Scopus, Q1] Available: doi.org/10.1016/j.egyr.2024.07.044

2. **Rifat Al Mamun Rudro**, H. Uddin, J. A. Aurnob, and K. Nur, "Ret-DNN: Predictive Analytics in Retail-Enhanced Deep Learning Models for Customer Behavior Analysis," ***International Journal of Computing and Digital Systems***, vol. 16, no. 1, pp. 189-201, 2024. [Scopus, Q3] Available: doi.org/10.12785/ijcds/1571107234

2025

3. H. Reza, N. I. Tareq, **Rifat Al Mamun Rudro**, M. M. F. Rabbi, and K. Nur, "Acute lymphoblastic leukemia diagnosis and subtype segmentation in blood smears using CNN and U-Net," ***Indonesian Journal of Electrical Engineering and Computer Science***, 2025. [Scopus, Q4] Available: doi.org/10.11591/ijeecs.v38.i2.pp950-959

4. **Rifat Al Mamun Rudro**, K. Nur, Z. Sahosh, S. Sneha, M. H. Uddin, S. Malik, F. Sakib, and R. R. Chowdhury, "DeepBERT-XAI: A Dual BERT Approach with XAI for Sentiment Analysis of Airline Tweet Data," **International Journal of Data Science and Analytics**, 2025 [Scopus, Q1]. Available: doi.org/10.1007/s41060-025-00967-w

5. **Rifat Al Mamun Rudro**, Hamim, S. A., Uddin, M. H., Masuduzzaman, M., & Hasan, M. M. "Waris-chain: The blockchain-driven transformation of inheritance solutions," **IEEE Transactions on Network and Service Management**, Special Issue on Reliable Networks, 2025 [Scopus, Q1]. Available: doi.org/10.1109/TNSM.2025.3608088

6. Biswas, R., Al Sohan, M. F., **Rifat Al Mamun Rudro**, & Parvin, S. "VGG19-ResSE: A Novel Model for Accurate Segmentation and Classification of Vitiligo Lesions," **Neural Computing and Applications**, 2025 [Scopus, Q1]. Available: doi.org/10.1007/s00521-025-11670-z

7. Nahar, A., **Rifat Al Mamun Rudro**, Al Sohan, M. F., Uddin, M. H., & Kumar, L. "Forecasting Solar Photovoltaic Power Generation: A Machine Learning Time Series Model Approach," **International Journal of Energy Research**, 2025 [Scopus, Q1]. Available: doi.org/10.1155/er/4092367

8. **Rifat Al Mamun Rudro**, J. Ahamed, N. E. Costa, and D. Nandi, "ProteinAngleFold: Multi-Head Attention Based Framework for Protein Structure Prediction," ***International Journal of Intelligent Systems and Applications***, 2025. [To Appear, Scopus, Q4]

2026

10. **Rifat Al Mamun Rudro**, M. H. Uddin, Z. H. Sahosh, S. Malik, S. G. Sneha, R. R. Chowdhury, & K. Nur "SPFNet2: A Lightweight Solar Panel Fault Detection Framework Using Parallel U-Net and MobileNetV3Large," **Renewable Energy**, 2026 [Scopus, Q1]. Available: https://doi.org/10.1016/j.renene.2026.125235

11. Sakibur R. Malik, **Rifat Al Mamun Rudro**, and D. Nandi, "LiteBERT-X: A Hybrid BERT Architecture for Explainable Fake News Classification," ***I.J. Modern Education and Computer Science***, 2026. [To Appear, Scopus, Q2]

Conference Articles

2023

1. R. Islam Reya, A. Nahar, M. F. Abdullah Al Sohan, and **Rifat Al Mamun Rudro**, "Enhancing academic integrity: A multi-model deep learning approach for reliable test supervision and dishonesty detection," in ***Proceedings Asia-Pacific Quality Network (APQN) Conference***, 2023. [Online].
Available: APQN Academic Conference (AAC) Proceedings.

2. M. F. Abdullah Al Sohan, S. K. Chaity, and **Rifat Al Mamun Rudro**, "The impact of ChatGPT in modern education: Boon or Bane?" in ***Proceedings Asia-Pacific Quality Network (APQN) Conference***, 2023. [Online].
Available: APQN Academic Conference (AAC) Proceedings.

2024

4. N. M. Shailee, A. Alam, T. Ahmed, **Rifat Al Mamun Rudro**, and K. Nur, "Software bug prediction using machine learning on JM1 dataset," in ***2024 International Conference on Advances in Computing, Communication, Electrical, and Smart Systems (iCACCESS)***, Mar. 2024, pp. 01-06.
Available: https://doi.org/10.1109/iCACCESS61735.2024.10499572.

5. **Rifat Al Mamun Rudro**, A. Alam, S. Talukder, T. Ahmed, N. Islam, and K. Nur, "TelLungNet-Enabling Telemedicine Utilizing an Improved U-Net Lung Image Segmentation," in ***2024 IEEE Conference on Artificial Intelligence (CAI)***, Jun. 2024, pp. 1387-1393.
Available: https://doi.org/10.1109/CAI59869.2024.00247.

6. S. Mahmud, K. Biswas, A. Alam, **Rifat Al Mamun Rudro**, N. J. Anannya, I. J. Mouri, and K. Nur, "Automatic Multiple Choice Question Evaluation Using Tesseract OCR and YOLOv8," in ***2024 IEEE Conference on Artificial Intelligence (CAI)***, Jun. 2024, pp. 246-252.
Available: https://doi.org/10.1109/CAI59869.2024.00054.

7. S. Al Ahmed, **Rifat Al Mamun Rudro**, A. J. Prity, S. Saha, N. Mansoor, and K. Nur, "CredChain: Academic and Professional Certificate Verification System using Blockchain," in ***2024 International Conference on Advances in Computing, Communication, Electrical, and Smart Systems (iCACCESS)***, Mar. 2024, pp. 1-6.
Available: https://doi.org/10.1109/iCACCESS61735.2024.10499520.

8. A. Nahar, **Rifat Al Mamun Rudro**, Md. F. A. A. Sohan, R. I. Reya, and Md. Uddin, "Predicting Photovoltaic Power Generation by Machine Learning Using Time Series Analysis," in ***Applied Energy Innovation Institute (AEii)***, 2024.
Available: https://doi.org/10.46855/energy-proceedings-11024.

9. M. F. A. Al Sohan, A. Nahar, **Rifat Al Mamun Rudro**, M. H. Uddin, M. J. A. Aurnob, and K. Nur, "AMLChain: An Automated Blockchain Model Architecture For Anti-Money Laundering in Banking Industry," in ***2024 International Conference on Electrical, Computer and Energy Technologies (ICECET)***, Sydney, Australia, 2024, pp. 1-6.
Available: doi: 10.1109/ICECET61485.2024.10698295.

10. A. Nahar, **Rifat Al Mamun Rudro**, and M. F. Abdullah Al Sohan, "SPXAI: Solar panel power production with explainable AI technology," in ***Proc. 16th Int. Conf. Applied Energy (ICAE2024)***, 2024.
Available: https://doi.org/10.46855/energy-proceedings-11441.

11. S. Yakin, A. H. Santo, R. Fahim, **Rifat Al Mamun Rudro**, and K. Nur, "WLD-InceptionV3: AI and computer vision-based urban waterlogging detection using a modified InceptionV3 model," in ***Proc. 3rd International Conference on Computing Advancements (ICCA 2024)***, 2024. Available: https://dl.acm.org/doi/full/10.1145/3723178.3723183.

12. **Rifat Al Mamun Rudro**, M. F. Abdullah Al Sohan, A. Nahar, and S. K. Chaity, "Sustainability in E-Commerce: AI and Augmented Reality Can Facilitate E-Shopping Journey," in ***Proc. 4th International Conference on Electrical, Computer, Communications and Mechatronics Engineering (ICECCME)***, Male, Maldives, 2024, pp. 1-9.
Available: https://doi.org/10.1109/ICECCME62383.2024.10796654.

13. M. Hossain, **Rifat Al Mamun Rudro**, R. Razzaque, and K. Nur, "Machine Learning Approaches for Detecting IoT Botnet Attacks: A Comparative Study of N-BaIoT Dataset," in ***Proc. 2024 International Conference on Decision Aid Sciences and Applications (DASA)***, 2024.
Available: https://doi.org/10.1109/DASA63652.2024.10836622.

2025

14. Md. H. Askari, M. O. Rahman, M. A. H. Asif, **Rifat Al Mamun Rudro**, and K. Nur, "Uncertainty-Aware Machine Learning for Predicting DIA: Integrating Ensemble Variance, Applicability Domain, and Conformal Prediction," in ***2025 28th International Conference on Computer and Information Technology (ICCIT)***, Dec. 2025, pp. 3064–3069.
Available: https://doi.org/10.1109/ICCIT68739.2025.11490567.

15. K. Md. Raihan, N. B. Akash, **Rifat Al Mamun Rudro**, and K. Nur, "Comparative Study on Predicting Chronic Kidney Disease with Classical and Hybrid Machine Learning Models," in ***2025 28th International Conference on Computer and Information Technology (ICCIT)***, Dec. 2025, pp. 2968–2973.
Available: https://doi.org/10.1109/ICCIT68739.2025.11491333.

16. F. Nourin, B. Prentice, **Rifat Al Mamun Rudro**, and K. Nur, "EHR Based Patient's Severity Prediction using Machine Learning," in ***2025 IEEE International Conference on Biomedical Engineering, Computer and Information Technology for Health (BECITHCON)***, Nov. 2025, pp. 150–155.
Available: https://doi.org/10.1109/BECITHCON69222.2025.11504303.

Under Review

1. Mamon, M. A. A., Rahman, M. F., Sadik, M. R. I., Rafi, M. A., **Rifat Al Mamun Rudro**, & Nandi, D. (2026). Next-Generation Micro-payments: A Hybrid Architecture for Blockchain-Based IoT Transactions [Under Review; International Journal of Information Engineering and Electronic Business].

2. Pranty, T. H., Khan, S., **Rifat Al Mamun Rudro**, & Nur, K. (2026). A Systematic Literature Review of Augmented Reality in Retail and E-commerce [Under Review; International Journal of Modern Education and Computer Science].

3. **Rifat Al Mamun Rudro**, Alam, T., Ricon, H. M., & Nur, K. (2026). SHANet: Addressing computational efficiency and data integrity in real-time blood cell detection with a lightweight YOLOv12-blockchain framework [Under Review; PLOS ONE].

4. **Rifat Al Mamun Rudro**, Uddin, M. H., Masuduzzaman, M., & Hasan, M. M. (2025). ALVChain - Asset and Liability Verification in Blockchain Systems for Comprehensive Financial Evaluation [Under Review; Computer Networks Journal].

5. Uddin, M. H., **Rifat Al Mamun Rudro**, & Al-Amin, M. (2025). ICEFA-XAI: A Blockchain-Integrated Intelligent Carbon Emission Factor Analyzer Solution for Automated Carbon Auditing Using Custom CNN [Under Review; Cluster Computing Journal].

6. **Rifat Al Mamun Rudro**, Uddin, M. H., Masuduzzaman, M., Sahosh, Z. H., & Hasan, M. M. (2024). Dual-chain KYC with central bank collaboration: The KYC-Chain model for secure and transparent customer onboarding [Under Review; Blockchain: Research and Applications Journal].

HIGHLIGHTED PROJECTS

TelLungNet: Improved U-Net Lung Image Segmentation October, 2024 - December, 2024

· Developed an enhanced U-Net model architecture to improve lung image segmentation, facilitating better telemedicine applications.

Photovoltaic Power Generation by ML Time Series Model June, 2024 - September, 2024

· Applied machine learning techniques combined with time series analysis to predict photovoltaic power generation.

SPF-Net to SPFNet2 December, 2024 - April, 2026

· A deep learning segmentation project focusing on training and applying U-Net models and segmenting images (solar panel imagery)

- SPF-Net, a deep learning-based project utilizing U-Net architecture for segmenting solar panel images and detecting faults.
- SPFNet2, an advanced version of SPF-Net, incorporates MobileNet variants, enhancing efficiency and accuracy, making it a lightweight and powerful solution for solar panel fault detection and maintenance through image segmentation.

Decentralized Blockchain Applications August, 2025 - Present

· A three-phase blockchain-based approach designed to enhance data management, identity verification, and decentralized application development.

- **Phase-1:** Waris-Chain, focuses on creating a secure, immutable decentralized ledger for managing heritage records, ownership verification, and historical data.
- **Phase-2:** KYC-Chain, introduces a blockchain solution for efficiently managing Know Your Customer (KYC) data through smart contracts, offering a transparent and compliant method for identity verification.
- **Phase-3:** ALVChain, aims to implement Web3 functionality and decentralized workflows, providing a framework for building secure and transparent decentralized applications across various industries.

SHANet: Blockchain-Enhanced YOLO for Real-Time Blood Cell Detection October, 2025 - Present

· Combining YOLO for real-time blood cell detection with blockchain technology for secure, immutable data storage. The system ensures accurate detection of blood cells from medical images while enhancing data security and transparency, making it ideal for healthcare applications requiring real-time analysis and secure data sharing.

ACADEMIC EXPERIENCES

- **Conducted Courses:** Instructed several core Computer Science courses at the undergrad level, including Computer Fundamentals, Programming Language (C++), Discrete Mathematics, Data Structures, Introduction to Database, Object-Oriented Programming (JAVA), Theory of Computation, and Web Technologies. Through these courses, ensured that students gained a comprehensive understanding of both foundational and advanced concepts of Computer Science, preparing them for further academic and professional success.
- **Administrative Responsibilities:** Actively involved in student course registration, preparation of exam questions, and overseeing the exam control room, including tasks such as photocopying, packaging exam papers, and resolving any discrepancies or mismatches in exam packages.

Additionally, responsible for conducting Set B exams, managing various departmental administrative duties, and supporting the smooth functioning of the academic department. This includes supervising student projects and theses, offering guidance, and ensuring timely completion.

COMMUNITY SERVICE

- Delivered a keynote presentation titled *"Intelligent Computing and Applications: From Foundations to Real-World Impact"* at the **3rd International Conference on Big Data Computing and Modeling (ICBDCM-2026)** on April 9, 2026, representing **American International University-Bangladesh (AIUB)** and the **UCH Research Group**. The session showcased cutting-edge research to an international audience of over 2,100 researchers, scholars, and industry experts. [News Link]
- Working as a **Research Associate** in the **Ubiquitous, Cloud and Human Computer Interaction (UCH) Research Group**, Department of Computer Science, American International University-Bangladesh (AIUB), under the supervision of **Prof. Dr. Kamruddin Md. Nur**. [UCH Research Group]

TOOLS & TECHNOLOGIES

- **Project Management:** JIRA, Odoo, Tally
- **Data Visualization:** Power BI, Tableau
- **Documentation & Typesetting:** LaTeX
- **Programming Languages:** Python, C++, R, Java, Solidity
- **Blockchain Development:** Ethereum, Hyperledger, Solidity

PEER REVIEW CONTRIBUTIONS

- **Scientific Reports (Q1):** https://www.nature.com/srep/
- **Discover Internet of Things (Q2):** https://link.springer.com/journal/43926
- **Discover Education (Q2):** https://link.springer.com/journal/44217
- **Discover Artificial Intelligence (Q1):** https://link.springer.com/journal/44163
- **Journal of Data, Information and Management (Q2):** https://link.springer.com/42488
- **Discover Computing (Q2):** https://link.springer.com/10791
- **Engineering Reports (Q2):** https://onlinelibrary.wiley.com/25778196
- **Concurrency and Computation: Practice and Experience (Q2):** wiley.com/15320634
- **Security and Privacy (Q3):** https://onlinelibrary.wiley.com/24756725

REFERENCES

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