Mahbubul Islam

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RESEARCH INTEREST

Human Computer Interaction (HCI), Social Computing, Gamification, Embedded System design, Data Mining

ACADEMIC PROFILE

Master of Science, *Computer Science and Engineering*, ***Jan, 2020 – Dec, 2023***
United International University, Dhaka, Bangladesh
CGPA: 4.00 out of 4.00

Bachelor of Science, *Electrical and Electronic Engineering*, ***Apr, 2011 – Jul, 2015***
Ahsanullah University of Science and Technology, Dhaka, Bangladesh
CGPA: 3.15 out of 4.00 (GPA of Final Semester: 3.34 out of 4.00)

RESEARCH EXPERIENCE

Heating and Cooling Timescales of Transient Brightenings in the Solar Transition Region Loops ***Sep, 2022-Present***
Utilized state-of-the-art image processing techniques to analyze large FOV, high-resolution astronomical images and spectral data, focusing on identifying and characterizing hundreds of anomalous brightening events within the atmosphere of the Sun. Leveraged big data analytics to extract and interpret heating and cooling timescales, and ran detail statistical comparison with magnetohydrodynamic modeling.
Supervisor: **Dr. Shah Bahauddin**, Research Faculty and Scientist, University of Colorado Boulder. (Personal Web-page)

Context Aware Gamification Based Cognitive Social Computing for User Preference Selection ***Mar, 2021-Nov, 2022***
Developed a data-driven gamification framework for personality prediction and personalized recommendations, leveraging large-scale datasets from surveys, gameplay, and social media, and applying BERT and NLP features for advanced feature extraction and analysis.
Supervisor: **Dr. Md Saddam Hossain**, Post-doctoral researcher, LUT School of Engineering Sciences, Finland. (Web-page)

LPWAN Technologies for IIOT and HCI ***Feb, 2023-Apr, 2024***
Conducted a data-driven analysis of IoT physical layer communication protocols (NB-IoT, LTE-M, Sigfox, LoRa, Z-Wave, RedCap), evaluating key metrics (power consumption, transmission range, application performance) and network architecture to determine the optimal protocol for IIoT and HCI applications.
Supervisor: **Dr. Arshia Khan**, Professor & Director of Graduate Studies, University of Minnesota Duluth. (Personal Web-page)

GPU Driven Deep Learning based Model Analysis ***Jul, 2023-Jul, 2024***
Implemented a data-driven comparison of GPU and CPU performance in deep learning, focusing on optimizing processing efficiency by analyzing runtime, inference time, and memory usage with large datasets
Supervisor: **Dr. Abdulaziz Tabbakh**, Asst. Professor, King Fahd University of Petroleum and Minerals (KFUPM). (Web-page)

A Data Driven Approach to Analysis the Effect of Pandemic on Society ***Apr, 2024-Present***
Performed a data-driven analysis of AI applications during the COVID-19 pandemic through a comprehensive literature survey, focusing on knowledge discovery and AI-based decision-making for societal impact.
Supervisor: **Dr. A.K.M. Muzahidul Islam**, Professor, United International University, Bangladesh. (Web-page)
Co-Supervisor: **Dr. Thanh Thi Nguyen,** Associate Professor, Monash University, Australia. (Web-page)

PUBLICATIONS

- **Islam, M.**, Choudhury, F. N., Jamil, Md. R, & Bahauddin, S. M. (2024). Heating and Cooling Timescales of Transient Brightenings in the Solar Transition Region Loops, in proceedings of 45th COSPAR Scientific Assembly. [Conf.]
- **Islam, Mahbubul.** Contextual Gamification Platform based Big5 Personality Trait and Preference Selection for User Recommendation. Diss. UIU, 2024. [Preprint]
- **Mahbubul Islam**, Hossain Md Mubashshir Jamil, Samiul Ahsan Pranto, Rupak Kumar Das, Al Amin, and Arshia Khan. Future industrial applications: Exploring lpwan-driven iot protocols, in Sensors (MDPI). [Journal]
- Tabbakh, A., Al Amin, L., **Islam, M.**, Mahmud, G.M.I., Chowdhury, I.K., Mukta, Md. S.H. Towards Sustainable AI: A comprehensive framework for Green AI, in Discover Sustainability (Springer-Nature). [Journal]

- Amin, L. A., Hossain, M. I., Nguyen, T. T., Jahan, T., **Islam, M.**, & Quader, F. (2025). Uncovering Critical Features for Deepfake Detection through the Lottery Ticket Hypothesis. [Preprint]
- Jamil, H. Md. **M., Islam**, M., Pranto S. A., Das, R.K., Al Amin, L.; 2024, Nov Enabling Human-Machine Interfaces with 5G RedCap: Architecture, Key Requirements, and Challenges, in proceedings of IEEE Conference on Engineering Informatics conference (ICEI24). [Conf.]
- **Islam, M**; Biswas, S; Ahmed, S.Md.; Rahman, J.Md.; Hasan, A.Rafi; Amin, A; Mukta S.H.Md.;2024, Nov Analysis of MDE Based Gamification Framework for Cognitive Evaluation, in proceedings of 34th International Conference on Computer Theory and Applications (ICCTA24), IEEE. [Conf.]
- **Islam, M**., Al Amin, S., Azad, M.A.K., Ahmed, G.S.M. and Islam, A.M., 2022, March. A Gas Cylinder Monitoring System: A Benign Transportation Sector Based on IoT and Edge Computing, in proceedings of 2022 International Conference on Decision Aid Sciences and Applications (DASA22) (pp. 506-510), IEEE. [Conf.]

Under Review:

- A Unified Framework for Predicting Personal Preferences in the Metaverse using Deep Learning and Gamification Approach submitted to **Knowledge and Information Systems (Springer-Nature)**.
- Unveiling Gaming Behavior Patterns in Bangladeshi Youth: An Unsupervised Machine Learning Approach submitted to **Scientific Reports (Springer-Nature)**.
- Data-Driven Approaches to Personalized Gamification: Recent Advances, Trends and Future Directions submitted to **IEEE Transactions on Human-Machine Systems.**
- Democratizing AI: A Comparative Study in Deep Learning Efficiency and Future Trends in Computational Processing submitted to **AI & Society: Knowledge, Culture and Communication (Springer-Nature)**.
- Artificial Intelligence and Machine Learning in Combating COVID-19: Lessons Learned for Future Pandemics for South Asia submitted to **Smart Health (Elsevier)**.
- Human-Centered Explainable AI for Securing XR Platforms: A Deep Intrusion Detection Framework submitted to **IEEE ISMAR-2025**

TECHNICAL SKILLS & STRENGTHS

- Programming Language : Python, C++, Assembly, SQL
- Frameworks : Scikit, NLTK, TensorFlow, Pandas
- Modeling and Analysis : MATLAB, PSpice, Tinkercad, Arduino IO, Packer Tracer, GNS3
- Soft Skills : Latex, Leadership, Project management

PROFESSIONAL EXPERIENCE

Assistant Manager, Summit Communications Limited, Dhaka ***July, 2024-Present***

- Analyzed and managed internal and external IP transit, CDN, PNI, and downstream networks using data-driven performance metrics, leading to a significant reduction in downtime and improved network reliability.
- Optimized IP routing through Submarine Cables SMW4, SMW5, and International Terrestrial Cables (ITC) based on detailed traffic data analysis, resulting in lower packet loss and latency for global traffic performance.
- Maintain Regulatory affairs, reports and high-level customer communication.

Senior System Engineer, Summit Communications Limited, Dhaka ***Feb, 2022-June, 2024***

- Managed IP transit, CDN, PNI, and downstream networks using data-driven metrics.
- Optimized IP routing via SMW4, SMW5, and ITC cables system

Senior Support Engineer, Link3 Technologies Limited, Dhaka ***Jul, 2019-Jan, 2022***

- Collaborated closely with teams on the installation and management of organization-wide local area networks (LAN), wide area networks (WAN), network segments, and internet systems, ensuring seamless connectivity and improved operational efficiency.
- Analyzed and optimized internal network infrastructure through proactive research and data-driven management, resulting in enhanced network performance, reliability, and scalability.

- **Teaching Instructor,** Topic: Physics, Math's, ICT ***2010-2023***

- **Supplementary Trainer**, Link3 Technologies Limited, Dhaka ***2020-2022***
  Topic: Introduction of Computer Networking, Networking fundamentals

- **Supplementary Trainer**, Summit Communications Limited, Dhaka ***2023-Present***
  Topic: Computer Networking, Networking fundamentals and troubleshoot

SELECTED PROJECTS

HYDRA, Link3 Technologies Limited, Dhaka ***2020 – 2021***
Tested and integrated an end-to-end OSS system for 150,000 internet clients, including seamless connections with broadband networks, EPC, soft switches, OTT services, IPTV middleware, and IoT platforms, resulting in enhanced operational efficiency.

Big Media, Link3 Technologies Limited, Dhaka ***2020 – 2021***
Tested an end-to-end IMS (IP Multimedia System) and IPTV network across Bangladesh, ensuring nationwide service coverage and improving multimedia service availability and customer experience.

Smart Railway Crossing Monitoring System, Ahsanullah University of Science and Technology, Dhaka ***2013***
Developed and implemented an automated railway crossing monitoring and control system using embedded systems integrated with IoT protocols, enabling real-time data collection and remote management. The prototype enhanced operational safety, minimized human error, and increased efficiency in railway crossing management.

Rainfall Prediction System, United International University, Dhaka ***2020***
Developed a machine learning-based system to predict annual rainfall using multilinear regression, incorporating historical weather data for accurate forecasting.

ACADEMIC SERVICE

- Reviewer at Internet of Things (Elsevier)
- Reviewer at IEEE SMC -2025

ACHIEVEMENTS

Deans Award List, United International University, Dhaka, Bangladesh
Merit Scholarship, United International University, Dhaka, Bangladesh
Board Scholarship, Secondary School Level, Dhaka