SHEIKH RABIUL ISLAM
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EDUCATION

- **Tennessee Tech University**, TN, USA

  Ph.D. in Engineering (**Computer Science**) — 2015 - May 2020

  Dissertation**:** Domain Knowledge Aided Explainable Artificial Intelligence.

  Advisors: William Eberle, Sheikh K. Ghafoor

  MS in **Computer Science**. — 2015 - 2018

- **Islamic University of Technology**, Bangladesh

  BSc in **Computer Science and Information Technology** — 2007 - 2010

RESEARCH INTERESTS

- Explainable Artificial Intelligence
- Fairness in Artificial Intelligence
- Data Mining and Big Data Analytics
- Healthcare Analytics
- Cyber Security
- Anomaly or Fraud Detection

RESEARCH EXPERIENCE

- **Assistant Professor** of Computer Science, University of Hartford, USA — August 2020 - Present

  Current research interests include Explainable Artificial Intelligence (XAI); fair ML/AI, healthcare analytics, cyber-attack prediction, detection, and mitigation;

- **Visiting International Researcher**, Tennessee Tech University, USA — June 2020 – August 2020

  Wrote a survey paper on Explainable Artificial Intelligence approaches with demonstrations, and collaborated on a grant proposal—NSF Program on Fairness in Artificial Intelligence in Collaboration with Amazon (FAI).

- **Graduate Research Assistant**, Tennessee Tech University, USA — 2018 – May 2020

  Worked on Explainable Artificial Intelligence (XAI) with a focus on uncovering and incorporating useful domain knowledge from an application domain (e.g., Finance, Security) that enhance the explainability of AI-based complex models.

- **Advanced Short-Term Research Intern**, Oak Ridge National Laboratory (ORNL), USA — Summer 2018

  Worked on an automated and generalized malware detection tool to avoid manual investigations of host logs, and a reconfigured a detector tool.

TEACHING AND MENTORING EXPERIENCE

- **Assistant Professor**, University of Hartford, USA — 2020 - Present

  Courses taught: Data Mining; Introduction to Cybersecurity; Information Assurance & Cryptography; Data Structures; Principles of Database Systems; Computer Networks; Foundation of Computing I; Foundation of Computing II; Programming Foundations.

  Advising: advised/advising one masters student, one honors thesis student, multiple honors contract students, multiple preceptors, and undergraduate students.

- **Graduate Research/Teaching Assistant**, Tennessee Tech University, USA — 2015 - 2019

  Instructed Data Structures and Algorithms course

  Instructed, graded, and tutored following course labs:

  Data Structures and Algorithms Lab

  Introduction to Problem Solving - Computer Programming Lab

  Database Management Systems lab

- **Volunteer***,* Tennessee Tech University*, USA* — 2017

  Worked as a volunteer and substitute mentor in summer boot camp—Governor's School for Emerging Technologies to stimulate STEM education in high school students.

AWARDS AND FELLOWSHIPS

- Student Travel Award, ACM SIGKDD, 2019 — 2019
- GRA from College of Engineering grants recognizing Carnegie classification — 2019 - 2020
- GRA from Cybersecurity Education, Research & Outreach Center (CEROC), Tennessee Tech — 2018 - 2019
- Ivanhoe Foundation Fellowship — 2017

GRANTS

- University of Hartford: 2021-22 Dean's Research and Teaching Grant — 2021
- University of Hartford: 2021-22 Grants to Promote Diversity, Equity, and Inclusion within the Classroom — 2021
- University of Hartford: 2020-21 Grants to Promote Diversity, Equity, and Inclusion within the Classroom — 2020

PUBLICATIONS

1. Thomas Goolsby, **Sheikh Rabiul Islam**, Ingrid Russell, "Advancing Fairness in Public Funding Using Domain Knowledge", **Accepted and awaiting publication** as a long paper in **AAAI 2022 Spring Symposium** (HOW FAIR IS FAIR? ACHIEVING WELLBEING AI). — 2022
2. **Sheikh Rabiul Islam**, Ingrid Russell, William Eberle, Darina Dicheva, "Incorporating the Concepts of Fairness and Bias into an Undergraduate Computer Science Course to Promote Fair Automated Decision Systems", **Accepted and awaiting publication** as an extended abstract in The 53rd ACM Technical Symposium on Computer Science Education (**SIGCSE 2022**). — 2022
3. A. N. M. Bazlur Rashid, Mohiuddin Ahmed, Sheikh Rabiul Islam, "A Supervised Rare Anomaly Detection Technique via Cooperative Co-Evolution-Based Feature Selection using Benchmark UNSW_NB15 Dataset", **Accepted and awaiting publication** in **UbiSec 2021**. — 2021
4. Hong Liu, Chen Zhong, Awny Alnusair, **Sheikh Rabiul Islam,** "FAIXID: A Framework for Enhancing AI Explainability of Intrusion Detection Results Using Data Cleaning Techniques", *Journal of Network and Systems Management* — 2021
5. Syeda Jannatus Saba, Biddut Sarker Bijoy, Souvika Sarkar, Md Saiful Islam, **Sheikh Rabiul Islam**, Md. Ruhul Amin and Shubhra Kanti Karmaker, "Towards Containing COVID-19 Pandemic by Mining Knowledge from Scientific Literature and Social Media", *17th Int. Conference on Data Science (ICDATA'21).* — 2021
6. Nazia Tasnim, Md. Istiak Hossain Shihab, Moqsadur Rahman, **Sheikh Rabiul Islam**, Mohammad Ruhul Amin, **"**Exploring the Scope and Potential of Local Newspaper-based — 2021

Dengue Surveillance in Bangladesh", *Joint KDD 2021 Health Day and 2021 KDD Workshop on Applied Data Science for Healthcare.*

7. **Sheikh Rabiul Islam** and William Eberle, "Implications of Combining Domain Knowledge in Explainable Artificial Intelligence", *AAAI-MAKE, 2021***.** 2021
8. Biddut Sarker Bijoy, Syeda Jannatus Saba, Souvika Sarker, Md Saiful Islam, **Sheikh Rabiul Islam**, Md. Ruhul Amin and Shubhra Kanti Karmaker, "COVID19-Alpha : Spatio-Temporal Visualization of COVID-19 Symptoms through Tweet Analysis", *ACM IUI '21: 26th International Conference on Intelligent User Interfaces.* 2021
9. Nazia Tasnim, Md. Istiak Hossain Shihab, Moqsadur Rahman, Jillur Rahman Saurav, **Sheikh Rabiul Islam**, "Observing the Unobserved: A Newspaper Based Dengue Surveillance System for the Low-Income Regions of Bangladesh**",** *The 34th International FLAIRS Conference.* 2021
10. **Sheikh Rabiul Islam,** William Eberle, Sheikh K. Ghafoor, Ambareen Siraj, and Mike Rogers, "Domain Knowledge Aided Explainable Artificial Intelligence for Intrusion Detection and Response ", *AAAI-MAKE* 2020. 2020
11. **Sheikh Rabiul Islam,** William Eberle, Sheikh K. Ghafoor, " Towards Quantification of Explainability in Explainable Artificial Intelligence Methods", *FLAIRS-33.* 2020
12. **Sheikh Rabiul Islam,** William Eberle, Sid Bundy, and Sheikh Khaled Ghafoor, "Infusing domain knowledge in AI-based "black box" models for better explainability with application in bankruptcy prediction*"*, *25th ACM SIGKDD, Workshop: Anomaly Detection in Finance, 2019*. 2019
13. Qian Chen, **Sheikh Rabiul Islam**, Henry Haswell, and Robert A. Bridges, Automated Ransomware Behavior Analysis: Pattern Extraction and Early Detection*, The 2nd International Conference on Science of Cyber Security (SciSec)*, 2019. 2019
14. **Sheikh Rabiul Islam**, Sheikh Khaled Ghafoor, and William Eberle, "Mining Illegal Insider Trading of Stocks: A Proactive Approach*"*, *IEEE Big Data*, 2018. 2018
15. Md Mosharaf Hossain, Thomas M. Hines, **Sheikh Rabiul Islam**, Sheikh K. Ghafoor, and Ramakrishnan Kannan, "A Flexible-blocking Based Approach for Performance Tuning of Matrix Multiplication Routines for Large Matrices with Edge Cases", *The 2nd Workshop on Benchmarking, Performance Tuning and Optimization for Big Data Applications (BPOD), IEEE Big Data,* 2018. 2018
16. **Sheikh Rabiul Islam**, William Eberle, and Sheikh Khaled Ghafoor, "Credit Default Mining Using Combined Machine Learning and Heuristic Approach*"*, *14th Int. Conference on Data Science (ICDATA'18),* 2018. 2018
17. **Sheikh Rabiul Islam**, William Eberle, and Sheikh Khaled Ghafoor, "Mining Bad Credit Card Accounts from OLAP and OLTP*", ACM International Conference on Compute and Data Analysis (ICCDA'17)*, 2017. 2017
18. Tanzeem Bin Noor, Md Rounok Salehin, **Sheikh Rabiul Islam**, "A clustering scheme for peer-to-peer file searching in mobile ad hoc networks", *International Journal of Advanced Research in Computer and Communication Engineering,* 2012. 2012

POSTERS AND ABSTRACTS

1. **Sheikh Rabiul Islam,** William Eberle, Sid Bundy, and Sheikh Khaled Ghafoor, "Infusing domain knowledge in AI-based "black box" models for better explainability with application in bankruptcy prediction*"*, *25th ACM SIGKDD, Workshop: Anomaly Detection in Finance, 2019*. 2019

2. Tigstu Dullo, Sudershan Gangrade, Ryan Marshall, **Sheikh R. Islam**, Sheikh Ghafoor, ShihChieh Kao, and Alfred J. Kalyanapu, "The Vulnerability of Critical Energy Infrastructures to Climate Change induced Flooding: A Case Study for the Conasauga River basin", *27th Tennessee Water Resources Symposium,* 2018*.* 2018

3. AJ Kalyanapu, TT Dullo, S Gangrade, SC Kao, R Marshall, **SR Islam**, and SK Ghafoor, "Hurricane Harvey Riverine Flooding: Part 1-Reconstruction of Hurricane Harvey Flooding for Harris County, TX using a GPU-accelerated 2D flood model for post-flood hazard analysis", *American Geophysical Union (AGU) Fall Meeting,* 2017. 2017

4. Tigstu TSIGE Dullo, Sudershan Gangrade, Ryan Marshall, **Sheikh R Islam**, Sheikh K Ghafoor, Shih-Chieh Kao, and Alfred J Kalyanapu, "A large-scale simulation of climate change effects on flood regime-A case study for the Alabama-Coosa-Tallapoosa River Basin", *American Geophysical Union (AGU) Fall Meeting,* 2017. 2017

5. TT Dullo, AJ Kalyanapu, S Gangrade, R Marshall, **SR Islam**, SK Ghafoor, SC Kao, and BL Preston, "Development of an Integrated DHSVM-Flood2D-GPU modeling framework - A Case Study for the Alabama-Coosa-Tallapoosa River Basin", *American Geophysical Union (AGU) Fall Meeting,*2016. 2016

SERVICES

- **Program Committee Member,** AAAI-MAKE 2022 - Spring Symposium 2021
- **Program Committee Member,** FLAIRS 35 – Special Track on Explainability, Bias, and Trust, 2022 2021
- **Program Committee Member,** FLAIRS 35 – Special Track on Neural Networks and Data Mining, 2022 2021
- **Program Committee Member,** AAAI-22 – Twelfth AAAI Symposium on Educational Advances in Artificial Intelligence, 2022 2021
- University of Hartford: **Chair,** CS Cybersecurity Advisory Committee 2021
- University of Hartford: **Chair,** MS in Computer Science Curriculum committee 2021
- University of Hartford: **Member**, A&S Diversity Criteria Working Group 2021
- University of Hartford: **Member**, A&S Curriculum Committee 2021
- **Program Committee Member,** FLAIRS 34 – Neural Networks and Data Mining Special Track 2021
- **Student Volunteer**, 25th ACM SIGKDD Conference 2019
- **Ad hoc Reviewer,** Expert Systems with Applications - Journal - Elsevier 2019-2020
- **Ad hoc Reviewer,** Journal of Decision Systems 2019
- **Ad hoc Reviewer,** International Journal of Networking and Virtual Organizations 2020
- **Ad hoc Reviewer**, International Conference on Computer Science and Application Engineering (CSAE, 2019) 2019
- **President**, Computer Science Graduate Students Club 2018 - 2019
- **Member**, Computer Science Student Advisory Council 2018 - 2019
- **Member**, IEEE 2018 - 2019
- **Member**, AAAI 2020

- **Participant**, Keep Putnam County Beautiful – Clean Commission 2018
- **Volunteer and Substitute Mentor**, The Governor's School for Emerging Technologies 2017
- **Volunteer**, Integrating Parallel and Distributed Computing in Introductory Programming Classes (iPDC) 2016

TECHNICAL SKILLS

- Programming: Python, C++, Java, PHP, MPI, OpenMP, CUDA, Javascript, and R.
- Data Science: Proficient in Scikit-learn, NLTK, Pandas, and Flask; Familiar with Tensorflow, Keras, D3.js, Highchart, Matlab, and Weka.
- Database: Oracle, MySql, PostgreSQL, and Sqlite3.
- Certification & Training:
    - High-Performance Computing Workshop at ORNL
    - Oracle Database SQL Certified Expert (2013)
    - Red Hat Certified Engineer (RHCE) training course at Base Ltd

REFERENCES

William Eberle

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