SHEIKH RABIUL ISLAM
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EDUCATION

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

  Ph.D. in Engineering (Computer Science concentration) — 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. — 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. 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
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).* — 2021
3. 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
4. Nazia Tasnim, Md. Istiak Hossain Shihab, Moqsadur Rahman, **Sheikh Rabiul Islam**, Mohammad Ruhul Amin, **"**Exploring the Scope and Potential of Local Newspaper-based Dengue Surveillance in Bangladesh", *Joint KDD 2021 Health Day and 2021 KDD Workshop on Applied Data Science for Healthcare.* — 2021
5. **Sheikh Rabiul Islam** and William Eberle, "Implications of Combining Domain Knowledge in Explainable Artificial Intelligence", *AAAI-MAKE, 2021***.** — 2021

6. 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

7. 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

8. **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

9. **Sheikh Rabiul Islam,** William Eberle, Sheikh K. Ghafoor, " Towards Quantification of Explainability in Explainable Artificial Intelligence Methods", *FLAIRS-33.* 2020

10. **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

11. 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

12. **Sheikh Rabiul Islam**, Sheikh Khaled Ghafoor, and William Eberle, "Mining Illegal Insider Trading of Stocks: A Proactive Approach*"*, *IEEE Big Data*, 2018. 2018

13. 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

14. **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

15. **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

16. 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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