

## SHEIKH RABIUL ISLAM

**Assistant Professor, Department of Computing Sciences, University of Hartford**

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### EDUCATION

- **Tennessee Tech University, TN, USA**  
**Ph.D. in Engineering (Computer Science)** 2015 - 2020  
Dissertation: Domain Knowledge Aided Explainable Artificial Intelligence.  
**MS in Computer Science** 2015 - 2018
- **Islamic University of Technology, Bangladesh**  
**BSc in Computer Science and Information Technology** 2007 - 2010

### RESEARCH INTERESTS

- Explainable and Fair Artificial Intelligence
- Cybersecurity
- Data Mining and Big Data Analytics

### RESEARCH EXPERIENCE

- **Assistant Professor** of Computer Science, University of Hartford, USA August 2020 - Present  
Current research interests include Explainable and Fair Artificial Intelligence, and Cybersecurity.
- **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) to 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 investigate host logs.

### 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 multiple honors thesis student, multiple honors contract students, preceptors, and graduate and undergraduate students.
- **Graduate Research/Teaching Assistant**, Tennessee Tech University, USA 2015 - 2019  
Instructed different undergraduate courses and labs.
- **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: 2022-23 Dean's Research and Teaching Grant 2022
- Greenberg Junior Faculty Research Grants 2022
- 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. Yash Mahajan, **Sheikh Rabiul Islam**, Mohammad Ruhul Amin, and Shubhra Karmaker, "Data-Driven Estimation of Effectiveness of COVID-19 Non-pharmaceutical Intervention Policies", *IEEE BigData 2022 - 5th Special Session on HealthCare Data*. 2022
1. **Sheikh Rabiul Islam**, Ingrid Russell, and Maanak Gupta, "Incorporating the Concept of Bias and Fairness in Cybersecurity Curricular Module", Accepted in *SIGCSE TS 2023*. 2022
2. Souvika Sarker, Shubhra Karmaker, Mohammad Ruhul Amin, Biddut Sarker Bijoy, Yash Mahajan, **Sheikh Rabiul Islam**, "Ad-Hoc Monitoring of COVID-19 Global Research Trends for Well-Informed Policy Making", *ACM Transactions on Intelligent Systems and Technology*. 2022
3. Mohiuddin Ahmed, **Sheikh Rabiul Islam**, Adnan Anwar, Nour Moustafa, Al-Sakib Khan Pathan, "**Book**: Explainable Artificial Intelligence for Cyber Security", *Springer Nature*. 2022
4. Thomas Goolsby, **Sheikh Rabiul Islam**, Ingrid Russell, "Advancing Fairness in Public Funding Using Domain Knowledge", *AAAI 2022 Spring Symposium (HOW FAIR IS FAIR? ACHIEVING WELLBEING AI)*. 2022
5. **Sheikh Rabiul Islam**, Ingrid Russell, William Eberle, Darina Dicheva, "Instilling Conscience about Bias and Fairness in Automated Decisions", *Journal of Computing Sciences in Colleges*. 2022
6. 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", *UbiSec 2021*. 2021
7. 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
8. **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", extended abstract in *The 53<sup>rd</sup> ACM Technical Symposium on Computer Science Education (SIGCSE 2022)*. 2021
9. 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" 2021

- Pandemic by Mining Knowledge from Scientific Literature and Social Media”, *17th Int. Conference on Data Science (ICDATA’21)*.
10. 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
  11. **Sheikh Rabiul Islam** and William Eberle, “Implications of Combining Domain Knowledge in Explainable Artificial Intelligence”, *AAAI-MAKE, 2021*. 2021
  12. 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
  13. 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
  14. **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
  15. **Sheikh Rabiul Islam**, William Eberle, Sheikh K. Ghafoor, “ Towards Quantification of Explainability in Explainable Artificial Intelligence Methods”, *FLAIRS-33*. 2020
  16. **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”, *25<sup>th</sup> ACM SIGKDD, Workshop: Anomaly Detection in Finance, 2019*. 2019
  17. 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
  18. **Sheikh Rabiul Islam**, Sheikh Khaled Ghafoor, and William Eberle, “Mining Illegal Insider Trading of Stocks: A Proactive Approach”, *IEEE Big Data*, 2018. 2018
  19. 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
  20. **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
  21. **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 (ICCD’17)*, 2017. 2017
  22. 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

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", *25<sup>th</sup> ACM SIGKDD, Workshop: Anomaly Detection in Finance*, 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", *27<sup>th</sup> Tennessee Water Resources Symposium*, 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.
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.
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.

## SERVICES

- **Co-chair**, FLAIRS-36 (Special Session: Explainability, Bias, and Trust) 2022
- **Program Committee Member**, ACM SIGCSE TS 2023 2022
- **Program Committee Member**, ACM SaT-CPS, 2023 2022
- **Program Committee Member**, AIOIS, 2023 2022
- **Program Committee Member**, Thirteenth AAAI Symposium on Educational Advances in Artificial Intelligence 2022
- **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**, 25<sup>th</sup> 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

#### REFERENCES

##### **William Eberle**

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##### **Sheikh K. Ghafoor**

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