SHEIKH RABIUL ISLAM
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EDUCATION

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

  Ph.D. in Engineering, with a concentration in Computer Science   2015 -

  Dissertation**:** Domain Knowledge Aided Explainable Artificial Intelligence.   May 2020

  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
- Data Mining and Big Data Analytics
- Cyber Security
- Predictive Modeling
- Anomaly or Fraud Detection

RESEARCH EXPERIENCE

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

  Current research interests include fraud/anomaly detection; bias mitigation; cyber-attack prediction, detection, and mitigation; and expediting attack mitigation using explainable artificial intelligence, etc.

- **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 will 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 reconfiguration of detector tool.

TEACHING AND MENTORING EXPERIENCE

- **Instructor**, Tennessee Tech University   2019

  Data Structures and Algorithms: Taught advanced data structures and applications, problem-solving strategies, and algorithm complexities.

- **Graduate Teaching Assistant**, Tennessee Tech University, USA   2015 - 2018

  Instructed, graded, and tutored following course labs:

  Data Structures and Algorithms Lab

Introduction to Problem Solving - Computer Programming Lab

Database Management Systems lab

- **Substitute Mento**r, 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.

INDUSTRY EXPERIENCE

- **Assistant Manager**, Teletalk Bangladesh Ltd.: Worked independently and collaboratively on   2011 – 2015
  multiple software development projects for internal and commercial use.

- **Specialist**, Robi Axiata Ltd.: Worked collaboratively on a telecommunication network
  performance monitoring software for analyzing network performance from a dashboard.   2011

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

PUBLICATIONS

1. **Sheikh Rabiul Islam,** William Eberle, Sheikh K. Ghafoor, Ambareen Siraj, and Mike Rogers,   2020
   "Domain Knowledge Aided Explainable Artificial Intelligence for Intrusion Detection and
   Response ", *AAAI-MAKE* 2020.

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

3. **Sheikh Rabiul Islam,** William Eberle, Sid Bundy, and Sheikh Khaled Ghafoor, "Infusing   2019
   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*.

4. Qian Chen, **Sheikh Rabiul Islam**, Henry Haswell, and Robert A. Bridges, Automated   2019
   Ransomware Behavior Analysis: Pattern Extraction and Early Detection*, The 2nd
   International Conference on Science of Cyber Security (SciSec)*, 2019.

5. **Sheikh Rabiul Islam,** William Eberle, Sheikh K. Ghafoor, Sid C. Bundy, Douglas A. Talbert, and   2019
   Ambareen Siraj. "Investigating bankruptcy prediction models in the presence of extreme
   class imbalance and multiple stages of economy ", ***Under review***.

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

7. Md Mosharaf Hossain, Thomas M. Hines, **Sheikh Rabiul Islam**, Sheikh K. Ghafoor, and   2018
   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.

8. **Sheikh Rabiul Islam**, William Eberle, and Sheikh Khaled Ghafoor, "Credit Default Mining   2018
   Using Combined Machine Learning and Heuristic Approach*", 14th Int. Conference on Data
   Science (ICDATA'18),* 2018.

9. **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

10. 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

- **Student Volunteer**, 25th ACM SIGKDD Conference   2019

- **Ad hoc Reviewer,** Expert Systems with Applications - Journal - Elsevier   2019

- **Ad hoc Reviewer,** Journal of Decision Systems   2019

- **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

- 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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Sheikh K. Ghafoor

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