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RESEARCH INTERESTS

- Game-theoretic Application for Cyber Security.
- Application of Machine Learning for Cyber Security.
- Fair ML/AI
- Explainable Artificial Intelligence.
- Efficient Counterfactual Examples Generation.

EDUCATION

Ph.D. in Computer Science   **Fall 2018 – In Progress (expected April 2022)**

Tennessee Tech University, Cookeville, Tennessee, USA

Coursework: Learning Theory; Mathematical Statistics; Machine Learning; Adversarial Learning;Security Topics in Smart Grid; Anomaly/Intrusion Detection System.

MS in Computer Science   **Spring 2016 – Fall 2017**

Tennessee Tech University, Cookeville, Tennessee, USA

Coursework: Information Assurance Cryptography; Parallel Programming; Computer Networks;Internet Security; Advanced Reverse Engineering; Distributed Algorithms; Intelligent Information Systems.

MBA in Finance   **December 2014**

IBA, University of Dhaka, Dhaka, Bangladesh

Courses: Managerial Communication, Management of Organizations, Management Accounting, Managerial Economics, Managing People at Work, Management Information Systems, Financial Theory and Practice.

B.Sc. in Computer Science   **March 2009**

Bangladesh University of Engineering and Technology, Dhaka, Bangladesh

Coursework: Software Engineering; Structured and Object-Oriented Programming; Computer Architecture; Algorithms; Artificial Intelligence; Data Structure; Computational Theory; Databases; Operating Systems.

TEACHING

Tennessee Tech University, Cookeville, TN, USA

- Teaching Assistant: CSC 1300 - Intro/Prob Solving-Comp Prog, Spring 2016.
- Teaching Assistant: CSC 1300 - Intro/Prob Solving-Comp Prog, Fall 2016.
- Teaching Assistant: CSC 2400 - Design of Algorithms, Spring 2017.
- Teaching Instructor: CSC 1300 - Intro/Prob Solving-Comp Prog, Summer 2017.
- Teaching Assistant: CSC 2500 - Unix Laboratory, Fall 2017.
- Teaching Instructor: CSC 1300 - Intro/Prob Solving-Comp Prog, Summer 2018.
- Teaching Instructor: CSC 2500 - Unix Laboratory, Fall 2018.
- Teaching Instructor: CSC 2500 - Unix Laboratory, Spring 2019.
- Teaching Instructor: CSC 1300 - Intro/Prob Solving-Comp Prog, Summer 2019.
- Teaching Instructor: CSC 2310 - Object-Oriented Prgrming/Dsgn, Summer 2019.
- Teaching Instructor: CSC 2500 - Unix Laboratory, Fall 2019.
- Teaching Instructor: CSC 2500 - Unix Laboratory, Spring 2020.
- Teaching Instructor: CSC 2310 - Object-Oriented Prgrming/Dsgn, Summer 2020.
- Teaching Instructor: CSC 2500 - Unix Laboratory, Fall 2020.
- Teaching Instructor: CSC 2500 - Unix Laboratory, Spring 2021.
- Teaching Instructor: CSC 2310 - Object-Oriented Prgrming/Dsgn, Fall 2021.

RESEARCH AND INDUSTRY EXPERIENCE

Graduate Assistant   Tennessee Tech University, Cookeville, TN, USA   **Aug 2018 – Present**
- Analyzed the pricing competition between Aggregators in V2G Systems using Game-Theoretic approach.
- Applied Machine learning to analyze the safety of Advanced metering infrastructure (AMI) networks through Smart Fraud Detection.
- Worked on Explainable Artificial Intelligence (XAI) with a focus on generating efficient counterfactula examples.

Visiting International Researcher   Tennessee Tech University, Cookeville, TN, USA   **May 2018 – Aug 2018**
- Worked on applying the Blockchain concept in providing secure Autonomous Vehicle services.

Graduate Assistant   Tennessee Tech University, Cookeville, TN, USA   **Jan 2016 – Dec 2017**
- Worked on Game-theoretic approach to mitigate co-resident attacks in the cloud environment.

Senior Software Engineer   Southeast Bank Ltd, Dhaka, Bangladesh   **Jun 2010 – Dec 2015**
- Developed the letter of credit part of the Foreign Exchange Module to help with foreign exchange deals.
- Worked as the Team Leader of the anti-money laundering software, Sanction Screening Solution.
- Developed the software for Automated Cheque Processing as per the Central Bank's requirement.
- Conducted a thorough analysis and resolved critical issues of the loan management software.
- Developed software for Human Resource Management for the better management of the employees.

TECHNICAL PROJECTS

- Counterfactual Examples for Data Augmentation (2020). Python, TensorFlow, scikit-learn.
- Smart Fraud Detection in Smart Metering System of AMI Networks (2019). Python, TensorFlow, scikit-learn.
- Chained of things: A secure and dependable design of autonomous vehicle services (2018). Hyperledger Fabric.
- CAMP Defense: Simulates co-resident attack defense mechanism in the cloud (2017). Java, CloudSim.
- Pricing Game: Provides optimal prices in different pricing competitions (2016). Java, CPLEX.
- Bangla Text to Speech Converter: Converts a document file/text of Bangla written by using Avro Keyboard/Bijoy into speech (2009). Java, Oracle.
- Hospital Management System: Manages patients' record and doctors' appointment (2008). Java, Oracle.
- Call Divert using Bluetooth: Diverts call using Bluetooth to eliminate call diverting cost (2007). Java, J2ME.
- Online Travel Agency: Provides information of tourist and facilitate ticket booking (2006). Java, Oracle.
- Flight Simulator: Simulates almost real-time flight effects (2005). C, OpenGL.

PUBLICATIONS

Peer-reviewed Journal
1. **Hasan, MGMM,** Rahman, MA, 2020. "A signaling game approach to mitigate co-resident attacks in an IaaS cloud environment". Journal of Information Security and Applications 50, 102397.
2. Rahman, MA, **Hasan, MGMM,** Manshaei, MH, Al-Shaer, E, 2020. "A game-theoretic analysis to defend against remote operating system fingerprinting". Journal of Information Security and Applications 52, 102456.

Peer-reviewed Conference

1. **Hasan, MGMM,** Talbert, D, 2021. "Counterfactual Examples for Data Augmentation: A Case Study". The 34th International FLAIRS Conference.
2. **Hasan, MGMM,** Rahman, MA, Manshaei, MH, Saad, W, 2019. "A Game-Theoretic Analysis of Pricing Competition between Aggregators in V2G Systems". IEEE 43rd Annual Computer Software and Applications Conference (COMPSAC).
3. Jakaria, AHM, Rahman, MA, **Hasan, MGMM,** 2019. "Safety Analysis of AMI Networks Through Smart Fraud Detection". IEEE Conference on Communications and Network Security (CNS).
4. **Hasan, MGMM,** Rahman, MA, 2018. "Chained of things: A secure and dependable design of autonomous vehicle services". IEEE 42nd Annual Computer Software and Applications Conference (COMPSAC).

5. **Hasan, MGMM,** Rahman, MA, 2017. "Protection by detection: A signaling game approach to mitigate co-resident attacks in cloud". IEEE 10th International Conference on Cloud Computing (CLOUD).

Posters and Abstracts

1. **Hasan, MGMM,** Talbert, D, 2020. "Use Case of Counterfactual Examples: Data Augmentation". Proceedings of Student Research and Creative Inquiry Day.
2. Jakaria, AHM, **Hasan, MGMM,** 2019. "Smart Fraud Detection in Smart Metering System of AMI Networks". The 14th Annual Research and Creative Inquiry Day.
3. **Hasan, MGMM,** Datta, Amarjit, Rahman, MA, 2018. "Poster Abstract: Chained of Things: A Secure and Dependable Design of Autonomous Vehicle Services". IEEE/ACM Third International Conference on Internet-of-Things Design and Implementation.

TECHNICAL SUMMARY

- Programming Languages: Python, C++, Java, C#, Shell Script, R, PHP, OpenMP, and R.
- Data Science: Scikit-learn, Pandas, Flask, Tensorflow, Keras, Matlab, and Weka.
- Database: Oracle, MySql, PostgreSQL, and Sqlite3.
- Protocol and APIs: JSON, XML, REST
- Web technologies: HTML, JavaScript, CSS
- Platform and Frameworks: Win32, .NET Framework, Android
- Tools and Service: Visual Studio; Eclipse; Microsoft SQL Server; Remnux; Mininet; NS3, Kali-Linux, Wireshark, Packet Tracer
- Version Control and Issue Tracking: Git, SVN

HONORS AND AWARDS

- NSF Travel Grant: IEEE Conference on Communications and Network Security, June 2019.
- Member of The Honor Society of Phi Kappa Phi.
- Merit Scholarship (for excellent results in HSC Examination, Rajshahi Board (2004 - 2008).
- Merit Scholarship (for excellent results in SSC Examination, Rajshahi Board (2001 - 2003)

SERVICES

- **Vice President,** Data Science League (2020-2021).
- **Member,** Computer Science Student Advisory Council (2021).
- **Subreviewer,** SmartGridComm'19.
- **Subreviewer,** ICDCN18 - PhD Forum.
- **Subreviewer,** 4th NSysS 2017.
- **Subreviewer,** ISI WIC 2016.
- **Participant,** Keep Putnam County Beautiful – Clean Commission (2018).
- **Vice President,** BADHAN (A Voluntary Blood Donor's Organization), BUET Zone, Dhaka (2008-2009).

REFERENCES

- Doug Talbert, Ph.D.
  Associate Chair
  Department of Computer Science
  Tennessee Tech University
  Cookeville, TN, USA, 38501
  dtalbert@tntech.edu
  +1 (931) 372-6178
- Gerald Gannod, Ph.D.
  Department Chair
  Department of Computer Science

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- Mohammad Ashiqur Rahman, Ph.D.
  Assistant Professor
  Department of Electrical and Computer Engineering
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  Miami, FL, USA, 33174
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