FARZANA AHAMED BHUIYAN

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OBJECTIVES

- My career objective is to conduct practical research in the field of software security to impact industry and societal practices to build secure and efficient software. Currently seeking an internship for Summer 2021.

WORK EXPERIENCES

- **Research Intern, Oak Ridge National Laboratory** **(June 2019 – August 2019)**
  Worked on multimodal detection of adverse cyber events using an integrated neuromorphic processor, learned how to apply multimodal machine learning techniques to machine intrusion data sets, investigate different methods, their accuracy, recall and performance.
- **Software Engineer (Android Developer), Reve System Ltd.** **(September 2016 – June 2017)**
  Built apps that communicate with RESTful services, worked on making the existing applications more user friendly.
- **Software Engineer (Android Developer), iPay System Ltd.** **(April 2016 – August 2016)**
  Contributed to the full mobile application development lifecycle of an online payment gateway system from planning, requirement gathering, development, testing and launching on Google play store, wrote technical specifications.
- **Research Assistant, PASER Group, Tennessee Technological University** **(September 2019 – Present)**
  Studied research methods for software security.
  Adviser: Dr. Akond Rahman
- **Teaching Assistant, Tennessee Technological University** **(August 2017 – May 2019)**
  Tutored students, took labs, graded quizzes and assignments and investigated exams
  Class: Introduction to Problem Solving and Computer Programming, Database Management Systems, Object Oriented Programming.

ACCOMPLISHMENTS

- Best student paper award in The Thirty-Third International FLAIRS (Florida Artificial Intelligence Research Society) conference 2020
- The Grace Hopper Celebration of Women in Computing (GHC) 2019 Scholar
- CRA-W Grad Cohort Workshop 2019 scholar
- Travel grants to be a student volunteer at the Women in Cybersecurity conference (WiCyS) 2019
- Travel grants to be a student volunteer and attendee at the SuperComputing conference (SC) 2018
- Travel grants to attend the Tri-State Women in Computing (TRIWIC) 2018

TECHNICAL SKILLS

- **Methods:**
  - **Natural Language Processing:** Bag-of-Words (BOW), Term Frequency Inverse Document Frequency (TF- IDF)
  - **Statistics:** ANOVA, Association Rule Mining, Chi-square Test, Correlation Analysis, Effect Size, Non-parametric and Parametric Hypothesis Tests, Principal Component Analysis (PCA)
  - **Regression:** Linear and Logistic Regression
  - **Machine Learning:** Artificial Neural Network, Decision Tree, kNN Classifier, Naive Bayes Classifier, Random Forest, Support Vector Machine, Hierarchical Clustering, K-Means Clustering
  - **Deep Learning:** Deep Belief Network (DBN), Multi-layer Perceptron (MLP), Convolutional Neutral Network (CNN), Recurrent Neural Network (RNN), Long Short Term Memory (LSTM)
- **Tools:** Scikit-learn, Keras, TensorFlow, Puppet, MPI, OpenMP
- **Languages:** Python**,** Ruby**,** C, C++, Java, Solidity, Assembly, PHP, HTML, CSS, SQL

RESEARCH EXPERIENCES

- **Secure Software Engineering:** The aim is to use machine learning techniques in the area of Software Security.
- **Multimodal Intrusion Detection:** Developing an intrusion detection dataset (IDs) as well as an intrusion detection system in multimodal environment where we have different type of data sources such as network traffic and host traffic.
- **Multimodal Deep Learning:** The aim is to evaluate various Deep Learning techniques to solve multimodal problems by evoking and promoting various challenges in the conceptual level of multimodal deep learning.

EDUCATION

- **Doctor of Philosophy** **(August 2017 – May 2022 (Expected))**

Department of Computer Science (CSC)**,** Tennessee Technological University **CGPA: 4.00/4.00**

- **Bachelor of Science** **(January 2011 – March 2016)**

Department of Computer Science & Engineering (CSE)**,** Bangladesh University of Engineering and Technology (BUET)

Thesis: Intelligent e-Health Monitoring System CGPA: 3.84/4.00

PUBLICATIONS

- **Farzana Ahamed Bhuiyan**, Akond Rahman, and Patrick Morrison. "Vulnerability Discovery Strategies Used in Software Projects." The 2020 Workshop on Human Centric Software Engineering & Cyber Security (HCSE&CS), 2020.
- **Farzana Ahamed Bhuiyan**, and Akond Rahman. "Characterizing Co-located Insecure Coding Patterns in Infrastructure as Code Scripts." The 2020 Workshop on Human Centric Software Engineering & Cyber Security (HCSE&CS), 2020.
- Akond Rahman, and **Farzana Ahamed Bhuiyan**. "A Vision to Mitigate Bioinformatics Software Development Challenges." The 2020 Workshop on Human Centric Software Engineering & Cyber Security (HCSE&CS), 2020.
- **Farzana Ahamed Bhuiyan,** Raunak Shakya, and Akond Rahman. "Can We Use Software Bug Reports to Identify Vulnerability Discovery Strategies?" The seventh annual Hot Topics in the Science of Security (HoTSoS) conference, 2020.
- Mohammad Mehedi Hasan, **Farzana Ahamed Bhuiyan**, and Akond Rahman, "Testing Practices for Infrastructure as Code", Languages and Tools for Next Generation Testing Workshop-LANGETI, 2020.
- Md. Shazibul Islam Shamim, **Farzana Ahamed Bhuiyan**, and Akond Rahman, "XI Commandments of Kubernetes Security: A Systematization of Knowledge Related to Kubernetes Security Practices", in the IEEE Secure Development Conference (SecDev) 2020.
- **Farzana Ahamed Bhuiyan**, Katherine Brown, Md Bulbul Sharif, Quentin Johnson, and Douglas Talbert. "Assessing Modality Selection Heuristics to Improve Multimodal Machine Learning for Malware Detection." The Thirty-Third International Flairs (Florida Artificial Intelligence Research Society) Conference, 2020.
- Katherine Brown, **Farzana Ahamed Bhuiyan**, and Douglas Talbert. "Uncertainty Quantification in Multimodal Ensembles of Deep Learners." The Thirty-Third International Flairs (Florida Artificial Intelligence Research Society) Conference, 2020.
- **Farzana Ahamed Bhuiyan**, Md Bulbul Sharif, Paul Joshua Tinker, William Eberle, Douglas Talbert, Sheikh Ghafoor, and Lewis Frey. "Gene Selection and Clustering of Breast Cancer Data." The Thirty-Second International Flairs (Florida Artificial Intelligence Research Society) Conference, 2019.