NUSRAT ZAHAN

PhD Student | Software Security | Machine Learning

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EXPERIENCE

Research Assistant- RealSearch Lab
North Carolina State University

Since May,2020

- Research and development of vulnerability prediction model using machine learning methods.
- Working with team to analyze different security detection techniques along with efficiency and challenges.

Teaching Assistant-Software Security
North Carolina State University

January,2020 – April 2020

- Assist students to implement different security techniques in a healthcare software. Prepare material and guideline for different security tools and techniques.

Security Specialist
NEC Corporation

April 2016 – August 2018

- Experienced in Bio-metrics solution focusing on Fingerprint Identification System (enrollment, verification, matching with large criminal AFIS-DB), face recognition system,video analytic solutions, multi–bio-metrics devices.

System Engineer
Desktop IT

August 2015 – March 2016

- Designed LAN, WAN WLAN solution, designed and deployed data center network, troubleshoot different types of problems related to LAN, WAN, WLAN Data Center.

EDUCATION

PhD - Computer Science
North Carolina State University

Since January 2020 CGPA : 3.91/4.0

BSc. - Electronics & Communication Engineering
Khulna University Of Engineering Technology

July 2011 – June 2015 CGPA : 3.31/4.0

PUBLICATION

- Structuring a Comprehensive Software Security Course Around the OWASP Application Security Verification Standard (Accepted-ICSE JSEET'21)

REFERENCES

- Dr. Laurie Williams, Distinguished Professor, North Carolina State University; PhD advisor

RESEARCH PROJECTS

Vulnerability Prediction Model

- Developing a vulnerability prediction model using real time vulnerability's data
- Feature Extraction Method: Abstract Syntax Tree, Software Metrics
- Model: Deep Neural Network, Machine Learning

Vulnerability Detection Techniques

- We studied five vulnerability detection techniques
- Techniques: SAST,DAST,SMPT,EMPT,IAST.
- Results: EMPT is the most efficient vulnerability detection technique followed by SAST.Recall rates for SAST and DAST is above 95% for three of the four tools.
- Tool used: SAST tools (e.g. Sonarcube), DAST/fuzzing tools (e.g. Zap)

Abuse Cases in Industrial Control Systems (ICS)

- Studied MITRE ATT&CK framework.
- Build a Web scrapper to collect ICS report from CERT-ICS.

SKILLS

- **Languages**: Python, R,Java,Latex,HTML,Unix Shell
- **Tools**: Git, Notebooks, Pandas, NumPy, SciPy, Matplotlib, Scikit-learn, MySQL, Fuzzing tool.
- **Research Method**: Qualitative & Quantitative analysis, Security testing, data-driven discovery and analytic, SDLC methodology, Machine Learning, Deep Neural Network

COURSES & PROJECTS

- **Graduate Courses**: Software Engineering, Software Testing, Software Security,Experimental Statistics, Design and Analysis of Algorithms.
- **Projects**:
  - Build a predictive model to forecast ozone levels based on forecasts of the atmospheric conditions.
  - Design an experiment to determine the best combination of settings for the fiber drawing process.
- **Coursera**: Machine Learning, Deep Learning