Md **Raihan** Ahmed

SOFTWARE ENGINEER · SECURITY EXPERT

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"Let me help you make the change that you want to see in this world."

Experience

University of Utah   *Utah, USA*

RESEARCH ASSISTANT   *Aug. 2021 - Current*

- To secure CPS/ICS, I implemented a tracking software to trace all the activities of the System.
- To detect attacks this ICSTracker is built with C++ & LLVM and tested on fischertechnik training factory 4.0 9v and SWaT water testbed.

Skills

Programming Lang.	Python, C/C++, Javascript, React.js, Node.JS, C#, JAVA, PHP, Typescript, Go, x86 Assembly
Compiler Dev. Tools	LLVM (used to build instrumentation tool)
Security Tools	Metasploit, Nmap, Burp Suite, Wireshark, AFL, AFL++, sqlmap, tcpdump, ghidra, IDA Pro
Frameworks	React.js, Node.js, Express.js, Android Native, Spring, Dot(.) Net
Data Science & ML	Tensorflow, Keras, NumPy, scikit-learn, Pandas, Matplotlib
Database	Oracle SQL, MySQL, MongoDB
Mining & Visualization Tools	gSpan, PrefixSpan, Graphviz
Dev. & Deployment Tools	GitHub, Docker, Kubernetes
Softwares Used	Neovim, tmux, vim, vs code
Data Analysis Software	Matlab, Google Colab, Jupyter, Anaconda
Building tools	Makefile, CMake, Ninja, Gradle
Others & OS's used	Shell Scripting, sh, Bash, Zsh, NixOS, Ubuntu, Kali Linux, macOS
Languages	English, Bangla, Hindi, Urdu

Education

University of Utah   *Utah, USA*

PH.D. IN COMPUTER SCIENCE   *Aug. 2021 - PRESENT*

University of Utah   *Utah, USA*

MS. IN COMPUTER SCIENCE   *Aug. 2021 - May 2024*

Projects

ICSTracker: To Trace back to the source of Intrusion in Industrial IoT Systems.   *C++, LLVM, Python*

PHD 1ST PROJ   *GitHub*   *Aug. 2021 - May 2024*

- It's a physical process-aware, cross-iteration and cross- domain approach to backtracking intrusions in ICS
- Built instrumentation passes to capture function calls, conditions and global variable values at runtime from the ICS controllers.

Personal Portfolio with React.js   *React.js, Javascript*

PORTFOLIO   *GitHub*   *Aug. 2022 - Dec. 2022*

- Built my portfolio site with react.js.

Interactive Visualization tool   *Javascript*

DATA VISUALIZATION COURSE   *GitHub*   *Aug. 2022 - Dec. 2022*

- Built website with javascript to explore video game sales by year and platform.

Fuzzing XPDF-4.05

APPLIED S/W SECURITY TEST. COURSE · To secure XPDF, discovered Critical bugs in XPDF with AFL++

LLVM, C++
Git1   Git2   Aug. 2022 - Dec. 2022

- To secure XPDF, discovered Critical bugs in XPDF with AFL++

Rollback attack in Cars

CYBER-PHYS SYS & IOT SECURITY COURSE

Arduino, C++
Github   Aug. 2022 - Dec. 2022

- Built a rollback device with Arduino to access cars without using keys.

Publications

Biointerface Research in Applied Chemistry

OVARIAN CANCER SUBSTANTIAL RISK FACTOR ANALYSIS BY MACHINE LEARNING: A LOW INCOMING COUNTRY

Bangladesh
paper   Jul. 2020

- Analyzed ovarian cancer data using various machine learning algorithms to identify significant risk factors

BMC bioinformatics

MACHINE LEARNING TO REVEAL AN ASTUTE RISK PREDICTIVE FRAMEWORK FOR GYNECOLOGIC CANCER AND ITS IMPACT ON WOMEN PSYCHOLOGY: BANGLADESHI PERSPECTIVE

Bangladesh
GitHub   paper   Apr. 2021

- Developed a predictive algorithm using machine learning to assess the risk of cervical and ovarian cancer associated with stress

Electrical, Computer and Communication Engineering (ECCE)

A COMPARATIVE ANALYSIS OF TRADITIONAL AND MODERN DATA COMPRESSION SCHEMES FOR LARGE MULTIDIMENSIONAL EXTENDIBLE ARRAY

Bangladesh
paper   Feb. 2019

- Compared traditional and modern data compression schemes for multi-dimensional data and concluding that the Extendible Array Based Compression Scheme (EaCRS) is most efficient

Elsevier

A BIOINFORMATICS APPROACH FOR IDENTIFICATION OF THE CORE ONTOLOGIES AND SIGNATURE GENES OF PULMONARY DISEASE AND ASSOCIATED DISEASES

Bangladesh
paper   Jul. 2020

- Spotted out significant common genes and proteins among COPD, DM, CR, IHD, IS, TB, and OB diseases, to suggest drug signatures.

Journal of Proteins and Proteomics

PROTEIN INTERACTION NETWORK AND DRUG DESIGN OF STOMACH CANCER AND ASSOCIATED DISEASE: A BIOINFORMATICS APPROACH

Bangladesh
paper   Dec. 2020

- Identified common genes among seven diseases (OB, SC, CC, PC, PRC, LK, MD) to analyze their biological and genetic network.

Teaching

Spring 2023	Teaching Assistant for CS 6956-001 - Software and System Security	*University of Utah*
Fall 2022	Teaching Assistant for CS 4400-001 - Computer Systems	*University of Utah*

Extracurricular & Honors

DOMESTIC

2022	Volunteered at the ACM Conference on Computer and Communications Security (CCS)	*Las Angeles, U.S.A*
2022	Reviewed 19+ papers from renowned conferences e.g., ESWA, COSE, IoT.	*Utah, U.S.A*
2022	Community Manager of Utah Security Club (UofU)	*Utah, U.S.A*

INTERNATIONAL

2017	Grantee of Lutfar Rahman Scholarship (GPA 4.00) in the first year of undergraduate degree.	*Bangladesh*
2019	Achieved first place in Beetles Hack tag Contest in 4th year of undergraduate degree.	*Bangladesh*
2019	Granted special award(4th Place) for Mobile app contest (DIU Carnival) in 3rd year of undergrad.	*Bangladesh*
2019	Participated in Competitive Programming Contest arranged locally at university.	*Bangladesh*
2017	Learned Web design and Web development from JobsBD besides undergrad studies.	*Bangladesh*
2010	Member of Sylhet Cadet College Soccer team. (4th in 2010, ICCFM)	*Bangladesh*