

# 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

- Implemented a CPS/ICS tracking software to trace all the activities of the System.
- ICSTracker is built with C++ & LLVM and tested on fischertechnik training factory 4.0 9v and SWaT water testbed.

## Skills

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

## Education

### University of Utah

Utah, USA

PH.D. IN COMPUTER SCIENCE

Aug. 2021 - PRESENT

- Supervisor: Dr. Mu Zhang

### University of Utah

Utah, USA

MS. IN COMPUTER SCIENCE

Aug. 2021 - May 2024

- Course-based (55 credits taken)

## Projects

### ICSTracker: 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

- Discovered Critical bugs in XPDF with AFL++

LLVM, C++

Git1   Git2   Aug. 2022 - Dec. 2022

## Rollback attack in Cars

CYBER-PHYS SYS & IOT SECURITY COURSE

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

Arduino, C++

Github   Aug. 2022 - Dec. 2022

# Publications

## Biointerface Research in Applied Chemistry

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

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

Bangladesh

paper   Jul. 2020

## BMC bioinformatics

MACHINE LEARNING TO REVEAL AN ASTUTE RISK PREDICTIVE FRAMEWORK FOR GYNECOLOGIC CANCER AND ITS

IMPACT ON WOMEN PSYCHOLOGY: BANGLADESHI PERSPECTIVE

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

Bangladesh

GitHub   paper   Apr. 2021

## Electrical, Computer and Communication Engineering (ECCE)

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

MULTIDIMENSIONAL EXTENDIBLE ARRAY

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

Bangladesh

paper   Feb. 2019

## Elsevier

A BIOINFORMATICS APPROACH FOR IDENTIFICATION OF THE CORE ONTOLOGIES AND SIGNATURE GENES OF

PULMONARY DISEASE AND ASSOCIATED DISEASES

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

Bangladesh

paper   Jul. 2020

## Journal of Proteins and Proteomics

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

BIOINFORMATICS APPROACH

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

Bangladesh

paper   Dec. 2020

# Teaching

Spring 2023   CS 6956-001 - Software and System Security

Fall 2022   CS 4400-001 - Computer Systems

University of Utah

University of Utah

# Honors & Extracurricular Activities

## INTERNATIONAL

2022   Volunteered at the ACM Conference on Computer and Communications Security (CCS)

2022   Reviewed 19+ papers from renowned conferences e.g., ESWA, COSE, IoT.

2022   Community Manager of Utah Security Club (UofU)

Las Angeles, U.S.A

Utah, U.S.A

Utah, U.S.A

## DOMESTIC

2017   Grantee of Lutfar Rahman Scholarship (GPA 4.00) in the first year of undergraduate degree.

2019   Achieved first place in Beetles Hack tag Contest in 4th year of undergraduate degree.

2019   Granted special award(4th Place) for Mobile app contest (DIU Carnival) in 3rd year of undergrad.

2019   Participated in Competitive Programming Contest arranged locally at university.

2017   Learned Web design and Web development from JobsBD besides undergrad studies.

2010   Member of Sylhet Cadet College Soccer team. (4th in 2010, ICCFM)

Bangladesh

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