Md Mahbub Hossain Raton

Date of Birth: 19th Aug 1997

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EDUCATION

Feb 2021	**B. Sc. (Engineering)** Major: Computer Science and Engineering Bangladesh University of Engineering and Technology (BUET) CGPA: 3.71/4.00
Aug. 2015	**Higher Secondary School Certification (H.S.C.)** Major: Science Saidpur Government Technical School & College, Saidpur, Nilphamari Board: Dinajpur; GPA: 5.00/5.00 *(Golden A+)*
May 2013	**Secondary School Certification (S.S.C.)** Major: Science Saidpur Government Technical School & College, Saidpur, Nilphamari Board: Dinajpur; GPA: 5.00/5.00 (*Golden A+*)

AWARDS, HONORS AND SCHOLARSHIPS

1. **Dean's Award:** 2017, 2018, 2019,
2. **BUET Merit Scholarship for Academic Excellence:** 2017, 2018, 2019,
3. **BUET Entrance Exam** (2015)**: 68th /~**12,000 *(top 1%)*
4. **H.S.C board scholarship** (Dinajpur board)**:** *Golden A+*, 2016- *2020*
5. **S.S.C board scholarship** (Dinajpur board): *Golden A+*, 2013-2015
6. **J.S.C board scholarship** (Dinajpur board)**:** *Golden A+*, 2010-2013
7. **P.S.C board scholarship** (Rajshahi Board): General, 2007-2009

PROGRAMMING AND SOFTWARE EXPERTISE

- **Programming languages:** Advanced: *C, C++, & Java*; Intermediate- *Python, & PHP*
- **Network Analyzer/Simulation Tools:** Intermediate: *Wireshark, Burp Suit, Cisco Packet Tracer*
- **Mathematical package & Simulators:** *MATLAB, & LogiSim*
- **Database:** Advanced- *Oracle, MySQL*;
- **Developer Tools:** Advanced- *Git, VS Code, Colab*; Intermediate- *Docker, Azure*
- **Framework:** *Advanced: Spring-boot, Flask*
- **Hardwire Development Platform:** *Atmel AVR*

RESEARCH AND PROJECT EXPERIENCES

Research interest:

- Computer Security
- Network Security
- Efficient Blockchain
- Cloud computing and security
- Machine learning in security

B.S. Thesis:

- BSc. Thesis title (Oct'18- Dec'20)- "Privacy and Efficiency in Private Blockchain"
  In this thesis, I have been working on blockchain storage reduction where I proposed a novel method, "***SliveredChain"***, to reduce storage requirement by 90% in a private blockchain system. I validated the security of the blockchain using pbft protocol, and the result have been submitted to *IEEE 41st Int. Conf. Distributed Computing Sys. (ICDCS 2021)*, Washington DC, USA (under review).

Network Security:

1. **TCP Reset Attack:** The purpose of this project was to terminate an established TCP connection prematurely. The main challenge was to build a forged TCP reset packet with a correct sequence number because a receiver discards the packet when it receives a packet with a sequence number that is too out of order. I used the man-in-the-middle technique to sniff a packet and build a packet with correct order. To set up the environment, I utilized three virtual machines running on seed Ubuntu 16.04 OS. One of these three machines is used to capture a packet, and then, terminate the TCP connection between the other two machines by sending a forged TCP reset packet. I used Scapy library for all packet manipulation tasks.

Image Processing:

1. **Determination of Hemoglobin level using image processing:** Implemented this project under the supervision of Assistant professor Dr. Md. Shamsuzzoha Bayzid, Dept. CSE, BUET, by analyzing the image dataset of inner eyelids using Java Spring Framework and I led the development team during the project. Expected outcome was that users can determine hemoglobin level using Smart devices (mobile phone) which could further be applied for disease diagnosis.
2. **Blood Cell Detection using YOLOv5:** Developed this project using popular BCCD dataset. This project aims to detect blood cells from images using the YOLOv5 object detection model.

Desktop Application using Native Java Networking API:

1. Developed "**Rem-Access**" using Java that resembles **"teamviewer"**, a software to access PC remotely. Users can access and control their remote computer using a local mouse and keyboard. Moreover, there is a support also available for file sharing between local and remote computers.
2. Created a simple chatting application "ChatBot" using Java where users can chat with multiple participants at once.

Android Application:

Determination of Hemoglobin level using image processing: The purpose of this project to determine hemoglobin level using android devices. For this project, I have developed an android application. Users need to take an image of the inner eyelid through the application. After that, the application processes the image and calculates the hemoglobin level in the blood. I have used the OpenCV library for android for all image processing tasks. Additional features of the application include: saving the report, book an appointment for a doctor, etc.

Hardware Projects:

1. Built a notification system using ATMega32 in C that can warn parents using phone calls and SMS in case of a baby drowning.
2. **Floating Point Hardware Simulation:** Implemented using Logisim simulator and led my team. Two operations- floating point addition and subtraction was implemented.
3. **MIPS Processor Design:** Made this simulation project using Logisim and led the team about its development. Simulated MIPS load, store, add, jump instructions.

PUBLICATIONS

1. **Md. Mahbub Hossain Raton**, Soumit Saha, Md Touhidul Islam, and Muhammad A. Adnan, "SliveredChain: Reducing Storage in Private Blockchain Systems Using Fault-Tolerant Overlay of Non-Overlapping Shards, *IEEE 41st Int. Conf. Distributed Computing Sys. (ICDCS 2021)*, July 7-10, 2021, Washington DC, USA *(under review) https://icdcs2021.us/*

REFERENCES

1. **Dr. Muhammad Abdullah Adnan**, Associate professor, Dept. of Computer Science and Engineering, Bangladesh University of Engineering and Technology (BUET), Palashi, Dhaka- 100, Phone: +880-152336926 email: adnan@cse.buet.ac.bd (*B.S thesis supervisor*)
2. **Dr. Rifat Shahriyar**, Associate Professor, Dept. of Computer Science and Engineering, Bangladesh University of Engineering and Technology (BUET), Palashi, Dhaka- 1000, Phone: +880-1777403791 email: rifat@cse.buet.ac.bd (*Course Teacher)*
3. **Dr. Md. Shamsuzzoha Bayzid,** Assistant professor, Dept. of Computer Science and Engineering, Bangladesh University of Engineering and Technology (BUET), Palashi, Dhaka- 100, Phone: +8801841234464 email: shams_bayzid@cse.buet.ac.bd (*Project supervisor*)