

Malik Ali Hussain

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Education

Carnegie Mellon University – Information Networking Institute

Pittsburgh, PA

Master of Science in Information Technology – Information Security - **CGPA: 3.95/4.00**

August 2021 – December 2022

Lahore University of Management Sciences

Lahore, Pakistan

Bachelor of Science in Computer Science with a Mathematics minor - **CGPA: 3.70/4.00**

August 2017 – June 2021

Relevant Coursework: Computer Systems, Distributed Systems, Secure Software Systems, Cyber Risk Modeling, Information Security, Applied Information Assurance, Topics in Cybersecurity, Software Engineering, Network Security, Net-Centric Computing, Operating Systems, Machine Learning, Discrete Mathematics & Algorithms

Professional Experience

Google | C++, Bazel

Madison, WI

Software Engineer Intern

May 2022 – August 2022

- Built an API for memory management & unsolicited message delivery from [Pony Express](#) to host application
- Designed, implemented & tested a Reliable Datagram(RD) operation for Pony Express followed by its benchmark analysis
- Developed a Multicast version of RD op resulting in ~46% reduction in application interrupts and ~2x increase in throughput

iTitans Ltd. | HTML, CSS, Bootstrap

Lahore, Pakistan

Software Engineer Intern

June 2020 – August 2020

- Used Jira for project management, Adobe XD for design & prototyping of the UI/UX of user-friendly web solutions
- Implemented web-solutions, in HTML, CSS, & integrated them with back-end capable of catering 6M+ annual traffic

Academic Projects

Distributed Systems, CMU | Java, Socket & Concurrent Programming

January 2022 – April 2022

- Implemented a Distributed Database Platform supporting database partitioning & replication with eventual consistency
- Developed a Distributed File System capable of interacting using RESTful APIs & ensuring concurrency control using locks
- Built a Java Remote library for service communication in Distributed Systems & used it to implement RAFT consensus algorithm

Cyber Threat Intelligence Sharing with MISP, CMU | Python, Zeek, MISP

September 2021 – November 2021

- Configured Intrusion Detection System on 10 network hosts & integrated it with MISP to automatically log malicious activities
- Automated all network hosts to retrieve data from MISP server, after every 120 seconds, and perform log analysis
- Programmed network hosts to Harden themselves against 30+ possible type of attacks using the results of log analysis

Computer Systems, CMU | C, Object-Oriented Programming

September 2021 – November 2021

- Developed a HTTP Proxy, in C, capable of handling multiple concurrent connections using multi-threaded LRU cache design
- Implemented Malloc package, in C, having an average memory utilization of greater than 78% and throughput of 11000 kops/sec

Issue Logging System Mobile Application, LUMS | Flutter, SQL, Android Studio

January 2020 – April 2020

- Designed UI/UX of application considering the usability for 3000+ users, including the less educated users, with Adobe XD
- Developed front end of the application for iOS/Android using Flutter framework and integrated with SQL database
- Deployed the application on Heroku while following an incremental model throughout the development phase

Paper Unshredder, LUMS | Python, ResNet, Google Colaboratory

September 2020 – December 2020

- Trained a Neural Network, in Python, to predict the compatibility of two paper shreds with 90% accuracy
- Devised an optimization technique to find the possible permutations of the shreds without using the absolute Bruteforce approach

Technical Skills

Languages & OS: Fluency in Python, C++, Java & C. Familiarity with Go, Haskell, PHP, SQL, HTML/CSS, Dart

Tools & Platforms: Flutter, Heroku, MISP, Wireshark, Splunk, Git, MS Office, Android Studio, GDB Debugger

Skills: Object-Oriented Programming, TCP/IP, Version Control, Agile Software Development, ML Model Training

Leadership Roles

- As **Teaching Assistant** at CMU, designed course assignments & delivered recitations for MS level Information Security course
- As **Teaching Assistant** at LUMS, revamped course labs & supervised semester long project of 4 groups from Databases course