

MUHAMMAD USMAN NADEEM

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RESEARCH INTERESTS

- Broad interests in Systems, Program Analysis, Compilers, Bug Detection, Software Security.

EDUCATION

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Blacksburg, VA, USA

Ph.D. Computer Science

2016-Present

(Advisor: [Dongyoon Lee](#))

- Relevant Courses: Advanced Compilers and Computer Architecture (CS6304), Advanced Compilers (CS5304), Multiprocessor Programming (CS5510), Linux Kernel Programming (ECE5984)

SCHOOL OF SCIENCE AND ENGINEERING, LAHORE UNIVERSITY OF MANAGEMENT SCIENCES (LUMS)

Lahore, PK

2012-2016

B.S. Computer Science Major GPA 3.67

- Senior Project: Using program analysis techniques to harden Android applications.
- Relevant courses: Computer Architecture, [Advanced Operating Systems](#), [Multicore Computing](#), Topics in Internet Research, Distributed Systems, Computer Networks

UNDERGRAD PROJECTS

HARDENING ANDROID APPLICATIONS

(2015-2016)

Senior Project

Advisors: Dr. Fareed Zaffar, Dr. Junaid Haroon

- Problem: Many Android applications leak private user data; user has no control on how permissions are used.
- Used static taint analysis and instrumentation to patch private data leaks according to user policy.
- Analysis and instrumentation was done on disassembled dex bytecode, .apk was later repackaged.

SECURE CLOUD

(Summer 2015)

Advisor: Dr. Fareed Zaffar

- Problem: Users of cloud services have to trust the service providers with their sensitive data. It is vulnerable to attacks from privileged software and hardware attacks.
- Goal was to check feasibility of Intel Software Guard Extensions (SGX) to provide secure execution as a cloud service.
- There was no SGX implementation at the time so the project was abandoned.

Multi Switch Software Defined Internet Exchange (SDX)

(Spring 2014-15)

Course Project: Topics in Internet Research

- Problem: OpenFlow switches have small flow tables that can become a bottleneck in large internet exchanges.
- Designed an architecture that allows SDX to use multiple switches with distributed flow tables.

8 bit MIPS Processor with pipelining

(Fall 2014-15)

Course Project: Computer Organization and Assembly Language

Solar Power Monitoring System using PIC microcontroller

(Summer 2014)

Tower Defense Game in Java

(Spring 2013-14)

Course Project: Advanced Programming

Fruit Ninja using WiiMote in MATLAB

(Fall 2012-13)

Course Project: Computational Problem Solving

EXPERIENCE

GRADUATE TEACHING ASSISTANT

Virginia Tech, USA

- CS 2114 Software Design and Data Structures, CS 2505 Computer Organization

(Fall/Spring 2016-2017)

TEACHING ASSISTANT

LUMS, PK

- CS 200 Intro to Programming and CS 202- Data Structures

(Fall/Spring 2014-2015)

ADDITIONAL INFORMATION

- **Skills:** C/C++, Java, Python, MATLAB, Node.js, MIPS/x86 assembly, Linux
- **Assistant Event Head** Tour De Mind @ LUMS PSIFI (National Science Olympiad)
- **Volunteer** Fatima Memorial Hospital and Shaukat Khanum Cancer Hospital