ALI AHAD

Dept of Computer Science, UVA

aa5rn@virginia.edu - LinkedIn

EDUCATION

University of Virginia   *August 2020 - Present*
Doctorate in Computer Science
Expected Graduation - 2026
Advisor - Prof. Yonghwi Kwon

Lahore University of Management Science   *August 2016 - June 2020*
BS Computer Science   Major GPA: 3.90 - GPA: 3.52

RESEARCH INTEREST

Software Systems Security, System Forensics, Data Provenance.

PUBLICATIONS

[1] **SwarmFlawFinder: Discovering and Exploiting Logic Flaws of Swarm Algorithms**,
Chijung Jung, Ali Ahad, Yuseok Jeon, and Yonghwi Kwon,
In Proc. of the 43rd IEEE Symposium on Security and Privacy (S&P '22)

[2] **Forensic Analysis of Configuration-based Attacks**,
Muhammad Adil Inam, Wajih Ul Hassan, Ali Ahad, Adam Bates, Rashid Tahir, Tianyin Xu, and
Fareed Zaffar,
In Proc. of the 29th Network and Distributed System Security Symposium (NDSS '22)

[3] **Swarmbug: Debugging Configuration Bugs in Swarm Robotics**,
Chijung Jung, Ali Ahad, Jinho Jung, Sebastian Elbaum, and Yonghwi Kwon,
*In Proc. of 29th ACM SIGSOFT International Symposium on the Foundations of Software Engineering
(FSE'21)*

[4] **Spinner: Automated Dynamic Command Subsystem Perturbation**,
Meng Wang, Chijung Jung, Ali Ahad, and Yonghwi Kwon,
In Proc. of 28th ACM Conference on Computer and Communications Security (CCS'21)

PROJECTS

Fine-grained forensics of configurations oriented cyber attack
The project is submitted in NDSS'21. Existing provenance tracking tools collect audit traces at the
kernel-level which lacks higher-level semantic information required for some of the attack investiga-
tions. We record the missing information and incorporate it in the provenance graph to completely
understand/reconstruct chain of events that were fragmentary before. We use sys-call hooks (Kernel
module) and LLVM (Taint and code instrumentation) to record information change in file and program
to complete the chain of events.

Obfuscation of code through flattening of code base through LLVM and SGX
To protect trusted software running on untrusted hosts, we were combining Intel SGX technology with
program-rewriting using LLVM. Pushing critical portions of the transformed program into the Intel
SGX enclave can result in a program that yields little or no information to an active adversary.

**Statistical measure the factors responsible for the Boom of Internet in Developing Coun-
tries**
Calculated factors that contributed to the increasing usage of internet in developing countries. We used
Multi-variable polynomial regression to find factors and predict the internet usage for upcoming years.

TECHNICAL STRENGTHS

Languages	C, C++, Python, Dart, Javascript, Golang
Software & Tools	Flutter, React Native, Git, Adobe Photoshop

WORK EXPERIENCE

Developer Advocate - Educative, inc.   December 2019 – Present

· Working as full-time developer advocate at a Seattle based company named Educative. My responsibilities include creating, reviewing and revamping tech-based courses and publishing them on the platform. The work includes researching on and learning latest technologies and creating content for learners. From the courses that I have created, one primary course is on JavaScript where it covers from the basics to all complicated aspects of the language including object-oriented programming and asynchronous programming composing of four different projects to highlight the language's capabilities.

Teaching Assistant - LUMS   Fall Semester 2019-20
Algorithms

· Worked as full-time Teaching Assistant for Algorithms course offered by Dr. Humaira Kamal. I helped design and make auto-grader for all assignments in the course. Moreover I helped grade graded components within the course including invigilating exams and giving tutorials.

Teaching Assistant - LUMS   Spring Semester 2018-19
Advanced Programming

· Worked as full-time Teaching Assistant for Advanced Programming course offered by Dr. Junaid Haroon. I helped design and make auto-grader for one exam. Moreover I held office hours and invigilate exams.

MISCELLANEOUS PROJECTS

Dataflow Analysis through LLVM

Provenance Tracking on compressed log

B2B Mobile app development in flutter (Market My House)

Tailor Appointment Mobile app development in React-Native (Pocket Darzi

AWARDS

Winner of Basketball in Interschool Sports Competition at Al Wadi International School – 2012-13

Winner of Annual Declamation Competition at Al Wadi International School – 2012-13

EXTRA-CURRICULAR

Member at Project for Uplifting of LUMS Support Staff - LCSS - 2016-17

Coach at YLCSS (Youth Leadership and Community Service Symposium) - 2015

Member of Socials department in SPADES (Society for the Promotion And Development Of Engineering and Sciences 2015-16