

# SAMEED ALI

(929) 310 3194 • VT, USA • sameed.ali.94@gmail.com

## EDUCATION

---

Dartmouth College	PhD in Computer Science	(Expected) Nov. 2024
Dartmouth College	Masters of Science in Computer Science	Jun. 2019
Lahore University of Management Sciences	Bachelors of Science in Computer Science	Jul. 2017

## WORK EXPERIENCE

---

**Summer Intern** | Trail of Bits Jun 2023 – Sep 2023

- Designed and developed automated software testing tool (fuzzer) using C/C++, and Python for large codebases.
- Instrumented an LLVM static analysis pass to collect various software testing metrics.
- Set up test infrastructure using Docker, git, and Bash on remote Linux servers to automate experiments.
- Conducted experiments that demonstrated the fuzzer's effectiveness by uncovering software bugs, leading to its inclusion in a funding proposal.

**Security Engineer Resident** | SandboxAQ Mar 2023 – Jun 2023

- Implemented NIST-approved post-quantum cryptographic algorithm for latency reduction using C/C++ and CUDA framework.
- Set up test infrastructure for experiments using Python and Docker in a cloud environment, conducted various experiments, benchmarked GPU kernels for performance and documented the results.
- Achieved a latency reduction of 20% in signature compute time by code optimization and novel caching strategy.
- Communicated achievements, insights and project outcomes to a technical and non-technical audience.

**Research Assistant** | Stanford Research Institute (SRI) International Mar 2021 – Jun 2021

- Demonstrated novel advanced exploitation mechanism in Linux package managers.
- Carried out statistical analysis of 100 GB+ corpus of Linux software packages, and known prior vulnerabilities in package managers to identify potential areas of interest.
- Summarized and visualized results of data analysis and proposed potential research directions for exploit construction.
- Designed and conducted multiple experiments, documented results and demonstrated novel exploitation mechanism (Published in IEEE Security and Privacy Workshops).

## RESEARCH EXPERIENCE

---

**DARPA Safe Documents (SafeDocs) Researcher** | Dartmouth College Sep 2019 – Sep 2023

- Designed and implemented a type-checked parser (input-handling program) in Rust.
- Wrote modular, readable, idiomatic, extensible and self-documenting Rust code.
- Designed a type-safe data-description language for constructing secure parsers.
- Collaborated with stake holders to ensure parser's software design was extensible, efficient and able to handle a large variety of file formats.
- Implemented a compiler in OCaml which generates secure parsers from a data-description language specification.
- Tested parser to ensure it handled complex file formats (including malformed input) like NITF, PDF, and PNG correctly.

**Cybersecurity Research Assistant** | Lahore University of Management Sciences Sep 2016 – May 2017

- Accurately predicted password strength via machine learning by gathering passwords from password leak monitoring twitter bots using Twitter API and Python.
- Wrote CUDA GPU code to extract features from 20M+ text-based passwords to increase process efficiency.
- Implemented various machine learning models in Python to classify password strength resulting in a 75% overall accuracy.

**Computer Networks Research Assistant** | Lahore University of Management Sciences Jun 2015 – Aug 2016

- Implemented novel data-centre network protocol leveraging software defined network (SDN) switches in C++
- Wrote automation scripts in Bash, Python to automate experiments and visualize results on remote Linux servers.
- Designed and implemented various SDN polling mechanisms to reduce control traffic overhead.
- Achieved control traffic overhead reduction from 7.7% to 4.5%.

## SKILLS

---

Python, Rust, C++/C, Java, NodeJS, Javascript, SQL, Clojure, OCaml, Haskell, Git, Android Programing, Docker, Bash, CUDA