NOFEL YASEEN

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EDUCATION

University of Pennsylvania **August 2017 - August 2022**
PhD in Computer and Information Science

Lahore University of Management Sciences **August 2013 - May 2017**
Bachelors of Computer Science

RESEARCH EXPERIENCE

Meta Platforms Inc **September 2022 - Present**
Research Scientist

- Migrated features to a new framework leading to developer efficiency and infrastructure efficiency.
- Improved tooling to automate feature migration.
- Built tools to enable engineers to find, reproduce, and diagnose software flaws, by providing tightly-controlled virtual computing environments.
- Provided record-replay debugging support, deterministic-execution sandboxes, and program instrumentation technology.

University of Pennsylvania **August 2017 - August 2022**
Graduate Research Assistant

- Designed a fine-grained, accurate, and precise measurement tool using programmable switch, called Speedlight, that operates on the scale of an entire network.
- Deployed a network testbed with real workloads to test new network protocols.
- Evaluated to show Speedlight can take measurements 100 times more granular than prior work.
- Implemented the network profiling tool, called tpprof, based on novel abstractions to better understand the network behavior and alert the operator for known traffic patterns. tpprof can match upto 100 signatures with only 10% CPU load.
- Devised domain specific algorithms for clustering and ranking the novel abstractions to allow the operators to focus on the most frequent network states.
- Devised a novel coverage-guided greybox fuzz-testing framework that directly tests running P4 switches by generating semi-random input packets and observing their resulting execution in the data plane.
- Presented my ideas at the most prestigious technical conferences (ACM Sigcomm 2018 and USENIX NSDI 2020) in the field of computer networking. Effectively communicated the purpose and function of my work to hundreds of experts in the field.
- Lead office hours, grade assignments and suggest course improvements. Courses: Networked Systems (Spring 2019), Internet and Web Systems (Spring 2020).

Microsoft **October 2018 - May 2019, June 2019 - August 2019**
Contractor and Internship **September 2019 - June 2020, June 2021 - August 2021**

- Investigated incidents in Microsoft Azure involving the physical networking team.
- Conducted case study of the needs of a large distributed network function from Microsoft's Azure.
- Synthesized ideas from from timed regular expressions, symbolic automata, and parametric verification to developed a runtime verifier using Apache Kafka and Flink to check correctness of the network functions.
- Scaled up and deployed the runtime verifier to the datacenter scale that could handle millions of flows. It can raise the alerts of incorrect network behavior within 120 ms.
- Presented the work of the runtime verifier in USENIX OSDI 2020.

- Researched on finding the trade-offs between cost and quality of monitoring computer networks. Also presented this work in ACM Hotnets 2021.

Lahore University of Management Sciences **June 2015 - May 2017**
Undergraduate Research Assistant

- Researched on designing of a novel technique to improve overall throughput while maintaining the quality of live streaming service in wireless networks. Furthermore, designed various test beds settings to emulate real life scenarios encountered in a WiFi environment.

PROGRAM COMMITTEE

USENIX NSDI - Networked Systems Design and Implementation **2024**

USENIX EuroSys - the European Systems Conference - Artifact Evaluation Committee **2022**

ACM SIGCOMM - Special Interest Group on Data Communication **2022**
Artifact Evaluation Committee

ACM CoNEXT - International Conference on emerging Networking EXperiments and **2022**
Technologies - Artifact Evaluation Committee

PUBLICATIONS

Nofel Yaseen "Network-Wide Monitoring and Debugging" **2022**
in *Publicly Accessible Penn Dissertations. 4997.* , Pennsylvania, USA.

Nofel Yaseen, Behnaz Arzani, Krishna Chintalapudi, Vaishnavi Ranganathan,
Felipe Vieira Frujeri, Kevin Hsieh, Daniel S. Berger, Vincent Liu, Srikanth **2021**
Kandula "Towards a Cost vs. Quality Sweet Spot for Monitoring Networks" in *ACM Workshop on Hot Topics in Networks (HotNets) 2021*

Nofel Yaseen, Behnaz Arzani, Ryan Beckett, Selim Ciraci, Vincent Liu
"Scalable Runtime Verification of Shardable Networked Systems" in *USENIX* **2020**
Symposium on Operating Systems Design and Implementation (OSDI) 2020

Jiaqi Gao, **Nofel Yaseen**, Robert MacDavid, Felipe Vieira Frujeri, Vincent Liu,
Ricardo Bianchini, Ramaswamy Aditya, Xiahoang Wang, Henry Lee, David Maltz,
Minlan Yu, Behnaz Arzani "Scouts: Improving the Diagnosis Process Through **2020**
Domain-Customized Incident Routing" in *Proceedings of ACM SIGCOMM 2020*,
New York City, New York, USA.

Nofel Yaseen, John Sonchack, Vincent Liu "tpprof: A Network Traffic Pattern
Profiler" in *USENIX Symposium on Networked Systems Design and Implementation* **2020**
(NSDI) 2020, Santa Clara, CA, USA.

Nofel Yaseen, John Sonchack, Vincent Liu "Synchronizing Network Snapshots" **2018**
in *Proceedings of ACM SIGCOMM 2018*, Budapest, Hungary.

Kamran Nishat, Farrukh Javed, Saim Salman, **Nofel Yaseen**, Ans Fida, Ihsan
Qazi "SlickFi: A Service Differentiation Scheme for High-Speed WLANs using **2016**
Dual Radio APs" in *Proceedings of ACM CoNEXT 2016*, Irvine, CA, USA.

TEACHING EXPERIENCE

Teaching Assistant, Internet and Web Systems **Spring 2020**
University of Pennsylvania, Department of Computer and Information Science.

Teaching Assistant, Networked Systems **Spring 2019**
University of Pennsylvania, Department of Computer and Information Science.

Teaching Assistant, Network Centric Programming **Spring 2017**
Lahore University of Management Sciences, Department of Computer Science.

Teaching Assistant, Introduction to Artificial Intelligence **Fall 2016**
Lahore University of Management Sciences, Department of Computer Science.

Teaching Assistant, Data Structures **Spring 2016**
Lahore University of Management Sciences, Department of Computer Science.

ADDITIONAL EXPERIENCE AND AWARDS

Facebook Fellowship Award **2020 - 2022**

Deans Honor List for excellent academic Performance at Lahore University of Management Sciences **2013 - 2017**

Ericsson ICT Professional Development Program which focuses on innovative technologies and emerging communication trends to bridge the gap between academia and ICT industry. **2015**

Scholarship at Beaconhouse School System for Exceptional Academic Performance to study for Advance levels. **2011 - 2013**

TECHNICAL SKILLS

- P4, Java, C++, Python, Rust
- MATLAB, Rails, Network Simulator (NS2), Emulab
- Windows, Linux, Mac