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Saim Salman

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Education

Brown University, USA **Aug 2017 – Present**

- MS Computer Science. GPA: 4.0/4.0 (Expected May, 2021)
- *Graduate Coursework*: Deep Learning; Topics on Networks and Distributed Systems; Topics in Software Security; Probability for Computing; Privacy-Conscious Computer Systems; Distributed Systems at Scale.
- *Graduate Thesis*: DeepConf: Automating Data Center Network Topologies Management with Machine Learning.

LUMS, Pakistan **Aug 2013 – May 2017**

- BS Computer Science. GPA: 3.79/4.0
- *Relevant Coursework*: Software Engineering; Artificial Intelligence; Advanced Programming; Databases; Computer Architecture; Theory of Automata; Computer Networks; Applied Probability.

Employment

Software Engineer Intern **Google** **Summer 2019**

- Developed Tratis; a tool that leveraged distributed tracing (Jaeger, Zipkin) output to construct models for microservices. These models included the topology, request / response size + time distributions which allow one to emulate the application for bench-marking under varying conditions. (Go, Python)

Graduate Research Assistant **Brown University** **Aug 2017 – Present**

- Researched and came up with a design for an SDN controller which supports different consistency models. (Java)
- Researched on applying ML techniques to configuration tuning for microservices to improve performance. (Go, Python)
- Implemented a system which leverages deep reinforcement learning to automatically design (re-configurable) optical data centers. In simulations, our system showed an improvement in average flow completion time ranging from 8% to 29%. (Python, Tensorflow)

Research Intern **LUMS** **May 2015 - May 2017**

- Helped in designing a service differentiation scheme for high speed WLANs that simultaneously increased the performance of real-time applications by 1.8 to 2.2x and network throughput by 1.7 to 3.4x. (C/C++, Bash)
- Implemented a system to thwart side-channel attacks (shared server and network resources) by continuously migrating entire virtual networks over physical networks. (Java, Bash)
- Improved ToRs end-to-end latency by introducing application awareness to circuit selection. Furthermore, we also came up with a novel technique to measure circuit health. (Python)

Teaching Assistant **LUMS / Brown** **May 2015 - Present**

- Discrete Mathematics (LUMS), Data Structures (LUMS), Networks (LUMS), Distributed Systems at Scale (Brown).

Other Projects

- **Nachos** Wrote code to implement scheduling, basic system calls and multi-programming in NachOS. (C/C++)
- **GDPR Compliant Microservices** Leveraged Istio to show how one satisfy some of the rules mandated by the GDPR for microservices. (Python, Bash)
- **Visitor Entry System** Developed a visitor entry system for universities. (Django Framework, Python)
- **C++ Interpreter** Wrote an interpreter for basic C++ constructs. (Python)
- **Reversi** Implemented an online multiplayer reversi game with client and server fault tolerance. (Node.js)

Publications

- **Topology Augmentation Meets Machine Learning** (ACM Sigcomm OptSys 2020)
  Saim Salman, Theophilus Benson [PDF]
- **DeepConf: Automating Data Center Network Topologies Management with ML** (ACM Sigcomm NetAI 2018)
  Saim Salman, Chris Streiffer, Huan Chen, Theophilus Benson, Asim Kadav [PDF]
- **SlickFi: Service Differentiation Scheme for High-Speed WLANs using Dual Radio APs** (ACM CoNEXT 2016)
  Kamran Nishat, Farrukh Javed, Saim Salman, Nofel Yaseen, Ans Fida and Ihsan Qazi [PDF]

Skills

- **Main Languages:** Python, Go, C/C++, Java, Node.js.
- **Other Languages:** Tensorflow, P4, Matlab, MySQL, Bash
- **Technologies:** AWS, GCloud, Kubernetes, Istio, Linkerd, Jaeger, Zipkin, Envoy, Floodlight, Unity.