Musa Iftikhar

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Experience

Research Asst. — **Tufts University, Greater Boston** — **since 2014**
Network Systems Research
• Reduced tail latency 2-10 times by using redundancy in a novel way to effectively mitigate stragglers in the Cloud, eliminating a major pain-point for providers at scale.
• Demonstrated these gains on Google Cloud by implementing a redundancy-aware network traffic generator, which uses QoS in Linux switches.
• Explored the design space of resilient data center network topologies and developed a network simulator to efficiently experiment with various topologies in C++ and Python.

Software Intern — **Microsoft, Redmond** — **2013**
Software Developer Engineer in Test
• Reduced shipping time of datamarket.azure.com by 95% by developing a tool to automate production testing in C#.
• Improved the accuracy of reporting by collaborating with the Business Intelligence team to standardize annotation of test traffic.
• Enabled live monitoring of tests by creating a dashboard that polls from Microsoft's MDS logs database.

Research Intern — **Cyphynets, LUMS** — **2013**
Cyber Physical Systems Research
• Facilitated autonomous land excavation by estimating material volume in an excavator bucket using a 3D point-cloud generated with stereo vision cameras.

Teaching Asst. — **Tufts University & LUMS** — **since 2013**
Algorithms, Computer Networks, Computation Theory, Discrete Mathematics
• Delivered lectures to class sizes of about 50 students, in addition to designing assignments as a lead TA.

Technical Skills

Languages
C, C++, Python, C#, Scheme, SML, MATLAB, shell, TCL, SQL, JavaScript, CSS, HTML

Proficiency
Cloud Computing, Computer Networking, Data Center Research, Linux, Machine Vision, LaTeX

Education

M.Sc. — **Tufts University** — **Dec 2017**
Majoring in Computer Science *(advised by Dr. Fahad Dogar)*
Specialization in Network Systems
› Graduate Scholarship | Notation of Development | ACM SIGCOMM Travel Scholarship

B.Sc. — **LUMS, Pakistan** — **May 2014**
Major: Electrical Engineering | Minor: Computer Science
› Dean's Honor List | IEEE Coding Guru (4th Position)

Project Experience

Data Centers
• Presented a new *redundancy-aware network stack* (RANS) to avoid stragglers with low overhead.
• Published RANS work as a first author at ACM HotNets'2016, and is under review at USENIX NSDI'2018.
• Designed a resilient network topology for high availability, predictability, and efficiency.
• Analyzed unequal cost multipath routing in comparison with ECMP and Packet Spraying.
• Delivered research talks: HotNets'2016, Atlanta | SIGCOMM M.M.'2015, London | NENS'2014, Boston

Robotics
• Achieved robust control of a robotic end effector to scan an uneven terrain using sensor fusion.
• Enhanced state-of-the-art Tracker-Learner-Detector algorithm by incorporating multiple camera views.

Microsoft Imagine Cup
• Contributed to the goal of eradicating Polio endemic by building a smartphone app to monitor vaccine coverage in Pakistan. (Region Finalist)