Dingming Wu

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Work Experiences

Bytedance/TikTok　　　　Bellevue, WA
Research Scientist　　　　*Jan. 2020 - now*
　Software defined networks, traffic shaping, traffic engineering, NIC-offloading

Alibaba　　　　Sunnyvale, CA
Research Intern　　　　*Aug. 2018 - Jan. 2019*
　Programmable switches. Modeled and designed a network service function chaining framework on programmable switches for edge clouds. Used P4 programming on Barefoot's Tofino Switch.

Microsoft　　　　Redmond, WA
Engineering Intern　　　　*May 2018 - Aug. 2018*
　Cache driver tracing and I/O performance monitoring. Built an I/O performance tracing tool for multi-threaded cache driver of Azure. Gained experience in Windows Device Driver development.

Microsoft　　　　Redmond, WA
Engineering Intern　　　　*May 2017 - Jul 2017*
　Cloud scale data analytics. Designed and implemented a data-driven model to detect and predict memory leak of Azure system software. Used Bayesian Networks and correlation analysis.

Education

Rice University　　　　Houston, TX
PhD in Computer Science; Area: System and Networking; GPA: 4.03/4.0　　　　*Aug. 2015 – Dec. 2019*

Nanjing University　　　　Nanjing, China
MS in Computer Science; GPA: 3.67/4.0　　　　*Sep. 2012 – July 2015*

Wuhan University　　　　Wuhan, China
BE in Computer Science; GPA: 3.46/4.0　　　　*Sep. 2008 – July 2012*

Programming Skills

- **Languages:** C, C++, Java, Python, P4, Matlab　　**Tools:** Hadoop, Spark, OpenMPI, Linux, Latex, Git, SVN

Selected Projects and Publications

- **Accelerated Service Function Chaining on Programmable Switches**: we designed a system that can offload a service chain to a programmable switch to achieve high performance and resource efficiency. Our system can compose multiple network functions into a single program that preserves the original chaining requirements, and exploit features of the switch ASIC to efficiently deploy the composed program on a single switch.
  *Publication: **Dingming Wu**, Ang Chen, T. S. Eugene Ng, Guohui Wang, Haiyong Wang, Accelerated Service Chaining on A Single Programmable Switch ASIC **ACM HotNets 2019**.*

- **Towards a Rackless Network Architecture for Data Centers**: we developed a rackless architecture that removes the *rack boundary* in DCNs and allows servers to talk to each other with uniform high bandwidth. This is achieved by optimizing the network topology for the changing workloads using circuit switches.
  *Publication: **Dingming Wu**, Weitao Wang, Ang Chen, T. S. Eugene Ng, Say No to Rack Boundaries: Towards a Reconfigurable Pod-Centric DCN Architecture **ACM SOSR 2019**.*

- **Ultra-Fast and Full-Capacity Failure Recovery in Data Center Networks**: we developed a novel network failure recovery approach that can mask failures from application performance. We use a small number of backup switches that are shared network-wide for repairing failures on demand so that the network quickly recovers to its full capacity without applications noticing the failures. This approach avoids the complications and ineffectiveness of rerouting.
  *Publication: **Dingming Wu**, Yiting Xia, Xiaoye Sun, Simbarashe Dzinamarira, Xin Huang, T. S. Eugene Ng, Masking Failures from Application Performance in Data Center Networks with Shareable Backup, **ACM SIGCOMM 2018***

Awards and Honors

- Outstanding student at NJU, Rank 1st of CS department, 2015;　　National Scholarship at NJU, top 3%, 2014