Yiyang Chang

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Education

Purdue University, West Lafayette, IN *Aug 2013 – Present*
Ph.D. student in Computer Engineering, ECE (GPA: 3.9/4.0)

Peking University, Beijing, China *Sept 2009 – July 2013*
B.S. in Micro-electronics, EECS (GPA: 3.6/4.0)

Research Experience

Network Performance Service Level Objectives Certification *Oct 2015 – Present*
- Built a system for certifying network performance SLOs, under various types of failures
- Implemented the framework and algorithms in GAMS and Gurobi Python Interface

Scalable Distributed Software-Defined Network Controller *Nov 2014 – July 2015*
- Designed SDN controllers with functional partition instead of topological partition
- Extended Floodlight SDN controller source (Java, sloc: 100k) to measure performance

Cloud VM Configuration Optimization *Sept 2013 – Aug 2014*
- Cost-aware VM selection based on historical data and online measurement
- Investigated the root cause of performance variation on Amazon EC2

Working Experience

Research Intern, Microsoft Research, Redmond, WA *May 2017 – August 2017*
- Prototyped a distributed deep learning training system over RDMA, accelerating a production-level model training speed by 6.5x
- Contributed to TensorFlow open source project (#11416)

Software Development Engineering Intern, Microsoft, Redmond, WA *May 2016 – July 2016*
- Prototyped and shipped TCP CUBIC congestion control in Windows 10
- Designed experiments to demonstrate throughput improvement in data transfer

Research Intern, Huawei, Santa Clara, CA *May 2014 – Aug 2014*
- Implemented a physical SDN with Pica8 switches and Ryu controller
- Built an SDN-based cloud monitoring system with OpenStack, Ryu, and Ganglia

Course Projects

Linux Kernel Hacking (C) ECE 695: Operating System (A)
- Built a usage-limiting CPU scheduler based on Linux Complete Fair Scheduler
- Visualized the memory page reference count in a Linux-ARM kernel

Paxos and Reliable Multicast (C) CS 505: Distributed System (A)
- Implemented a Paxos-based replication protocol, a total-ordering multicast service, and Leslie Lamport's Byzantine Generals algorithm

Compiler for LITTLE (C++) ECE 573: Compiler (A)
- Built a full-fledged compiler for a lightweight language, LITTLE, with flex and bison

Selected Publication

- **Yiyang Chang**, Sanjay Rao, and Mohit Tawarmalani. "Robust Validation of Network Designs under Uncertain Demands and Failures", **NSDI**, 2017 (Acceptance rate: 46/253 = 18.2%).

Honors and Awards

Facebook Fellowship Finalist, Facebook Inc. *Jan 2018*
Bilsland Fellowship, Purdue University *Jan 2018*
National Scholarship, Peking University *Dec 2012*
Google Excellence Scholarship, Google Inc. *May 2012*

Technical Skills

Programming	Python (proficient), C/C++, Java, Linux Shell Script, Matlab
Software-Defined Network	ONOS, Floodlight, Ryu, Mininet, Open vSwitch, Wireshark
Deep learning	TensorFlow
Cloud Computing	Docker, Kubernetes, Amazon Web Services, OpenStack
Software Development	Git, GDB, Valgrind, Bazel, Vim, LaTeX
Kernel Debugging	WinDbg, QEMU, Hyper-V, VirtualBox
Optimization	GAMS, Pyomo, CPLEX, Gurobi, BARON