

Libin Liu

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Education

City University of Hong Kong, Hong Kong

- Ph.D. in Computer Science
• Advisor: Dr. Hong Xu (Henry)

Apr 2016 – Present

Shandong University, Jinan, Shandong Province

- B.S. in School of Software
• Graduated with College Honors
• Cumulative GPA: 91.93/100, Rank: 2/321

Sep 2011 – Jul 2015

Research Interests

 Intelligent Networking Systems

Publications

- Tyrus: PHY-Assisted Neural Adaptive Congestion Control for Cellular Networks
Libin Liu, Hong Xu
ACM SIGCOMM (poster), 2019.
 - Elasecutor: Elastic Executor Scheduling in Data Analytics Systems
Libin Liu, Hong Xu
ACM SoCC, 2018.
 - U-HAUL: Efficient State Migration in NFV
Libin Liu, Hong Xu, Zhixiong Niu, Peng Wang, Dongsu Han
ACM APSys, 2016.
 - RepNet: Cutting Latency with Flow Replication in Data Center Networks
Shuhao Liu, Hong Xu, **Libin Liu**, Wei Bai, Kai Chen, Zhiping Cai
IEEE Transactions on Services Computing, 2018.
 - Kuijia: Traffic Rescaling in Software-Defined Data Center WANs
Che Zhang, Hong Xu, **Libin Liu**, Zhixiong Niu, Peng Wang
Security and Communication Networks, 2018.
 - Unveiling performance of NFV software dataplanes
Zhixiong Niu, Hong Xu, **Libin Liu**, Yongqiang Tian, Peng Wang, Zhenhua Li
CAN Workshop, co-located with ACM CoNEXT, 2017.
 - NetKernel: Network Stack as a Service in the Cloud
Zhixiong Niu, Hong Xu, Dongsu Han, Peng Wang, **Libin Liu**
USENIX NSDI (poster), 2017.
 - Kuijia: Traffic Rescaling in Data Center WANs
Che Zhang, Hong Xu, **Libin Liu**, Zhixiong Niu, Peng Wang, Yongqiang Tian, Chengchen Hu
IEEE Sarnoff, 2016.
- You can find my [Google Scholar Citations](#) here.

Selected Awards & Scholarships

- CityU Postgraduate Studentship 2016 – Present
- SoCC Student Scholarship Sep 2018
- Excellent Graduate of Shandong Province Jun 2015
- The CCF Outstanding Undergraduate Award
Only 98 students got this award in China Oct 2014
- Outstanding Student of Shandong Province and Shandong University May 2014
- National Scholarship of China 2012 – 2014
- The First-grade Scholarship of Shandong University 2012 – 2014
- The Second Prize of China Undergraduate Mathematical Contest in Modeling
Awarded by China Society for Industrial and Applied Mathematics Nov 2013

Selected Projects

- Bottleneck-Aware Coflow Scheduling Without Prior Knowledge

- We present Fai that strives to improve the bottleneck flow performance without prior knowledge. Fai employs bottleneck-aware scheduling for coflows. Like Aalo, Fai adopts loose coordination to update coflow priority and flow rates based on total bytes sent. In addition, Fai detects bottleneck flows based on a flow's rate and bytes sent, and de-allocates bandwidth for other flows to match the bottleneck rate without affecting the coflow completion time (CCT). The saved bandwidth is then distributed among coflows according to their priority to improve overall performance.
- **Elastic Executor Scheduling in Data Analytics Systems** SoCC'18
 - Elastic Executor is a novel executor scheduler for data analytics systems. It dynamically allocates and explicitly sizes resources to executors over time according to the predicted time-varying resource demands. Rather than placing executors using their peak demands, Elastic Executor strategically assigns them to machines based on a concept called *dominant remaining resource* to minimize resource fragmentation. Elastic Executor further adaptively reprovisions resources in order to tolerate inaccurate demand prediction.
 - The source code of Elastic Executor implementation is available at <https://github.com/NetX-lab/ElasticExecutor>.
- **U-HAUL: Efficient State Migration in NFV** APSys'16
 - U-HAUL is an efficient state migration system that reduces the state migration overhead in NFV. It takes advantage of the fact that most flows are short-lived mice flows, and in many cases their processing states will expire before the state migration finishes. Rather than blindly moving states of all the flows, U-HAUL keeps the states of active mice flows on the original NF instance, and only migrates elephant flow states. By reducing the number of flow states to be migrated, U-HAUL greatly reduces the migration delay and its performance penalty.

Research Experience

Networking Platform Department, TEG, Tencent

- Research Intern
 - Project: Intelligent Traffic Scheduling in WAN Traffic Engineering
 - Mentor: Dr. Li Chen
 - Project: Performance Issues in Large-scale Routing Table
 - Mentor: Dr. Yuanwei Lu

May 2019 – Present

Department of Computer Science, City University of Hong Kong

- Research Assistant
 - Project: State Migration in Network Function Virtualization (NFV)
 - Supervisor: Dr. Hong Xu

Oct 2015 – Mar 2016

Department of Computer Science and Engineering, HKUST

- Research Intern
 - Project: Load Balancing in Data Center Networks
 - Supervisor: Dr. Kai Chen

Dec 2014 – May 2015

Teaching Assistant Experience

- CS2311 Computer Programming Fall, 2019
- CS3402 Database Systems Spring, 2017 – 2019
- CS5488 Big Data Algorithms and Techniques, CS4480 Data-Intensive Computing Fall, 2016 – 2018

Talks

- Elastic Executor: Elastic Executor Scheduling in Data Analytics Systems
AI Theory Lab, Huawei Noah's Ark Lab
Mar. 1, 2019, Hong Kong
- Elastic Executor: Elastic Executor Scheduling in Data Analytics Systems
ACM SoCC 2018
Oct. 11, 2018, Carlsbad, CA, USA
- U-HAUL: Efficient State Migration in NFV
ACM APSys 2016
Aug. 4, 2016, The University of Hong Kong, Hong Kong

Languages

- Chinese: Native language
- English: Fluent (speaking, reading, writing)

Reviewers

- IEEE/ACM Transactions on Networking
- IEEE Transactions on Cloud Computing

Reference

- **Dr. Hong Xu**
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