

Wei Bai

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Research Interests

Computer networks, with a special focus on data center networks

Employment

2017-Present **Microsoft Research Asia**, Beijing, China
Associate Researcher 2, Networking Research Group
Manager: Yongqiang Xiong
Projects: Azure Application Gateway, SONiC

Education

2013-2017 **Hong Kong University of Science and Technology (HKUST)**, Hong Kong SAR
Ph.D. Computer Science
Advisor: Prof. Kai Chen
Thesis: "Congestion Control Mechanisms for Data Center Networks"
2009-2013 **Shanghai Jiao Tong University (SJTU)**, Shanghai, China
B.E. Information Security

Awards and Honors

2016, 2017 HKUST Research Travel Grant
2015, 2016 USENIX NSDI Student Grant
2015 **Microsoft Research Asia Fellowship**
2013-2017 HKUST Postgraduate Scholarship
2013 SJTU Outstanding Bachelor Thesis Award (Top 1%)
2012 First Prize, Software Group, Information Security Contest, National Undergraduate Electronic Design Contest

Publications

Conference Publications

[C12] Hong Zhang, Junxue Zhang, **Wei Bai**, Kai Chen, Mosharaf Chowdhury, "Resilient Datacenter Load Balancing in the Wild" in *Proceedings of the ACM SIGCOMM 2017 Conference (SIGCOMM)*, Los Angeles, California, August 21-25, 2017.

- [C11] Ziyang Li, **Wei Bai**, Kai Chen, Dongsu Han, Yiming Zhang, Dongsheng Li, Hongfang Yu, "Rate-Aware Flow Scheduling for Commodity Data Center Networks" in *Proceedings of the 36th Annual IEEE International Conference on Computer Communications (INFOCOM)*, Atlanta, Georgia, May 1-4, 2017.
- [C10] **Wei Bai**, Kai Chen, Li Chen, Changhoon Kim, Haitao Wu, "Enabling ECN over Generic Packet Scheduling" in *Proceedings of the 12th International Conference on emerging Networking EXperiments and Technologies (CoNEXT)*, Irvine, California, December 12-15, 2016.
- [C9] Li Chen, Kai Chen, **Wei Bai**, Mohammad Alizadeh "Scheduling Mix-flows in Commodity Datacenters with Karuna" in *Proceedings of the ACM SIGCOMM 2016 Conference (SIGCOMM)*, Florianopolis, Brazil, August 22-26, 2016.
- [C8] **Wei Bai**, Li Chen, Kai Chen, Haitao Wu "Enabling ECN in Multi-Service Multi-Queue Data Centers" in *Proceedings of the 13th USENIX Symposium on Networked Systems Design and Implementation (NSDI)*, Santa Clara, California, March 16-18, 2016.
- [C7] Shuihai Hu, **Wei Bai**, Kai Chen, Chen Tian, Ying Zhang, Haitao Wu, "Providing Bandwidth Guarantees, Work Conservation and Low Latency Simultaneously in the Cloud", in *Proceedings of the 35th Annual IEEE International Conference on Computer Communications (INFOCOM)*, San Francisco, California, April 10-14, 2016.
- [C6] Hong Zhang, Kai Chen, **Wei Bai**, Dongsu Han, Chen Tian, Hao Wang, Haibing Guan, Ming Zhang, "Guaranteeing Deadlines for Inter-Datacenter Transfers" in *Proceedings of the 10th European Conference on Computer Systems (EuroSys)*, Bordeaux, France, April 21-24, 2015.
- [C5] **Wei Bai**, Li Chen, Kai Chen, Dongsu Han, Chen Tian, Hao Wang, "Information-Agnostic Flow Scheduling for Commodity Data Centers" in *Proceedings of the 12th USENIX Symposium on Networked Systems Design and Implementation (NSDI)*, Oakland, California, May 4-6, 2015.
- [C4] Shuihai Hu, Kai Chen, Haitao Wu, **Wei Bai**, Chang Lan, Hao Wang, Hongze Zhao, Chuanxiong Guo, "Explicit Path Control in Commodity Data Centers: Design and Applications" in *Proceedings of the 12th USENIX Symposium on Networked Systems Design and Implementation (NSDI)*, Oakland, California, May 4-6, 2015.
- [C3] Yangming Zhao, Kai Chen, **Wei Bai**, Minlan Yu, Chen Tian, Yanhui Geng, Yiming Zhang, Dan Li, Sheng Wang, "RAPIER: Integrating Routing and Scheduling for Coflow-aware Data Center Networks" in *Proceedings of the 34th Annual IEEE International Conference on Computer Communications (INFOCOM)*, Hong Kong, April 26-May 1, 2015.
- [C2] **Wei Bai**, Kai Chen, Haitao Wu, Wuwei Lan, Yangming Zhao, "PAC: Taming TCP Incast Congestion Using Proactive ACK Control" in *Proceedings of the IEEE 22nd International Conference on Network Protocols (ICNP)*, Research Triangle, North Carolina, October 21-24, 2014.

- [C1] Yang Peng, Kai Chen, Guohui Wang, **Wei Bai**, Zhiqiang Ma, Lin Gu, "HadoopWatch: A First Step Towards Comprehensive Traffic Forecasting in Cloud Computing" in *Proceedings of the 33rd Annual IEEE International Conference on Computer Communications (INFOCOM)*, Toronto, Canada, April 27-May 2, 2014.

Workshop Publications

- [W4] Shuihai Hu, **Wei Bai**, Baochen Qiao, Kai Chen, Kun Tan, "Augmenting Proactive Congestion Control with Aeolus" in *Proceedings of the 2nd Asia-Pacific Workshop on Networking (APNet)*, Beijing, China, August 2-3, 2018.
- [W3] Gaoxiong Zeng, **Wei Bai**, Ge Chen, Kai Chen, Dongsu Han, Yibo Zhu, "Combining ECN and RTT for Datacenter Transport" in *Proceedings of the 1st Asia-Pacific Workshop on Networking (APNet)*, Hong Kong, China, August 3-4, 2017.
- [W2] **Wei Bai**, Kai Chen, Shuihai Hu, Kun Tan, Yongqiang Xiong, "Congestion Control for High-speed Extremely Shallow-buffered Datacenter Networks" in *Proceedings of the 1st Asia-Pacific Workshop on Networking (APNet)*, Hong Kong, China, August 3-4, 2017.
- [W1] **Wei Bai**, Li Chen, Kai Chen, Dongsu Han, Chen Tian, Weicheng Sun, "PIAS: Practical Information-Agnostic Flow Scheduling for Data Center Networks" in *Proceedings of the 13th ACM Workshop on Hot Topics in Networks (HotNets)*, Los Angeles, California, October 27-28, 2014.

Journal Publications

- [J4] **Wei Bai**, Li Chen, Kai Chen, Dongsu Han, Chen Tian, Hao Wang, "PIAS: Practical Information-Agnostic Flow Scheduling for Commodity Data Centers" in *IEEE/ACM Transactions on Networking*, (**ToN**), Volume 25, Issue 4, Pages 1954-1967, 2017.
- [J3] Hong Zhang, Kai Chen, **Wei Bai**, Dongsu Han, Chen Tian, Hao Wang, Haibing Guan, Ming Zhang, "Guaranteeing Deadlines for Inter-Datacenter Transfers" in *IEEE/ACM Transactions on Networking* (**ToN**), Volume 25, Issue 1, Pages 579-595, 2017.
- [J2] Shuihai Hu, Kai Chen, Haitao Wu, **Wei Bai**, Chang Lan, Hao Wang, Hongze Zhao, Chuanxiong Guo, "Explicit Path Control in Commodity Data Centers: Design and Applications" in *IEEE/ACM Transactions on Networking*, (**ToN**), Volume 24, Issue 5, Pages 2768-2781, 2016.
- [J1] Yang Peng, Kai Chen, Guohui Wang, **Wei Bai**, Yangming Zhao, Hao Wang, Yanhui Geng, Zhiqiang Ma, Lin Gu, "Towards Comprehensive Traffic Forecasting in Cloud Computing: Design and Application" in *IEEE/ACM Transactions on Networking* (**ToN**), Volume 24, Issue 4, Pages 2210-2222, 2016.

Selected Talks

- Aug. 2017 Experiments with Data Center Congestion Control Research, APNet 2017, Hong Kong, China
- Dec. 2016 Enabling ECN over Generic Packet Scheduling, CoNEXT 2016, Irvine, California
- Mar. 2016 Enabling ECN in Multi-Service Multi-Queue Data Centers, NSDI 2016, Santa Clara, California

May 2015 Information-Agnostic Flow Scheduling for Commodity Data Centers, NSDI 2015, Oakland, California

Professional Activities

Technical Program Committee

The 38th IEEE International Conference on Distributed Computing Systems (**ICDCS 2018**), "Cloud Computing and Data Centers" Track

Organizing Committee

Web Chair, The 2nd Asia-Pacific Workshop on Networking (**APNet 2018**)

Reviewer

IEEE/ACM Transactions on Networking

Elsevier Computer Networks

IEEE Transactions on Network and Service Management

IEEE Communications Letters

ACM Transactions on Storage

Computer Skills

Programming C, Python

Miscellaneous Linux Netfilter, NS-2 simulation, switch configuration, CUDA

References

Available upon request