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Wei Bai

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: SONiC, Long-haul RDMA

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

[C13] Zhao Lucis Li, Mike Chieh-Jan Liang, **Wei Bai**, Qiming Zheng, Yongqiang Xiong, Guangzhong Sun, "Accelerating Rule-matching Systems with Robust Learning" in *Proceedings of the 2019 USENIX Annual Technical Conference* (**ATC**), Renton, Washington, July 10-12, 2019.

[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**), Florianpolis, 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

[J5] 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 *IEEE Transactions on Cloud Computing* (**TCC**), 2019.

[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

Oct. 2018 Congestion Control Mechanisms for Data Center Networks, HotDC 2018, Beijing, China

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 3rd Asia-Pacific Workshop on Networking (**APNet 2019**)

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

Organizing Committee

Web Chair, The 3rd Asia-Pacific Workshop on Networking (**APNet 2019**)

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

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Available upon request