Xingyu Zhou

Contact Information

The Ohio State University
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Research Interests

Cloud computing, data centers, optimization,
applied probability, stochastic networks, signal processing

Education

The Ohio State University, Columbus, Ohio, (**Presidential Fellow**)
Ph.D., Electrical and Computer Engineering, 2015 – Present
Advisors: Prof. Ness Shroff

Tsinghua University, Beijing, China, (**with honor**)
M.S., Electrical Engineering, 2015
Advisor: Prof. Wei Chen

BUPT, Beijing, China, (**with honor**)
B.S., Electrical Engineering, 2012 (Ranking: Top 1)
Thesis advisor: Prof. Dongming Yuan

Honers and Awards

Presidential Fellowship, The Ohio State University, 2019 (**highest honor at OSU**)

Student Travel Grant, ACM Sigmetrics, 2018, 2019

Student Travel Grant, IFIP Performance, 2018, 2019

Excellent Dissertation Award, Chinese Institute of Electronics, 2016

Outstanding Graduate Award of Beijing city, 2012 and 2015

Outstanding Graduate Award, BUPT and Tsinghua University, 2012, 2015

Distinguished Dissertation Award, BUPT and Tsinghua University, 2012, 2015

Academic Rising Star Award, Electrical Engineering, Tsinghua University, 2015

"The December 9th" Scholarship, Tsinghua University, 2014

Presidential Award, Finalist of top 10 graduate students, Tsinghua University, 2014 (**highest honor at Tsinghua**)

National Scholarship, Ministry of Education, China, 2011 and 2014

HNA (HaiNan Airlines) Academic Excellence Scholarship, BUPT, 2011

First prize in National Undergraduate Electronic Design Contest, 2011

First prize in National "Freescale Cup" Intelligent Car Competition, 2011

Working Papers

W1. Xingyu Zhou, Ness Shroff, Adam Wierman, "Heavy traffic analysis of general load balancing with memory" in preparation to be submitted to *Mathematics of Operation Research*

Journal Publications

J10. **Xingyu Zhou**, Jian Tan, and Ness Shroff, "Heavy-traffic Delay Optimality in Pull-based Load Balancing Systems: Necessary and Sufficient Conditions," *Proceedings of the ACM on Measurement and Analysis of Computing Systems (POMACS)*, vol. 2, Article. 44, Dec. 2018. https://doi.acm.org/10.1145/3287323

J9. **Xingyu Zhou**, Jian Tan and Ness Shroff, "Flexible load balancing with multi-dimensional state-space collapse: Throughput and heavy-traffic delay optimality," in *Performance Evaluation, Elsevier*, 127, pp. 176-193. https://doi.org/10.1016/j.peva.2018.10.003

J8. **Xingyu Zhou***, Fei Wu*, Jian Tan, Kannan Srinivasan, and Ness Shroff, "Degree of queue imbalance: Overcoming the limitation of heavy-traffic delay optimality in load balancing systems," *Proceedings of the ACM on Measurement and Analysis of Computing Systems (POMACS)*, vol. 2, Article. 21, Mar. 2018. https://doi.acm.org/10.1145/3179424 (*co-primary authors)

J7. **Xingyu Zhou**, Fei Wu, Jian Tan, Yin Sun, and Ness Shroff, "Designing low-complexity heavy-traffic delay-optimal load balancing schemes: Theory to algorithms," *Proceedings of the ACM on Measurement and Analysis of Computing Systems (POMACS)*, vol. 1, Article. 39, Dec. 2017. https://doi.acm.org/10.1145/3154498

J6. **Xingyu Zhou**, Bo Bai, Wei Chen, "Antenna selection in energy efficient MIMO systems: A survey," *China Communications*, vol. 12, pp. 162-173, Sep. 2015. https://doi.org/10.1109/CC.2015.7275254 (**Invited paper**)

J5. **Xingyu Zhou**, Bo Bai, and Wei Chen, "Greedy relay antenna selection for sum rate maximization in amplify-and-forward MIMO two-way relay channels under a holistic power model," *IEEE Communications Letters*, vol. 19, pp. 1648-1651, Jun. 2015. https://doi.org/10.1109/LCOMM.2015.2449313

J4. Tong Tian, **Xingyu Zhou**, Bo Bai, and Wei Chen, "How many antennas should be activated in keyhole channels under a holistic power model," *IEEE Communications Letters*, vol. 19, pp. 981-984, Apr. 2015. https://doi.org/10.1109/LCOMM.2015.2418762

J3. **Xingyu Zhou**, Bo Bai, and Wei Chen, "Iterative antenna selection for decode-and-forward MIMO relay systems under a holistic power model," *IEEE Communications Letters*, vol. 18, pp. 2237-2240, Dec. 2014. https://doi.org/10.1109/LCOMM.2014.2366091

J2. **Xingyu Zhou**, Bo Bai, and Wei Chen, "A low complexity energy efficiency maximization method for multiuser amplify-and-forward MIMO relay systems with a holistic power model," *IEEE Communications Letters*, vol. 18, pp. 1371-1374, Aug. 2014. https://doi.org/10.1109/LCOMM.2014.2329863

J1. **Xingyu Zhou**, Bo Bai, and Wei Chen, "Iterative antenna selection for multi-stream MIMO under a holistic power model," *IEEE Wireless Communications Letters*, vol. 3, pp. 82-85, Dec. 2013. https://doi.org/10.1109/WCL.2013.111713.130754

Conference Publications

C8. **Xingyu Zhou**, Jian Tan, and Ness Shroff, "Heavy-traffic Delay Optimality in Pull-based Load Balancing Systems: Necessary and Sufficient Conditions," to appear in *Proc. ACM SIGMETRICS/IFIP PERFORMANCE*, Phoenix, Arizona, June. 2019

C7. **Xingyu Zhou**, Jian Tan and Ness Shroff, "Flexible load balancing with multi-dimensional state-space collapse: Throughput and heavy-traffic delay optimality," in *Proc. International Symposium on Computer Performance, Modeling, Measurements and Evaluation (IFIP Performance)*, Toulouse, France, Dec. 2018.

C6. **Xingyu Zhou***, Fei Wu*, Jian Tan, Kannan Srinivasan, and Ness Shroff, "Degree of queue imbalance: Overcoming the limitation of heavy-traffic delay optimality in load balancing systems," in *Proc. ACM SIGMETRICS*, Irvine, California, USA, Jun. 2018. https://doi.acm.org/10.1145/3219617.3219665 (*co-primary authors)

C5. **Xingyu Zhou**, Fei Wu, Jian Tan, Yin Sun, and Ness Shroff, "Designing low-complexity heavy-traffic delay-optimal load balancing schemes: Theory to algorithms," in *Proc. ACM SIGMETRICS*, Irvine, California, USA, Jun. 2018. https://doi.acm.org/10.1145/3219617.3219670

C4. **Xingyu Zhou**, Bo Bai, and Wei Chen, "Energy efficient relay antenna selection for AF MIMO two-way relay channels," in *Proc. IEEE International Conference on Communications (ICC)*, London, UK, Jun. 2015. https://doi.org/10.1109/ICC.2015.7249063

C3. **Xingyu Zhou**, Bo Bai, Wei Chen and Yuxing Han, "On energy efficiency maximization of AF MIMO relay systems with antenna selection," in *Proc. IEEE Global Conference on Signal and Information Processing (GlobalSIP)*, Atlanta, Georgia, USA, Dec. 2014. https://doi.org/10.1109/GlobalSIP.2014.7032084 (**Invited paper**)

C2. **Xingyu Zhou**, Bo Bai, Wei Chen and Yuxing Han, "Energy efficient transmission for DF MIMO relay systems with antenna selection," in *Proc. IEEE Global Conference on Signal and Information Processing (GlobalSIP)*, Atlanta, Georgia, USA, Dec. 2014. https://doi.org/10.1109/GlobalSIP.2014.7032097

C1. **Xingyu Zhou**, Bo Bai, Wei Chen and Yuxing Han, "An iterative algorithm for joint antenna selection and power adaptation in energy efficient MIMO," in *Proc. IEEE International Conference on Communications (ICC)*, Sydney, Australia, Jun. 2014 https://doi.org/10.1109/ICC.2014.6883915

Invited Talks and Presentations

"Heavy-traffic Delay Optimality in Pull-based Load Balancing Systems: Necessary and Sufficient Conditions" invited talk at INFORMS Annual Meeting, Seattle, Oct. 2019

"Heavy-traffic Delay Optimality in Pull-based Load Balancing Systems: Necessary and Sufficient Conditions" invited talk at RSRG Seminar, Caltech, Feb. 2019

"Load balancing in heavy traffic: Theory and algorithms," invited talk at SQUALL seminar, CMU, Sep. 2018

"Delay-Optimality in Load Balancing Systems," keynote at ITC'19 based on my works (given by Prof. Shroff).

"Flexible Load Balancing with Multi-dimensional State-space Collapse: Throughput and Heavy-traffic Delay Optimality," IFIP Performance'18, Toulouse, France, Dec. 2018

"Degree of queue imbalance: Overcoming the limitation of heavy-traffic delay optimality in load balancing systems," ACM Sigmetrics'18, Irvine, Jun. 2018

"Designing low-complexity heavy-traffic delay-optimal load balancing schemes: Theory to algorithms," ACM Sigmetrics'18, Irvine, CA, Jun. 2018

"Load balancing in heavy-traffic regime: Theory and algorithms," invited presentation at 3rd IMACCS workshop, Columbus, OH, Jun. 2018

"Load balancing algorithms in cloud networks," PhD Qualify Exam Presentation, 2015

"Energy efficient relay antenna selection for AF MIMO two-way relay channels," IEEE ICC'15, London, UK, Jun. 2015

"An iterative algorithm for joint antenna selection and power adaptation in energy efficient MIMO," IEEE ICC'14, Sydney, Australia, Jun. 2014

"On energy efficiency maximization of AF MIMO relay systems with antenna selection," IEEE GlobalSIP'14, Atlanta, Georgia, USA, Dec. 2014.

Teaching Experience

T.A., Introduction to Wireless Networking, The Ohio State University, Spring 2018, 2019
T.A., Data Structures and Algorithms, Tsinghua University, Fall 2014
T.A., Communications and Networks, Tsinghua University, Fall 2013

Industry Experience

Facebook Inc, Recruiting Product Team
Machine Learning Engineer Intern, May. 2019 - Aug. 2019
Project: Developing various machine learning models to improve the recruiting products

Mentoring Experience

SRT (Student Research Training) Mentor, Tsinghua University
Tong Tian (now PhD student at CMU): co-authored an IEEE Journal.
Yue Liu (now at NetEase)

Leadership and Activities

Social Practice Activity, Tsinghua, Winter and Summer, 2013
Gold medal prizes for both activities
Team leader and Presentor

Technical Skills

Mathematica: Probability, Stochastic Analysis, Optimization, Machine Learning
Statistics: Hypothesis testing, ANOVA, Regression, A/B Test
Programming: Python, C, Java, R, Matlab, MySQL, HTML, LaTeX
Platform: Hadoop, MapReduce, Pig, Spark, YARN.

Professional Service

Reviewer for the following journals: IEEE/ACM Transactions on Networking, IEEE Transactions on Communications, IEEE Journal on Selected Areas in Communications, IEEE Communications Surveys and Tutorials, IEEE Transactions on Network Science and Engineering, Performance Evaluation, IEEE Access
Reviewer for the following conferences: ACM Sigmetrics, ACM MobiHoc, IEEE INFOCOM, IEEE ICC, IEEE Globecom, IEEE GlobalSIP, IEEE WiOpt.