

Xingyu Zhou

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Latest update: Mar. 25, 2023

RESEARCH INTERESTS	Bandits, Reinforcement learning, Differential privacy Applied probability, Stochastic systems
PROFESSIONAL EXPERIENCE	Wayne State University , Detroit, Michigan, Assistant Professor, Electrical and Computer Engineering, 2021 – Present
INDUSTRY EXPERIENCE	Research Intern , Alibaba Group, USA Jun. 2020 – Aug. 2020 Mentor: Jian Tan Machine Learning Engineer Intern , Recruiting Product Team ¹ , Meta May 2019 – Aug. 2019
EDUCATION	The Ohio State University , Columbus, Ohio, (Presidential Fellow) Ph.D., Electrical and Computer Engineering, 2015 – 2020 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	NSF CISE Research Initiation Initiative Award Best Student Paper Award, IEEE WiOpt 2022 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 “Freescall Cup” Intelligent Car Competition , 2011

¹Also have a short visit at core systems team on load balancing problems

RESEARCH GRANTS	G1.CRII:CNS: Towards an Efficient Serverless Mobile Edge Computing, NSF, \$175,000, 05/2022 - 04/2024, Sole PI (Active)
PRE-PRINTS	<p>P5. Xingyu Zhou, Sayak Ray Chowdhury “On Differentially Private Federated Linear Contextual Bandits,” https://arxiv.org/pdf/2302.13945.pdf</p> <p>P4. Wenbo Ren, Xingyu Zhou, Jia Liu, Ness B Shroff, “Multi-armed bandits with local differential privacy,” https://arxiv.org/pdf/2007.03121.pdf</p> <p>P3. Xingyu Zhou, “On the Fenchel Duality between Strong Convexity and Lipschitz Continuous Gradient,” https://arxiv.org/pdf/1803.06573.pdf</p> <p>P2. Xingyu Zhou, Ness Shroff, “A Note on Load Balancing in Many-Server Heavy-Traffic Regime,” https://arxiv.org/pdf/2004.09574.pdf</p> <p>P1. Xingyu Zhou, Ness Shroff, “A Note on Stein’s Method for Heavy-Traffic Analysis,” https://arxiv.org/pdf/2003.06454.pdf</p>
CONFERENCE PUBLICATIONS	<p>C24. Honghao Wei, Arnob Ghosh, Ness Shroff, Lei Ying, Xingyu Zhou, “Provably Efficient Model-Free Algorithms for Non-stationary CMDPs,” to appear in AISTATS 2023</p> <p>C23. Arnob Ghosh, Xingyu Zhou, Ness Shroff, “Achieving Sub-linear Regret in Infinite Horizon Average Reward Constrained MDP with Linear Function Approximation,” ICLR 2023 https://openreview.net/pdf?id=zZhX4eYNeeh</p> <p>C22. Sayak Ray Chowdhury*, Xingyu Zhou*, “Distributed Differential Privacy in Multi-Armed Bandits,” ICLR 2023 (*co-primary authors). https://openreview.net/pdf?id=cw8FeirkIfU</p> <p>C21. Xingyu Zhou, Bo Ji, “On Kernelized Multi-Armed Bandits with Constraints,” in <i>NeurIPS</i>, 2022 (Acceptance rate $\approx 25.6\%$) https://openreview.net/pdf?id=wgRQ1IM4g_w</p> <p>C20. Arnob Ghosh, Xingyu Zhou, Ness Shroff, “Provably Efficient Model-Free Constrained RL with Linear Function Approximation,” in <i>NeurIPS</i>, 2022 (Acceptance rate $\approx 25.6\%$) https://openreview.net/pdf?id=Gf5DxrgD2cT</p> <p>C19. Fengjiao Li, Xingyu Zhou, Bo Ji, “Differentially Private Linear Bandits with Partial Distributed Feedback,” <i>WiOpt</i>, 2022 https://doi.org/10.23919/WiOpt56218.2022.9930524 (Best Student Paper)</p> <p>C18. Yuntian Deng, Xingyu Zhou, Arnob Ghosh, Abhishek Gupta, Ness B Shroff, “Interference Constrained Beam Alignment for Time-Varying Channels via Kernelized Bandits,” to appear in <i>WiOpt</i>, 2022 https://doi.org/10.23919/WiOpt56218.2022.9930591 (Best Student Paper Runner-Up)</p> <p>C17. Sayak Ray Chowdhury*, Xingyu Zhou*, “Shuffle Private Linear Contextual Bandits,” in <i>ICML</i>, 2022 (*co-primary authors) https://proceedings.mlr.press/v162/chowdhury22a.html (Acceptance rate $\approx 22\%$)</p> <p>C16. Yuntian Deng, Xingyu Zhou, Baekjin Kim, Ambuj Tewari, Abhishek Gupta, Ness Shroff “Weighted Gaussian Process Bandits for Non-stationary Environments,” in <i>AISTATS</i>, 2022 https://proceedings.mlr.press/v151/deng22b.html (Acceptance rate $\approx 28\%$)</p> <p>C15. Xingyu Zhou, “Differentially Private Reinforcement Learning with Linear Function Approximation,” in <i>ACM Sigmetrics/IFIP Performance</i>, 2022 https://doi.org/10.1145/3489048.3522648 (Acceptance rate $\approx 20\%$)</p>

- C14. Sayak Ray Chowdhury*, **Xingyu Zhou*** “Differentially Private Regret Minimization in Episodic Markov Decision Processes,” in *AAAI*, 2022 (*co-primary authors) <https://ojs.aaai.org/index.php/AAAI/article/view/20588> (Oral acceptance rate $\approx 4.6\%$)
- C13. Sayak Ray Chowdhury*, **Xingyu Zhou*** and Ness Shroff “Adaptive Control of Differentially Private Linear Quadratic Systems,” in *IEEE ISIT*, 2021 (*co-primary authors). <https://doi.org/10.1109/ISIT45174.2021.9518203>
- C12. **Xingyu Zhou** and Jian Tan “Local Differential Privacy for Bayesian Optimization,” in *AAAI*, 2021. <https://ojs.aaai.org/index.php/AAAI/article/view/17330> (Acceptance rate $\approx 21\%$)
- C11. **Xingyu Zhou** and Ness Shroff “No-Regret Algorithms for Time-Varying Bayesian Optimization,” in *IEEE CISS*, 2021 <https://doi.org/10.1109/CISS50987.2021.9400292> (Invited)
- C10. Wentao Weng, **Xingyu Zhou**, and R. Srikant, “Optimal Load Balancing with Locality Constraints,” in *Proc. ACM SIGMETRICS*, Beijing, China, June. 2021 <https://doi.org/10.1145/3428330> (Acceptance rate $\approx 12\%$)
- C9. **Xingyu Zhou**, Ness Shroff and Adam Wierman, “Asymptotically Optimal Load Balancing in Large-scale Heterogeneous Systems with Multiple Dispatchers,” in *Proc. International Symposium on Computer Performance, Modeling, Measurements and Evaluation (IFIP Performance)*, Virtual 2020. <https://doi.org/10.1016/j.peva.2020.102146>
- C8. **Xingyu Zhou**, Jian Tan, and Ness Shroff, “Heavy-traffic Delay Optimality in Pull-based Load Balancing Systems: Necessary and Sufficient Conditions,” in *Proc. ACM SIGMETRICS/IFIP PERFORMANCE*, Phoenix, Arizona, June. 2019 <https://doi.org/10.1145/3376930.3376935> (Acceptance rate $\approx 16\%$)
- 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. <https://doi.org/10.1016/j.peva.2018.10.003>
- 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) (Acceptance rate $\approx 20\%$)
- 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> (Acceptance rate $\approx 20\%$)
- 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)

JOURNAL
PUBLICATIONS

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, "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>

J14. Fengjiao Li, **Xingyu Zhou**, Bo Ji, "(Private) Kernelized Bandits with Distributed Biased Feedback," in *Proceedings of the ACM on Measurement and Analysis of Computing Systems (POMACS)*, vol. 7, Article. 5, Mar. 2023 <https://doi.org/10.1145/3579318>

J13. **Xingyu Zhou**, "Differentially Private Reinforcement Learning with Linear Function Approximation," to appear in *Proceedings of the ACM on Measurement and Analysis of Computing Systems (POMACS)*, vol. 6, Article. 8, Mar. 2022 <https://doi.org/10.1145/3508028>

J12. Wentao Weng, **Xingyu Zhou**, and R. Srikant, "Optimal Load Balancing with Locality Constraints," *Proceedings of the ACM on Measurement and Analysis of Computing Systems (POMACS)*, vol. 2, Article. 45, Nov. 2020. <https://doi.org/10.1145/3428330>

J11. **Xingyu Zhou**, Ness Shroff and Adam Wierman, "Asymptotically Optimal Load Balancing in Large-scale Heterogeneous Systems with Multiple Dispatchers," in *Performance Evaluation, Elsevier* Volume 145, January 2021, 102146. <https://doi.org/10.1016/j.peva.2020.102146>

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>

INVITED TALKS

"On Differentially Private Federated Linear Contextual Bandits" invited talk at AI-EDGE Seminar, OSU, Mar. 2023

"Shuffle Private Linear Contextual Bandits" invited talk at UCLA Big Data and Machine Learning seminar, Virtual, May. 2022

"Stein's Method for Heavy-traffic Analysis: Load Balancing and Scheduling" invited talk at YEQT workshop, Virtual, Jun. 2021

"Stein's Method for Heavy-traffic Analysis With Applications in Load Balancing And Scheduling" invited talk at INFORMS Annual Meeting, Virtual, Oct. 2021

"Asymptotically Optimal Load Balancing in Large-scale Heterogeneous Systems with Multiple Dispatchers" invited talk at INFORMS Annual Meeting, Virtual, Oct. 2020

"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, Carnegie Mellon University, Sep. 2018

TEACHING EXPERIENCE

Instructor, Object-Oriented Programming for ECE, Fall 2022; Winter, 2023

Instructor, Online Decision Making, Wayne State University, Fall, 2021

Instructor, Algorithms and Data Structures, Wayne State University, Winter, 2021, 2022; Fall 2022

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

**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)

Summer Research Intern Mentor, Ohio State University
Wentao Weng (now PhD student at MIT): co-authored an ACM conference paper

**LEADERSHIP AND
ACTIVITIES**

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

**PROFESSIONAL
SERVICE**

Technical Committee Member: WiOpt 2021, ITC 33, 2021, INFOCOM, 2022

Web Chair: MobiHoc 2023

Reviewer for international competition: The US-UK Privacy Enhancing Technologies (PETs) prize challenge

Reviewer for the following journals: IEEE/ACM Transactions on Networking, IEEE Transactions on Communications, IEEE Journal on Selected Areas in Communications, IEEE Transactions on Network Science and Engineering, Performance Evaluation, IEEE Access

Reviewer for the following conferences: ICML, NeurIPS, ACM Sigmetrics, ACM MobiHoc, IEEE INFOCOM, IEEE ICC, IEEE Globecom, IEEE GlobalSIP, IEEE WiOpt.