

Xingyu Zhou

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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 1/120) Thesis advisor: Prof. Dongming Yuan
HONORS 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) National Scholarship , Ministry of Education, China, 2011 and 2014 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 Excellent Dissertation Award , Chinese Institute of Electronics, 2016 Academic Rising Star Award , Electrical Engineering, Tsinghua University, 2015 “The December 9th” Scholarship , Tsinghua University, 2014 Presidential Scholarship , Finalist of top 10 graduate students, Tsinghua University, 2014 (highest honor at Tsinghua) HNA (HaiNan Airlines) Academic Excellence Scholarship , BUPT, 2011 Student Travel Grant , ACM Sigmetrics, 2018, 2019 Student Travel Grant , IFIP Performance, 2018, 2019 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. NSF-CRII :CNS: Towards an Efficient Serverless Mobile Edge Computing, \$175,000, 05/2022 - 04/2024, Sole PI (Active)
	G2. NSF-Medium : Collaborative Research: NeTS: Medium: Black-box Optimization of White-box Networks: Online Learning for Autonomous Resource Management in NextG Wireless Networks, \$1,200,000, 10/2023 - 09/2026, PI: WSU share \$300,000 (Active)
PRE-PRINTS	P6. Sayak Ray Chowdhury*, Xingyu Zhou* , Nagarajan Natarajan, "Differentially Private Reward Estimation with Preference Feedback," (*co-primary authors). https://arxiv.org/pdf/2310.19733.pdf
	P5. Xingyu Zhou , Sayak Ray Chowdhury "On Differentially Private Federated Linear Contextual Bandits," https://arxiv.org/pdf/2302.13945.pdf
	P4. Wenbo Ren, Xingyu Zhou , Jia Liu, Ness B Shroff, "Multi-armed bandits with local differential privacy," https://arxiv.org/pdf/2007.03121.pdf
	P3. Xingyu Zhou , "On the Fenchel Duality between Strong Convexity and Lipschitz Continuous Gradient," https://arxiv.org/pdf/1803.06573.pdf
	P2. Xingyu Zhou , Ness Shroff, "A Note on Load Balancing in Many-Server Heavy-Traffic Regime," https://arxiv.org/pdf/2004.09574.pdf
	P1. Xingyu Zhou , Ness Shroff, "A Note on Stein's Method for Heavy-Traffic Analysis," https://arxiv.org/pdf/2003.06454.pdf
CONFERENCE PUBLICATIONS	C27. [NeurIPS'23] Yulian Wu*, Xingyu Zhou* , Youming Tao, Di Wang, "On Private and Robust Bandits," (*co-primary authors). https://openreview.net/pdf?id=gaXAjtHic2
	C26. [ICML'23] Duo Cheng, Xingyu Zhou , Bo Ji, "Understanding the Role of Feedback in Online Learning with Switching Costs," https://proceedings.mlr.press/v202/cheng23f.html
	C25. [ICML'23] Yulian Wu, Xingyu Zhou , Sayak Ray Chowdhury, Di Wang, "Differentially Private Episodic Reinforcement Learning with Heavy-tailed Rewards," https://proceedings.mlr.press/v202/wu23aa.html
	C24. [AISTATS'23] Honghao Wei, Arnob Ghosh, Ness Shroff, Lei Ying, Xingyu Zhou , "Provably Efficient Model-Free Algorithms for Non-stationary CMDPs," https://proceedings.mlr.press/v206/wei23b.html
	C23. [ICLR'23] Arnob Ghosh, Xingyu Zhou , Ness Shroff, "Achieving Sub-linear Regret in Infinite Horizon Average Reward Constrained MDP with Linear Function Approximation," https://openreview.net/pdf?id=zZhX4eYNeeh
	C22. [ICLR'23] Sayak Ray Chowdhury*, Xingyu Zhou* , "Distributed Differential Privacy in Multi-Armed Bandits," (*co-primary authors). https://openreview.net/pdf?id=cw8FeirkIfU
	C21. [NeurIPS'22] Xingyu Zhou , Bo Ji, "On Kernelized Multi-Armed Bandits with Constraints," https://openreview.net/pdf?id=wgRQ1IM4g_w
	C20. [NeurIPS'22] Arnob Ghosh, Xingyu Zhou , Ness Shroff, "Provably Efficient Model-Free Constrained RL with Linear Function Approximation," https://openreview.net/pdf?id=Gf5DxrgD2cT

- C19.[WiOpt'22] Fengjiao Li, **Xingyu Zhou**, Bo Ji, "Differentially Private Linear Bandits with Partial Distributed Feedback," <https://doi.org/10.23919/WiOpt56218.2022.9930524> (Best Student Paper)
- C18.[WiOpt'22] Yuntian Deng, **Xingyu Zhou**, Arnob Ghosh, Abhishek Gupta, Ness B Shroff, "Interference Constrained Beam Alignment for Time-Varying Channels via Kernelized Bandits," <https://doi.org/10.23919/WiOpt56218.2022.9930591> (Best Student Paper Runner-Up)
- C17.[ICML'22] Sayak Ray Chowdhury*, **Xingyu Zhou***, "Shuffle Private Linear Contextual Bandits," (*co-primary authors) <https://proceedings.mlr.press/v162/chowdhury22a.html>
- C16.[AISTATS'22] Yuntian Deng, **Xingyu Zhou**, Baekjin Kim, Ambuj Tewari, Abhishek Gupta, Ness Shroff "Weighted Gaussian Process Bandits for Non-stationary Environments," <https://proceedings.mlr.press/v151/deng22b.html>
- C15.[SIGMETRICS'22] **Xingyu Zhou**, "Differentially Private Reinforcement Learning with Linear Function Approximation," <https://doi.org/10.1145/3489048.3522648>
- C14.[AAAI'22] Sayak Ray Chowdhury*, **Xingyu Zhou*** "Differentially Private Regret Minimization in Episodic Markov Decision Processes," (*co-primary authors). <https://ojs.aaai.org/index.php/AAAI/article/view/20588>
- C13.[ISIT'21] Sayak Ray Chowdhury*, **Xingyu Zhou*** and Ness Shroff "Adaptive Control of Differentially Private Linear Quadratic Systems," (*co-primary authors). <https://doi.org/10.1109/ISIT45174.2021.9518203>
- C12.[AAAI'21] **Xingyu Zhou** and Jian Tan "Local Differential Privacy for Bayesian Optimization," <https://ojs.aaai.org/index.php/AAAI/article/view/17330>
- C11.[CISS'21] **Xingyu Zhou** and Ness Shroff "No-Regret Algorithms for Time-Varying Bayesian Optimization," <https://doi.org/10.1109/CISS50987.2021.9400292> (Invited)
- C10.[SIGMETRICS'21] Wentao Weng, **Xingyu Zhou**, and R. Srikant, "Optimal Load Balancing with Locality Constraints," <https://doi.org/10.1145/3428330>
- C9.[Performance'20] **Xingyu Zhou**, Ness Shroff and Adam Wierman, "Asymptotically Optimal Load Balancing in Large-scale Heterogeneous Systems with Multiple Dispatchers," <https://doi.org/10.1016/j.peva.2020.102146>
- C8.[SIGMETRICS'19] **Xingyu Zhou**, Jian Tan, and Ness Shroff, "Heavy-traffic Delay Optimality in Pull-based Load Balancing Systems: Necessary and Sufficient Conditions," <https://doi.org/10.1145/3376930.3376935>
- C7.[Performance'18] **Xingyu Zhou**, Jian Tan and Ness Shroff, "Flexible load balancing with multi-dimensional state-space collapse: Throughput and heavy-traffic delay optimality," <https://doi.org/10.1016/j.peva.2018.10.003>
- C6.[SIGMETRICS'18] **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," (*co-primary authors). <https://doi.acm.org/10.1145/3219617.3219665>

JOURNAL
PUBLICATIONS

- C5.[SIGMETRICS'18] **Xingyu Zhou**, Fei Wu, Jian Tan, Yin Sun, and Ness Shroff, "Designing low-complexity heavy-traffic delay-optimal load balancing schemes: Theory to algorithms," <https://doi.acm.org/10.1145/3219617.3219670>
- C4.[ICC'15] **Xingyu Zhou**, Bo Bai, and Wei Chen, "Energy efficient relay antenna selection for AF MIMO two-way relay channels," <https://doi.org/10.1109/ICC.2015.7249063>
- C3.[GlobalSIP'14] **Xingyu Zhou**, Bo Bai, Wei Chen and Yuxing Han, "On energy efficiency maximization of AF MIMO relay systems with antenna selection," <https://doi.org/10.1109/GlobalSIP.2014.7032084> (Invited)
- C2.[GlobalSIP'14] **Xingyu Zhou**, Bo Bai, Wei Chen and Yuxing Han, "Energy efficient transmission for DF MIMO relay systems with antenna selection," <https://doi.org/10.1109/GlobalSIP.2014.7032097>
- C1.[ICC'14] **Xingyu Zhou**, Bo Bai, Wei Chen, "An iterative algorithm for joint antenna selection and power adaptation in energy efficient MIMO," <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 ASU, Oct. 2023
- "On Differentially Private Federated Linear Contextual Bandits" invited talk at INFORMS Annual Meeting, Oct. 2023
- "On Differentially Private Federated Linear Contextual Bandits" invited talk at Robotics and Control Seminar, MSU, Sep. 2023
- "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

	<p>“Heavy-traffic Delay Optimality in Pull-based Load Balancing Systems: Necessary and Sufficient Conditions” invited talk at INFORMS Annual Meeting, Seattle, Oct. 2019</p> <p>“Heavy-traffic Delay Optimality in Pull-based Load Balancing Systems: Necessary and Sufficient Conditions” invited talk at RSRG Seminar, Caltech, Feb. 2019</p> <p>“Load balancing in heavy traffic: Theory and algorithms,” invited talk at SQUALL seminar, Carnegie Mellon University, Sep. 2018</p>
TEACHING EXPERIENCE	<p>Instructor, Object-Oriented Programming for ECE, Fall 2022, 2023; Winter, 2023</p> <p>Instructor, Online Decision Making, Wayne State University, Fall, 2021</p> <p>Instructor, Algorithms and Data Structures, Wayne State University, Winter, 2021, 2022; Fall 2022, 2023</p> <p>T.A., Introduction to Wireless Networking, The Ohio State University, Spring 2018, 2019</p> <p>T.A., Data Structures and Algorithms, Tsinghua University, Fall 2014</p> <p>T.A., Communications and Networks, Tsinghua University, Fall 2013</p>
MENTORING EXPERIENCE	<p>Co-advised PhD students and post-docs</p> <p>Yuntian Deng (PhD, now a research scientist at Amazon): co-advised with Ness Shroff at OSU.</p> <p>Arnob Ghosh (Postdoc, now an assistant professor at NJIT): co-advised with Ness Shroff at OSU.</p> <p>Fengjiao Li (PhD, now an assistant professor at Shanxi University): co-advised with Bo Ji at Virginia Tech. (Female)</p> <p>Duo Cheng (PhD, Virginia Tech): co-advised with Bo Ji at Virginia Tech.</p> <p>Remote/Summer Interns</p> <p>Yulian Wu (PhD, KAUST): co-authored ICML and NeurIPS papers. (Female)</p> <p>Wei Zhang (PhD, TAMU): co-authored SIGMETRICS paper. (Female)</p> <p>Wentao Weng (Yao Class at Tsinghua, now PhD at MIT): co-authored SIGMETRICS paper.</p> <p>SRT (Student Research Training) Mentor, Tsinghua University</p> <p>Tong Tian (later PhD CMU, now Baidu research): co-authored an IEEE Journal.</p> <p>Yue Liu (now at NetEase) (Female)</p>
LEADERSHIP AND ACTIVITIES	<p>Social Practice Activity, Tsinghua University, Winter and Summer, 2013</p> <p>Gold medal prizes for both activities</p> <p>Team leader and Presenter</p>
PROFESSIONAL SERVICE	<p>Technical Committee Member: SIGMETRICS’ 2022, 2023, 2024; WiOpt 2021, ITC 33, 2021, INFOCOM, 2022</p> <p>Web Chair: MobiHoc 2023, 2024</p> <p>Reviewer for international competition: The US-UK Privacy Enhancing Technologies (PETs) prize challenge</p> <p>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</p> <p>Reviewer for the following conferences: ICML, NeurIPS, ICLR, AISTATS, ACM Sigmetrics, ACM MobiHoc, IEEE INFOCOM, IEEE ICC, IEEE Globecom, IEEE GlobalSIP, IEEE WiOpt.</p>