Xingyu Zhou

Assistant Professor, ECE Department, Wayne State University
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Latest update: Mar. 3, 2024

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

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**)

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 "Freescale Cup" Intelligent Car Competition, 2011

[1] Also 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

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 (CSRankings:18)[2]

C32.[ICLR'24] **Xingyu Zhou**, Sayak Ray Chowdhury, "On Differentially Private Federated Linear Contextual Bandits," to appear in ICLR24

C31.[ICLR'24] Duo Cheng, **Xingyu Zhou**, Bo Ji, "Follow-the-Perturbed-Leader for Adversarial Bandits: Heavy Tails, Robustness, and Privacy," to appear in ICLR24

C30.[AISTATS'24] Sayak Ray Chowdhury*, **Xingyu Zhou***, Nagarajan Natarajan, "Towards Achieving Sub-linear Regret and Hard Constraint Violation in Model-free RL," to appear in AISTATS23 (*co-primary authors)

C29.[AISTATS'24] Arnob Ghosh, **Xingyu Zhou**, Ness Shroff, "Towards Achieving Sub-linear Regret and Hard Constraint Violation in Model-free RL," to appear in AISTATS23

C28.[NeurIPS'23] Yulian Wu*, **Xingyu Zhou***, Youming Tao, Di Wang, "On Private and Robust Bandits," (*co-primary authors). https://openreview.net/pdf?id=gaXAjtHic2

C27.[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

C26.[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

C25.[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

C24.[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

C23.[ICLR'23] Sayak Ray Chowdhury*, **Xingyu Zhou***, "Distributed Differential Privacy in Multi-Armed Bandits," (*co-primary authors). https://openreview.net/pdf?id=cw8FeirkIfU

[2]NeurIPS, ICML, ICLR, AAAI, SIGMETRICS are on CSRankings. However, it is only one (partial) measure of quality.

C22.[NeurIPS'22] **Xingyu Zhou**, Bo Ji, "On Kernelized Multi-Armed Bandits with Constraints," https://openreview.net/pdf?id=wgRQ1IM4g_w

C21.[NeurIPS'22] Arnob Ghosh, **Xingyu Zhou**, Ness Shroff, "Provably Efficient Model-Free Constrained RL with Linear Function Approximation,"https://openreview.net/pdf?id=Gf5DxrgD2cT

C20.[SIGMETRICS'23] Fengjiao Li, **Xingyu Zhou**, Bo Ji, "(Private) Kernelized Bandits with Distributed Biased Feedback," https://dl.acm.org/doi/10.1145/3579318

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

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

Journal Publications

J15. Fengjiao Li, **Xingyu Zhou**, Bo Ji, "Distributed Linear Bandits with Differential Privacy," in *IEEE Transactions on Network Science and Engineering (TNSE)*, 2024 https://doi.org/10.1109/TNSE.2024.3362978

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 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

"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, 2023; Winter, 2023
Instructor, Online Decision Making, Wayne State University, Fall, 2021
Instructor, Algorithms and Data Structures, Wayne State University, Winter, 2021, 2022; Fall 2022, 2023
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

Co-advised PhD students and post-docs
Yuntian Deng (PhD, now a research scientist at Amazon): co-advised with Ness Shroff at OSU.
Arnob Ghosh (Postdoc, now an assistant professor at NJIT): co-advised with Ness Shroff at OSU.
Fengjiao Li (PhD, now an assistant professor at Shanxi University): co-advised with Bo Ji at Virginia Tech. (Female)
Duo Cheng (PhD, Virginia Tech): co-advised with Bo Ji at Virginia Tech.

Remote/Summer Interns
Yulian Wu (PhD, KAUST): co-authored ICML and NeurIPS papers. (Female)
Wei Zhang (PhD, TAMU): co-authored SIGMETRICS paper. (Female)
Wentao Weng (Yao Class at Tsinghua, now PhD at MIT): co-authored SIGMETRICS paper.

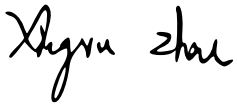
SRT (Student Research Training) Mentor, Tsinghua University
Tong Tian (later PhD CMU, now Baidu research): co-authored an IEEE Journal.
Yue Liu (now at NetEase) (Female)

Leadership and Activities

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

Professional Service

Technical Committee Member: SIGMETRICS' 2022, 2023, 2024; MobiHoc' 2023, 2024; WiOpt 2021, ITC 33, 2021, INFOCOM, 2022
Web Chair: MobiHoc 2023, 2024
Publicity Chair: WiOpt 2024
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
Reviewer for the following conferences: ICML, NeurIPS, ICLR, AISTATS, ACM Sigmetrics, ACM MobiHoc, IEEE INFOCOM, IEEE ICC, IEEE Globecom, IEEE GlobalSIP, IEEE WiOpt.



Mar. 3, 2024