

Xingyu Zhou

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Homepage: <https://xingyuzhou.org>

Research interests

Reinforcement Learning, Language Models, Differential Privacy
Online Learning, Queueing Theory

Employment

Wayne State University

Detroit, MI

Assistant Professor

01/2021 – Present

Department of Electrical and Computer Engineering

Alibaba Group, USA

Sunnyvale, CA

Research Intern

06/2020 – 08/2020

Mentor: Jian Tan

Meta

Menlo Park, CA

Machine Learning Engineering Intern

05/2019 – 08/2019

Education

Ohio State University

Columbus, OH

PhD in Electrical and Computer Engineering

08/2015 – 12/2020

Advisor: Ness Shroff

Tsinghua University

Beijing, China

MS in Electrical Engineering

09/2012 – 07/2015

Advisors: Wei Chen and Bo Bai

Beijing University of Posts and Telecommunications

Beijing, China

BS in Electrical Engineering, Rank: 1/120

09/2008 – 06/2012

Honors and Awards

NSF CAREER Award

2025

NSF CRII Award

2022

Best Student Paper & Runner-up Awards (IEEE WiOpt)

2022

Presidential Fellowship (Ohio State University, highest honor)

2019

Presidential Scholarship, Finalist (Tsinghua University, highest honor)

2014

National Scholarship

2011, 2014

Outstanding Graduate Award of Beijing City

2012, 2015

Outstanding Graduate Award (BUPT and Tsinghua)

2012, 2015

Distinguished Dissertation Award (BUPT and Tsinghua)

2012, 2015

Academic Rising Star Award (Tsinghua)

2015

12.9 Scholarship (Tsinghua)

2014

First Prize, National Undergraduate Electronic Design Contest

2011

Grants

NSF CAREER (2441519) 10/2025 – 09/2030

CAREER: Foundations of Trustworthy Sequential Decision-Making: Privacy, Robustness, and Fairness

\$500,000, *Solo PI*

NSF CNS Medium (2312835)

10/2023 – 09/2026

Collaborative Research: NeTS: Medium: Black-box Optimization of White-box Networks: Online Learning for Autonomous Resource Management in NextG Wireless Networks

\$1,200,000, *PI at WSU with share of \$300,000*

NSF CRII (2153220)

07/2022 – 06/2026

CNS: Towards an Efficient Serverless Mobile Edge Computing

\$175,000 (*with no cost extensions*), *Solo PI*

Conference Publications

(† Equal Contributions)

On the Sample Complexity of Differentially Private Policy Optimization

Yi He, Xingyu Zhou

NeurIPS 2025

Odin: Effective End-to-End SLA Decomposition for 5G/6G Network Slicing via Online Learning

Duo Cheng, Ramanujan Sheshadri, Ahan Kak, Nakjung Choi, Xingyu Zhou, Bo Ji

MobiHoc 2025

A Unified Theoretical Analysis of Private and Robust Offline Alignment: from RLHF to DPO

Xingyu Zhou, Yulian Wu, Francesco Orabona

ICML 2025 (Spotlight)

Square χ PO: Differentially Private and Robust χ^2 -Preference Optimization in Offline Direct Alignment

Xingyu Zhou, Yulian Wu, Wenqian Weng, Francesco Orabona

ICML 2025

Optimal Rates for Robust Stochastic Convex Optimization

Changyu Gao, Andrew Lowy, Xingyu Zhou, Stephen Wright

FORC 2025

Locally Private and Robust Multi-Armed Bandits

Xingyu Zhou, Wei Zhang

NeurIPS 2024

**Taming Heavy-Tailed Losses in Adversarial Bandits and the
Best-of-Both-Worlds Setting**

Duo Cheng, Xingyu Zhou, Bo Ji

NeurIPS 2024

**Private Heterogeneous Federated Learning Without a Trusted Server
Revisited: Error-Optimal and Communication-Efficient Algorithms
for Convex Losses**

Changyu Gao[†], Andrew Lowy[†], Xingyu Zhou[†], Stephen Wright

ICML 2024

On Differentially Private Federated Linear Contextual Bandits

Xingyu Zhou, Sayak Ray Chowdhury

ICLR 2024

Differentially Private Reward Estimation with Preference Feedback

Sayak Ray Chowdhury[†], Xingyu Zhou[†], Nagarajan Natarajan

AISTATS 2024

**Towards Achieving Sub-linear Regret and Hard Constraint Violation
in Model-free RL**

Arnob Ghosh, Xingyu Zhou, Ness Shroff

AISTATS 2024

On Private and Robust Bandits

Yulian Wu[†], Xingyu Zhou[†], Youming Tao, Di Wang

NeurIPS 2023

**Understanding the Role of Feedback in Online Learning with
Switching Costs**

Duo Cheng, Xingyu Zhou, Bo Ji

ICML 2023

**Differentially Private Episodic Reinforcement Learning with
Heavy-tailed Rewards**

Yulian Wu, Xingyu Zhou, Sayak Ray Chowdhury, Di Wang

ICML 2023

Provably Efficient Model-Free Algorithms for Non-stationary CMDPs

Honghao Wei, Arnob Ghosh, Ness Shroff, Lei Ying, Xingyu Zhou

AISTATS 2023

Achieving Sub-linear Regret in Infinite Horizon Average Reward Constrained MDP with Linear Function Approximation
Arnob Ghosh, Xingyu Zhou, Ness Shroff
ICLR 2023

Distributed Differential Privacy in Multi-Armed Bandits
Sayak Ray Chowdhury[†], Xingyu Zhou[†]
ICLR 2023

(Private) Kernelized Bandits with Distributed Biased Feedback
Fengjiao Li, Xingyu Zhou, Bo Ji
SIGMETRICS 2023

On Kernelized Multi-Armed Bandits with Constraints
Xingyu Zhou, Bo Ji
NeurIPS 2022

Provably Efficient Model-Free Constrained RL with Linear Function Approximation
Arnob Ghosh, Xingyu Zhou, Ness Shroff
NeurIPS 2022

Differentially Private Linear Bandits with Partial Distributed Feedback
Fengjiao Li, Xingyu Zhou, Bo Ji
WiOpt 2022 (Best Student Paper)

Interference Constrained Beam Alignment for Time-Varying Channels via Kernelized Bandits
Yuntian Deng, Xingyu Zhou, Arnob Ghosh, Abhishek Gupta, Ness Shroff
WiOpt 2022 (Best Student Paper, Runner-up)

Shuffle Private Linear Contextual Bandits
Sayak Ray Chowdhury[†], Xingyu Zhou[†]
ICML 2022

Weighted Gaussian Process Bandits for Non-stationary Environments
Yuntian Deng, Xingyu Zhou, Baekjin Kim, Ambuj Tewari, Abhishek Gupta,
Ness Shroff
AISTATS 2022

Differentially Private Reinforcement Learning with Linear Function Approximation
Xingyu Zhou

Differentially Private Regret Minimization in Episodic Markov Decision Processes

Sayak Ray Chowdhury[†], Xingyu Zhou[†]

AAAI 2022 (*Oral*)

Adaptive Control of Differentially Private Linear Quadratic Systems

Sayak Ray Chowdhury[†], Xingyu Zhou[†], Ness Shroff

ISIT 2021

Local Differential Privacy for Bayesian Optimization

Xingyu Zhou, Jian Tan

AAAI 2021

No-Regret Algorithms for Time-Varying Bayesian Optimization

Xingyu Zhou, Ness Shroff

CISS 2021

Optimal Load Balancing with Locality Constraints

Wentao Weng, Xingyu Zhou, R. Srikant

SIGMETRICS 2021

Asymptotically Optimal Load Balancing in Large-scale Heterogeneous Systems with Multiple Dispatchers

Xingyu Zhou, Ness Shroff, Adam Wierman

Performance 2021

Heavy-traffic Delay Optimality in Pull-based Load Balancing Systems: Necessary and Sufficient Conditions

Xingyu Zhou, Jian Tan, Ness Shroff

SIGMETRICS 2019

Flexible load balancing with multi-dimensional state-space collapse: Throughput and heavy-traffic delay optimality

Xingyu Zhou, Jian Tan, Ness Shroff

Performance 2018

Degree of queue imbalance: Overcoming the limitation of heavy-traffic delay optimality in load balancing systems

Xingyu Zhou[†], Fei Wu[†], Jian Tan, Kannan Srinivasan, Ness Shrof

SIGMETRICS 2018

Designing low-complexity heavy-traffic delay-optimal load balancing schemes: Theory to algorithms

Xingyu Zhou, Fei Wu, Jian Tan, Yin Sun, Ness Shroff

SIGMETRICS 2018

Energy efficient relay antenna selection for AF MIMO two-way relay channels

Xingyu Zhou, Bo Bai, and Wei Chen

ICC 2015

On energy efficiency maximization of AF MIMO relay systems with antenna selection

Xingyu Zhou, Bo Bai, Wei Chen, Yuxing Han

GlobalSIP 2014

Energy efficient transmission for DF MIMO relay systems with antenna selection

Xingyu Zhou, Bo Bai, Wei Chen, Yuxing Han

GlobalSIP 2014

An iterative algorithm for joint antenna selection and power adaptation in energy efficient MIMO

Xingyu Zhou, Bo Bai, Wei Chen

ICC 2014

Journal Publications

(† Equal Contributions)

Contextual Bandits with Packing and Covering Constraints: A Modular Lagrangian Approach via Regression

Aleksandrs Slivkins, Xingyu Zhou, Karthik Abinav Sankararaman, Dylan J. Foster

Journal of Machine Learning Research (JMLR) 2024

Distributed Linear Bandits with Differential Privacy

Fengjiao Li, Xingyu Zhou, Bo Ji

IEEE Transactions on Network Science and Engineering (TNSE) 2024

(Private) Kernelized Bandits with Distributed Biased Feedback

Fengjiao Li, Xingyu Zhou, Bo Ji

Proceedings of the ACM on Measurement and Analysis of Computing Systems (POMACS) 2023

Differentially Private Reinforcement Learning with Linear Function Approximation

Xingyu Zhou

*Proceedings of the ACM on Measurement and Analysis of Computing Systems
(POMACS) 2022*

Asymptotically Optimal Load Balancing in Large-scale Heterogeneous Systems with Multiple Dispatchers

Xingyu Zhou, Ness Shroff, Adam Wierman

Performance Evaluation, Elsevier 2021

Optimal Load Balancing with Locality Constraints

Wentao Weng, Xingyu Zhou, R. Srikant

*Proceedings of the ACM on Measurement and Analysis of Computing Systems
(POMACS) 2020*

**Heavy-traffic Delay Optimality in Pull-based Load Balancing Systems:
Necessary and Sufficient Conditions**

Xingyu Zhou, Jian Tan, Ness Shroff

*Proceedings of the ACM on Measurement and Analysis of Computing Systems
(POMACS) 2018*

**Flexible load balancing with multi-dimensional state-space collapse:
Throughput and heavy-traffic delay optimality**

Xingyu Zhou, Jian Tan, Ness Shroff

Performance Evaluation, Elsevier 2018

**Degree of queue imbalance: Overcoming the limitation of
heavy-traffic delay optimality in load balancing systems**

Xingyu Zhou[†], Fei Wu[†], Jian Tan, Kannan Srinivasan, Ness Shroff

*Proceedings of the ACM on Measurement and Analysis of Computing Systems
(POMACS) 2018*

**Designing low-complexity heavy-traffic delay-optimal load balancing
schemes: Theory to algorithms**

Xingyu Zhou, Fei Wu, Jian Tan, Yin Sun, Ness Shroff

*Proceedings of the ACM on Measurement and Analysis of Computing Systems
(POMACS) 2017*

Antenna selection in energy efficient MIMO systems: A survey

Xingyu Zhou, Bo Bai, Wei Chen

China Communications 2015 (Invited paper)

**Greedy relay antenna selection for sum rate maximization in
amplify-and-forward MIMO two-way relay channels under a holistic
power model**

Xingyu Zhou, Bo Bai, and Wei Chen

How many antennas should be activated in keyhole channels under a holistic power model

Tong Tian, Xingyu Zhou, Bo Bai, and Wei Chen

IEEE Communications Letters 2015

Iterative antenna selection for decode- and-forward MIMO relay systems under a holistic power model

Xingyu Zhou, Bo Bai, and Wei Chen

IEEE Communications Letters 2014

A low complexity energy efficiency maximization method for multiuser amplify-and-forward MIMO relay systems with a holistic power model

Xingyu Zhou, Bo Bai, and Wei Chen

IEEE Communications Letters 2014

Iterative antenna selection for multi- stream MIMO under a holistic power model

Xingyu Zhou, Bo Bai, and Wei Chen

IEEE Wireless Communications Letters 2013

Preprints

Multi-armed bandits with local differential privacy

Wenbo Ren, Xingyu Zhou, Jia Liu, Ness B Shroff

arxiv preprint arXiv:2007.03121

A Note on Load Balancing in Many-Server Heavy-Traffic Regime

Xingyu Zhou, Ness Shroff

arxiv preprint arXiv:2004.09574

A Note on Stein's Method for Heavy-Traffic Analysis

Xingyu Zhou, Ness Shroff

arxiv preprint arXiv:2003.06454

On the Fenchel Duality between Strong Convexity and Lipschitz Continuous Gradient

Xingyu Zhou

arxiv preprint arXiv:1803.06573

Talks

Recent Theoretical Advances in Private Reinforcement Learning

Tutorial, ACM SIGMETRICS'25

06/2025

The Interplay between Privacy and Robustness: from Mean Estimation to LLM Alignment

CSP Seminar, UMich, Ann Arbor (Host: Vijay Subramanian) 09/2025
CAD Seminar, Wayne State University (Host: Yan Wang) 12/2024

Contextual Bandits with Constraints Revisited: A Modular Approach with Improved Rates

Safe RL Seminar (Host: Shangding Gu) 08/2024

On Differentially Private Federated Linear Contextual Bandits

ASU (Host: Guoliang Xue) 10/2023
INFORMS Annual Meeting 10/2023
Robotics and Control Seminar, MSU (Host: Vaibhav Srivastava) 09/2023
AI-EDGE Seminar, OSU 03/2023

Shuffle Private Linear Contextual Bandits

Big Data and ML Seminar, UCLA (Host: Quanquan Gu) 05/2022

Stein's Method for Heavy-traffic Analysis: Load Balancing and Scheduling

INFORMS Annual Meeting 10/2021
YEQT workshop 06/2021

Asymptotically Optimal Load Balancing in Large-scale Heterogeneous Systems with Multiple Dispatchers

INFORMS Annual Meeting 10/2020

Heavy-traffic Delay Optimality in Pull-based Load Balancing Systems: Necessary and Sufficient Conditions

INFORMS Annual Meeting 09/2019
RSRG Seminar, Caltech, 02/2019

Load balancing in heavy traffic: Theory and algorithms

CMU 09/2018

Teaching

Online and Adaptive Methods for Machine Learning

ECE 7640, Wayne State University Fall 2021/2024/2025

A brand new graduate course on sequential decision-making, covering online learning, bandits, reinforcement learning as well as applications in language models such as alignment and reasoning.

Object-Oriented Programming for ECE

ECE 2050, Wayne State University 2022 – 2025

A brand new undergraduate course on programming with C++, with a focus on computational thinking and general problem-solving skills by leveraging recursion, backtracking, data structures and OOP.

Algorithms and Data Structures

ECE 4050, Wayne State University Winter 2021/2022, Fall 2022/2023

An existing course, but with a brand new set of lecture notes.

Mentoring

Current PhD Students

Wenqian Weng (UC Davis, BS; UW, MS)

Yi He (Beijing Jiao Tong University, BS)

PhD Committee

Duo Cheng (Virginia Tech)	Expected 2026
Mahdi Rouholamini (Wayne State University)	2025
Changyu Gao (University of Wisconsin-Madison)	2025
Yuntian Deng (Ohio State University)	2021

Co-advised PhD Students and Postdocs

Duo Cheng (PhD, Virginia Tech with Bo Ji)

Changyu Gao (PhD, UW-Madison with Stephen Wright) → Amazon

Fengjiao Li (PhD, Virginia Tech with Bo Ji) → Assistant Professor, Shanxi University

Arnob Ghosh (Postdoc, OSU with Ness Shroff) → Assistant Professor, NJIT

Yuntian Deng (PhD, OSU with Ness Shroff) → Amazon

Remote/Summer Research Interns

Yulian Wu (PhD, KAUST) → Multiple Top Conference Papers

Wei Zhang (PhD, TAMU) → A NeurIPS paper

Wentao Weng (Yao Class, Tsinghua) → A SIGMETRICS paper, now PhD, MIT

Professional Service

Conference Organizing Committee

Web Chair: MobiHoc	2023–2025
SIGMETRICS	2026
Publicity Chair: WiOpt	2024

Conference TPC Members

NeurIPS (Area Chair)	2024-2025
SIGMETRICS	2022-2026
MobiHoc	2023-2025
INFOCOM	2022
WiOpt	2021

Reviewer and Panelist for Proposals

NSF US-UK Privacy Enhancing Technologies (PETs) prize challenge 2022

Reviewer for Journals

Journal of Machine Learning Research
Operations Research
IEEE Transactions on Information Theory
IEEE/ACM Transactions on Networking
IEEE Transactions on Communications
IEEE Journal on Selected Areas in Communications
IEEE Transactions on Network Science and Engineering

Reviewer for Conferences

ICML, ICLR, NeurIPS, AISTATS, SIGMETRICS, MobiHoc, WiOpt

Outreach

ML Summer Camp for High School Students

Founder, ECE, Wayne State University

Summer 2023–2025