

# Xueru Zhang

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CONTACT INFORMATION	595 Drees Laboratories 2015 Neil Avenue Columbus, OH 43210	Phone: +1 (734) 548-1967 E-mail: <a href="mailto:zhang.12807@osu.edu">zhang.12807@osu.edu</a> Homepage: <a href="https://xueruzhang.github.io">xueruzhang.github.io</a>
APPOINTMENTS	<b>The Ohio State University</b> , Columbus, OH	
	• Assistant Professor, Department of Computer Science & Engineering	<i>Since 09/2021</i>
	• Faculty Affiliate, Translational Data Analytics Institute	<i>Since 10/2021</i>
EDUCATION	<b>University of Michigan</b> , Ann Arbor, MI	
	• Ph.D. in Electrical Engineering and Computer Science	<i>01/2017 - 08/2021</i>
	<b>Advisor:</b> Mingyan Liu	
	<b>Thesis:</b> <i>Socially Responsible Machine Learning: On the Preservation of Individual Privacy and Fairness</i>	
	<b>Committee:</b> Yiling Chen, Alfred Hero, Mingyan Liu, Atul Prakash, Aaron Roth	
	• M.Sc. in Electrical Engineering and Computer Science	<i>09/2015 - 12/2016</i>
	<b>Beihang University (BUAA)</b> , Beijing, China	
	• B.Eng. in Electronic and Information Engineering	<i>09/2011 - 06/2015</i>
RESEARCH INTERESTS	◦ Societal Aspects of Artificial Intelligence (Algorithmic Fairness, Privacy, Security) ◦ Machine Learning, Sequential Decision-Making, Distributed Optimization ◦ Algorithmic Economics	
AWARDS	• <b>ProQuest Distinguished Dissertation Award</b> , Finalist, University of Michigan <i>2021</i> • <b>Caltech Young Investigators Forum</b> , Engineering and Applied Science, Caltech <i>2021</i> • <b>Towner Prize for Outstanding Ph.D. Research</b> , Finalist, University of Michigan <i>2020</i> • <b>S. Lipschitz, M. A. Host and A. O. Smith Awards</b> , Finalist, University of Michigan <i>2020</i> • <b>EECS Rising Stars 2020</b> , University of California, Berkeley <i>2020</i> • <b>Rackham Predoctoral Fellowship</b> , University of Michigan <i>2020</i> • <b>ITA Graduation Day Invited Talk</b> , University of California, San Diego <i>2020</i> • <b>Outstanding Graduate of Beijing (Top 5%)</b> , Beijing, China <i>2015</i> • <b>First-Class Academic Scholarship</b> , BUAA, China <i>2012, 2013, 2014</i> • <b>Merit Student of Beijing (1/295)</b> , Beijing, China <i>2014</i> • <b>Baosteel Education Scholarship (1/3591)</b> , China <i>2013</i> • <b>National Scholarship (Top 2%)</b> , China <i>2012</i>	
CONFERENCE PUBLICATIONS	1. <a href="#">Fairness Interventions as (Dis)incentives for Strategic Manipulation</a> . <b>X. Zhang</b> , M. Khalili, K. Jin, P. Naghizadeh and M. Liu <i>In the 39th International Conference on Machine Learning (ICML), 2022.</i> Acceptance rate: 21.9%  2. <a href="#">Incentive Mechanisms for Strategic Classification and Regression Problems</a> . K. Jin, <b>X. Zhang</b> , M. Khalili, P. Naghizadeh and M. Liu <i>In ACM Conference on Economics and Computation (EC), 2022.</i> Acceptance rate: 27% <i>Contributed Talk in ICLR Workshop on Socially Responsible Machine Learning, 2022.</i>	

3. [Fair Sequential Selection Using Supervised Learning Models.](#)  
M. Khalili, **X. Zhang**, M. Abroshan  
*In the 35th Conference on Neural Information Processing Systems (NeurIPS), 2021.*  
Acceptance rate: 26%
4. [Cardiac Complication Risk Profiling for Cancer Survivors via Multi-View Multi-Task Learning.](#)  
T. Pham, C. Yin, L. Mehta, **X. Zhang**, and P. Zhang  
*In the IEEE International Conference on Data Mining (ICDM), regular paper, 2021.*  
Acceptance rate: 9.9%
5. [Improving Fairness and Privacy in Selection Problems.](#)  
M. Khalili, **X. Zhang**, M. Abroshan and S. Sojoudi  
*In the 35th AAAI Conference on Artificial Intelligence (AAAI), 2021.*  
Acceptance rate: 21%
6. [How Do Fair Decisions Fare in Long-Term Qualification?](#)  
**X. Zhang\***, R. Tu\*, Y. Liu, M. Liu, H. Kjellström, K. Zhang and C. Zhang  
*In the 34th Conference on Neural Information Processing Systems (NeurIPS), 2020.*  
Acceptance rate: 20%
7. [A Robust Energy and Emissions Conscious Cruise Controller for Connected Vehicles with Privacy Considerations.](#)  
C. Huang, **X. Zhang**, R. Salehi, T. Ersal and A. Stefanopoulou  
ASME Automotive and Transportation Systems **Best Paper Award Finalist**  
*In 2020 American Control Conference (ACC), 2020.*
8. [Group Retention when Using Machine Learning in Sequential Decision Making: the Interplay between User Dynamics and Fairness.](#)  
**X. Zhang\***, M. Khalili\*, C. Tekin and M. Liu  
*In the 33rd Conference on Neural Information Processing Systems (NeurIPS), 2019.*
9. [Contract Design for Purchasing Private Data Using a Biased Differentially Private Algorithm.](#)  
M. Khalili\*, **X. Zhang\*** and M. Liu  
*In the 14th Workshop on the Economics of Networks, Systems and Computation (NetEcon), 2019.*
10. [Incentivizing Effort in Interdependent Security Games Using Resource Pooling.](#)  
M. Khalili, **X. Zhang** and M. Liu  
*In the 14th Workshop on the Economics of Networks, Systems and Computation (NetEcon), 2019.*
11. [Effective Premium Discrimination for Designing Cyber Insurance Policies with Rare Losses.](#)  
M. Khalili, **X. Zhang** and M. Liu  
*In the 10th Conference on Decision and Game Theory for Security (GameSec), 2019.*
12. [Improving the Privacy and Accuracy of ADMM-based Distributed Algorithms.](#)  
**X. Zhang**, M. Khalili and M. Liu  
*In the 35th International Conference on Machine Learning (ICML), 2018.*
13. [Recycled ADMM: Improve Privacy and Accuracy with Less Computation in Distributed Algorithms.](#)  
**X. Zhang**, M. Khalili and M. Liu  
*In the 56th Annual Allerton Conference on Communication, Control, and Computing (Allerton), 2018.*
14. [Public Good Provision Games on Networks with Resource Pooling.](#)  
M. Khalili, **X. Zhang** and M. Liu  
*In the International Conference on Network Games Control and Optimization (NetGCoop), 2018.*
15. [A Fair and Interpretable Network for Clinical Risk Prediction: A Regularized Multi-view Multi-task Learning Approach.](#)  
T. Pham, C. Yin, L. Mehta, **X. Zhang**, P. Zhang

*In Knowledge and Information Systems (KAIS), 2022.*

16. [Differentially Private Real-Time Release of Sequential Data.](#)  
**X. Zhang**, M. Khalili and M. Liu  
*In ACM Transactions on Privacy and Security (TOPS), 2022.*
17. [Designing Contracts for Trading Private and Heterogeneous Data Using a Biased Differentially Private Algorithm.](#)  
M. Khalili\*, **X. Zhang\*** and M. Liu  
*In IEEE Access, 2021.*
18. [Resource Pooling for Shared Fate: Incentivizing Effort in Interdependent Security Games through Cross-investments.](#)  
M. Khalili, **X. Zhang** and M. Liu  
*In IEEE Transactions on Control of Network Systems (TCNS), 2020.*
19. [Recycled ADMM: Improving the Privacy and Accuracy of Distributed Algorithms.](#)  
**X. Zhang**, M. Khalili and M. Liu  
*In IEEE Transactions on Information Forensics and Security (TIFS), 2019.*
20. [Predictive Cruise Control with Private Vehicle-to-Vehicle Communication for Improving Fuel Consumption and Emissions.](#)  
**X. Zhang\***, C. Huang\*, M. Liu, A. Stefanopoulou and T. Ersal  
*In IEEE Communications Magazine, 2019.*
21. [Long-Term Impacts of Fair Machine Learning.](#)  
**X. Zhang**, M. Khalili and M. Liu  
*In Ergonomics in Design: The Quarterly of Human Factors Applications, 2019.*
22. [Fairness in Learning-Based Sequential Decision Algorithms: A Survey.](#)  
**X. Zhang** and M. Liu  
*Springer Studies in Systems, Decision and Control, Handbook on RL and Control, 2021.*
23. Fairness and Accuracy under Domain Generalization.  
T. Pham, **X. Zhang**, P. Zhang
24. Fair Supervised Learning Under Equalized Loss Constraint.  
M. Khalili, **X. Zhang**, M. Abroshan and I. Vakili
25. Controlling Information Leakage in Federated Learning: A Framework for Improved Privacy and Accuracy.  
T. Yin\*, **X. Zhang\***, M. Khalili and M. Liu  
(\* indicates equal contribution)

#### BOOK CHAPTERS

#### SUBMITTED PAPERS

#### GRANTS

1. **(PI)** Cisco Research 01/2023 - 12/2023  
*Federated Learning with Edge Dynamics*  
with Aylin Yener  
Total award amount: \$200,000
2. **(PI)** NSF CISE Core Program 10/2022 - 09/2025  
*Long-Term Impact of Fair Machine Learning under Strategic Individual Behavior*  
with Mohammad Mahdi Khalili  
Total award amount: \$600,000
3. **(PI)** Clinical and Translation Science (CCTS) Pilot Award 10/2022 - 09/2023  
with Ping Zhang and Jeffrey Caterino and Laxmi Mehta

Total award amount: \$50,000

4. **(PI)** OSU President's Research Excellence Accelerator Award

07/2022 - 06/2023

*Fair Machine Learning Adaptable to Deployment Environments in Healthcare*  
with Ping Zhang and Jeffrey Caterino

Total award amount: \$50,000

TEACHING

**Instructor**, The Ohio State University

- CSE 3521: Survey of Artificial Intelligence I: Basic Techniques
- CSE 5523: Machine Learning and Statistical Pattern Recognition
- CSE 5539: Fairness in Machine Learning

*Fall 2022*  
*Spring 2022*  
*Fall 2021*

**Guest Lecturer**

- CSE 6521: Artificial Intelligence, The Ohio State University

*Fall 2021*

**Graduate Student Instructor**, University of Michigan

- EECS 501: Probability and Random Processes

*Winter 2020*

MENTORING

**Ph.D. Students**

- Xuwei Tan
- Tian Xie
- Zhiqun Zuo

*09/2022-*  
*09/2022-*  
*09/2022-*

**Ph.D. Candidacy Exam Committee Member**

- Tianchen Zhou, ECE, OSU (Advisor: Jia (Kevin) Liu)
- Tai-Yu Daniel Pan, CSE, OSU (Advisor: Wei-Lun (Harry) Chao)
- Hong-You Chen, CSE, OSU (Advisor: Wei-Lun (Harry) Chao)

*2022*  
*2022*  
*2022*

**M.Sc. and B.Sc. Students**

- Yunqing Qiu, Yizhi Wang

*2021-2022*

ACADEMIC  
SERVICES

**Journal and Conference Reviewer**

- Frontiers in Big Data
- International Conference on Artificial Intelligence and Statistics (AISTATS)
- IEEE Journal on Selected Areas in Communications (JSAC)
- Journal of Machine Learning Research (JMLR)
- International Conference on Machine Learning (ICML)
- AAAI Conference on Artificial Intelligence (AAAI)
- International Conference on Learning Representations (ICLR)
- IEEE Access
- IET Intelligent Transport Systems
- American Control Conference (ACC)
- Conference on Decision and Game Theory for Security (GameSec)
- IEEE Transaction on Information Forensics and Security (TIFS)
- Conference on Neural Information Processing Systems (NeurIPS)
- IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
- Conference on Decision and Control (CDC)

*Since 2022*  
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*Since 2019*

**Session Chair/Leader**

- **Session:** Fairness and bias in ML and NLP session  
*Women in Machine Learning (WiML) Workshop*, ICML
- **Session:** People, AI, and Fairness, Physics and Machine Learning  
*Information Theory and Applications (ITA) Workshop*, UCSD

*07/2020*  
*02/2020*

**Workshop Organizer**

- TDAI Foundations CoP Deep Learning Summer School, The Ohio State University

*06/2022*

- Workshop on Socially Responsible Machine Learning  
*International Conference on Learning Representations (ICLR)* 04/2022
- International Conference on Machine Learning (ICML)* 07/2021

#### Panelist

- Faculty Panel Discussion, New Faculty Orientation, College of Engineering, OSU 08/2022
- CogFest 2022, Center for Cognitive Brain Sciences, OSU 04/2022

#### Guest Editor

- Special Issue: Game Theory for Cybersecurity and Privacy, *Games*

#### Others

- **Judge**, CSE graduate student poster competition, The Ohio State University 02/2022
- **Judge**, poster session, TDAI Fall Forum, The Ohio State University 11/2021
- **Discussant**, *ECE Communications and Signal Processing Seminar*, University of Michigan 2020
  - Enabling Fast and Robust Federated Learning
  - Connections between Online Learning and Differential Privacy

INVITED TALKS	Towards Ethical AI: Improving Model Fairness and Privacy in Online Marketing and Advertising	06/2022
	◦ <b>Walmart Global Tech</b>	
	Fair Machine Learning under Social Dynamics	03/2022
	◦ <b>AI Club</b> , OSU	
	Long-Term Impact of Fair Machine Learning	12/2021
	◦ <b>Machine Learning Symposium</b> , Computer Science Department, USC	
	Fair Machine Learning with Human in Feedback Loops	06/2021
	◦ <b>Caltech Young Investigators Forum</b> , Engineering and Applied Science, Caltech	
	Trustworthy Machine Learning: On the Preservation of Individual Privacy and Fairness	2021
	◦ Emory University, <i>Department of Computer Science</i>	
	◦ Ohio State University, <i>Department of Computer Science &amp; Engineering</i>	
	◦ Purdue University, <i>School of Industrial Engineering</i>	
	◦ Purdue University, <i>Department of Computer Science</i>	
	◦ Pennsylvania State University, <i>College of Information Sciences &amp; Technology</i>	
	◦ University of California, Santa Cruz, <i>Department of Computer Science &amp; Engineering</i>	
	◦ University of Maryland, College Park, <i>Department of Electrical &amp; Computer Engineering</i>	
	◦ University of Notre Dame, <i>Department of Computer Science &amp; Engineering</i>	
	◦ Virginia Polytechnic Institute and State University, <i>Department of Computer Science</i>	
	◦ Washington University in St. Louis, <i>Department of Computer Science &amp; Engineering</i>	
	Human-Centric Machine Learning: On the Preservation of Individual Privacy and Fairness	07/2020
	◦ Shanghai Jiao Tong University, China	
	Human-Centric Machine Learning	02/2020
	◦ <b>Graduation Day</b> , <i>Information Theory and Applications Workshop</i> , UCSD	
WORKSHOP AND POSTER	How Do Fair Decisions Fare in Long-Term Qualification?	
	◦ <i>Engineering Graduate Symposium (EGS)</i> , University of Michigan	02/2021
	◦ <i>NeurIPS Workshop</i> , Consequential Decision Making in Dynamic Environments	12/2020
	◦ <i>EECS Rising Stars Workshop</i> , UC Berkeley	11/2020
	◦ Conference on Neural Information Processing Systems (NeurIPS)	12/2020
	Group Retention when Using Machine Learning in Sequential Decision Making: the Interplay between User Dynamics and Fairness	
	◦ <i>ICML Workshop</i> , Women in Machine Learning (WiML)	07/2020
	◦ <i>Information Theory and Applications Workshop</i> , UCSD	02/2020
	◦ Conference on Neural Information Processing Systems (NeurIPS), Vancouver	12/2019
	Long Term Impact of Fair Machine Learning in Sequential Decision Making: Representation Disparity and Group Retention	
	◦ ACM conference on Economics and Computation (EC), Phoenix	06/2019

- *EC Workshop*, Mechanism Design for Social Good (MD4SG), Phoenix 06/2019
- Using Resource Pooling to Obtain More Efficient Equilibrium in Interdependent Security Games
  - ACM conference on Economics and Computation (EC), Phoenix 06/2019
- Improving the Privacy and Accuracy of ADMM-Based Distributed Algorithms
  - International Conference on Machine Learning (ICML), Stockholm 07/2018
- Differential Privacy of ADMM-based Distributed Machine Learning Algorithms
  - *Engineering Graduate Symposium (EGS)*, University of Michigan 11/2017

SKILLS PYTHON, PYTORCH, TENSORFLOW, MATLAB, C/C++, HTML, CCS