

Xingtu Liu

Contact

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Education

	Simon Fraser University <i>Master of Science (Computing Science, Thesis-Based)</i> Supervisor: Sharan Vaswani	December 2025
	University of Waterloo <i>Bachelor of Mathematics (Honours Mathematical Studies)</i> Supervisor: Gautam Kamath	August 2022

Research Interests

- Developing statistical theories for reinforcement learning and machine learning
- Designing provably efficient learning algorithms
- High-dimensional statistics

Preprints

	Linear Scalarizations are Enough for Risk-Neutral Multi-Objective Reinforcement Learning Valentin Tiriac*, <u>Xingtu Liu</u> *, Lin F. Yang, Csaba Szepesvari, Sharan Vaswani In Preparation	
	An Information-Theoretic Analysis of Out-of-Distribution Generalization in Meta-Learning with Applications to Meta-RL <u>Xingtu Liu</u> Submitted to L4DC 2026 (available on arXiv:2510.23448)	
	Central Limit Theorems for Asynchronous Averaged Q-Learning <u>Xingtu Liu</u> Submitted to L4DC 2026 (available on arXiv:2509.18964) NeurIPS 2025 Workshop on Optimization for Machine Learning	

Publications

	Sample Complexity Bounds for Linear Constrained MDPs with a Generative Model <u>Xingtu Liu</u> , Lin F. Yang, Sharan Vaswani International Conference on Algorithmic Learning Theory (ALT) 2026 NeurIPS 2025 Workshop on Constrained Optimization for Machine Learning	
	A Note on Arithmetic–Geometric Mean Inequality for Well-Conditioned Matrices <u>Xingtu Liu</u> Conference on Information Sciences and Systems (CISS) 2025 <i>A Short Note Partially Resolving a COLT 2021 Open Problem</i>	
	Neural Networks with Complex-Valued Weights Have No Spurious Local Minima <u>Xingtu Liu</u> Conference on Information Sciences and Systems (CISS) 2025 NeurIPS 2024 Workshop on Optimization for Machine Learning	
	Information-Theoretic Generalization Bounds for Batch Reinforcement Learning <u>Xingtu Liu</u> Entropy 2024 NeurIPS 2024 Workshop on Mathematics of Modern Machine Learning	
	Landscape Analysis of Stochastic Policy Gradient Methods <u>Xingtu Liu</u> European Conference on Machine Learning (ECML) 2024	

Improved Rates for Differentially Private Stochastic Convex Optimization with Heavy-Tailed Data

Gautam Kamath*, Xingtu Liu*, Huanyu Zhang* (*Alphabetical Order)

International Conference on Machine Learning (ICML) 2022

Oral Presentation (2.1% Acceptance Rate)

Thesis

Sample Complexity Bounds for Constrained Markov Decision Processes with Linear Function Approximation

Master's Thesis

Experience

Graduate Research Assistant

Simon Fraser University

Advisor: Sharan Vaswani

January 2024 - August 2025

Burnaby, BC

Undergraduate Research Assistant

University of Waterloo

Advisor: Gautam Kamath

September 2020 - May 2021

Waterloo, ON

Service

Conference Reviewer:

International Conference on Machine Learning (ICML)

2025

Conference on Neural Information Processing Systems (NeurIPS)

2024-2025

International Conference on Learning Representations (ICLR)

2025-2026

International Conference on Artificial Intelligence and Statistics (AISTATS)

2022-2024

Reinforcement Learning Conference (RLC)

2025

International Joint Conference on Neural Networks (IJCNN)

2025

Journal Reviewer:

Transactions on Machine Learning Research (TMLR)

2024

Workshop Reviewer:

NeurIPS Workshop on Optimization for Machine Learning (OPT)

2025

Teaching

Simon Fraser University

Fall 2023 - Fall 2025

Teaching Assistant

CMPT 409/981: Optimization for Machine Learning (1 term)

CMPT 210: Probability and Computing (1 term)

CMPT 120: Introduction to Computing Science and Programming (2 terms)

MACM 101: Discrete Mathematics (1 term)

Conference Talks

Vision and Learning Workshop at ICML 2025

July 2025

Sample Complexity Bounds for Linear Constrained MDPs with a Generative Model

Conference on Information Sciences and Systems

March 2025

A Note On Arithmetic-Geometric Mean Inequality for Well-Conditioned Matrices

Conference on Information Sciences and Systems

March 2025

Neural Networks with Complex-Valued Weights Have No Spurious Local Minima

European Conference on Machine Learning

September 2024

Landscape Analysis of Stochastic Policy Gradient Methods

Skills

Python, C, C++, R, Matlab, L^AT_EX

Languages

Chinese (Native), English (Fluent)