

Xiangyu Liu

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Education

University of Maryland, College Park

PhD student in Computer Science

- Advisor: Kaiqing Zhang

College Park, MD

Sep. 2021 – May. 2026 (expected)

Shanghai Jiao Tong University (SJTU)

B.E. in Computer Science

- Zhiyuan Honors Program of Engineering (an elite program for top 5% talented students)

Shanghai, China

Sep. 2017 – Jun. 2021

University of California, Berkeley

Exchange Student

GPA: 4.0/4.0

Berkeley, CA

Jan. 2020 – May 2020

Experience

Bloomberg AI

Research intern

- Research on bond pricing with recurrent neural networks.

NY, USA

June. 2022 – Sep. 2022

Research Interests

My research interests are centered around the fundamental aspects of (multi-agent) reinforcement learning, with a particular emphasis on the *game-theoretical/strategic, partially observable, and adversarial* settings.

Recently, my research is also extended to studying the interaction of LLM agent“s” through the lens of game theory and online learning.

Working in Progress

- Chanwoo Park*, Xiangyu Liu*, Asuman E. Ozdaglar, Kaiqing Zhang (* denotes equal contribution)
Do LLM Agents Have Regret? A Case Study in Online Learning and Games.
arXiv preprint arXiv:2403.16843, 2024 (Under Review)
Oral talk at ICLR 2024 workshop: How Far Are We From AGI

Publications

- Xiangyu Liu, Hangtian Jia, Ying Wen, Yujing Hu, Yingfeng Chen, Changjie Fan, Zhipeng Hu, Yaodong Yang
Towards Unifying Behavioral and Response Diversity for Open-ended Learning in Zero-sum Games
NeurIPS 2021
- Xiangyu Liu, Kaiqing Zhang
Partially Observable Multi-agent RL with (Quasi-)Efficiency: The Blessing of Information Sharing
ICML 2023
- Xiangyu Liu, Souradip Chakraborty, Yanchao Sun, Furong Huang

Rethinking Adversarial Policies: A Generalized Attack Formulation and Provable Defense in RL.

ICLR 2024 and **Outstanding Paper Award** at NeurIPS 2022 Workshop on Trustworthy and Socially Responsible Machine Learning.

- o Xiangyu Liu, Chenghao Deng, Yanchao Sun, Yongyuan Liang, Furong Huang
Beyond Worst-case Attacks: Robust RL with Adaptive Defense via Non-dominated Policies.
ICLR 2024 **Spotlight (Top 5%)**.
- o Yongyuan Liang, Yanchao Sun, Ruijie Zheng, Xiangyu Liu, Tuomas Sandholm, Furong Huang, Stephen McAleer
Game-theoretic Robust Reinforcement Learning Handles Temporally-coupled Perturbations.
ICLR 2024.
- o Yang Cai[†], Xiangyu Liu[†], Argyris Oikonomou[†], Kaiqing Zhang[†] ([†] denotes alphabetical order)
Provable Partially Observable Reinforcement Learning with Privileged Information.
NeurIPS 2024.
- o Pankayaraj Pathmanathan, Souradip Chakraborty, Xiangyu Liu, Yongyuan Liang, Furong Huang
Is Poisoning a Real Threat to LLM Alignment? Maybe More So Than You Think
AAAI 2025.

Talks

- o Talk at the 2024 INFORMS Optimization Society Conference (IOS 2024) on partially observable multi-agent RL, Houston, Texas, 2024
- o Contributed talk at the TSRML workshop of NeurIPS 2022 on adversarial policies in competitive games, 2022
- o Talk at RLChina on unifying diversity in open-ended learning for zero-sum games, China, 2021

Awards and Scholarships

- o **Outstanding Paper Award**, NeurIPS 2022 Workshop on Trustworthy and Socially Responsible Machine Learning. 2022
- o **Dean's Fellowship**, University of Maryland, College Park. 2021
- o **National Scholarship** (Top 0.2% in China), Ministry of Education of P.R.China. 2018&2019
- o **1st Prize in Chinese College Mathematics Competitions** (Top 1 at SJTU, selected for final). 2018
- o **A-class Scholarship for Excellent Academic Performance** (Top 1% at SJTU), SJTU. 2018

Outreach

- o Reviewer for UAI 2024, NeurIPS 2024, ICLR 2025, AISTATS 2025, AAMAS 2025, UAI 2025, ICML 2025
- o One of student organizers of summer AI camps at UMD 2023 for K-12 students
- o TAs: Common-sense reasoning in NLP (Fall 2021); Cryptography (Spring 2022)

Skills

- o Programming Languages: Python, C/C++, Java, MATLAB, \LaTeX
- o Deep Learning Packages: PyTorch, TensorFlow