

JIAYUAN LIU

Computer Science Department, Carnegie Mellon University, Pittsburgh, USA

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Education

Carnegie Mellon University

Aug 2023 – present

Ph.D. student in Computer Science, School of Computer Science

Pittsburgh, USA

- Member of [Foundations of Cooperative AI Lab](#)
- Advised by [Prof. Vincent Conitzer](#)

Tsinghua University

Aug 2019 – June 2023

Bachelor's in Computer Science and Technology at [Yao Class](#), summa cum laude

Beijing, China

- GPA: 4.0/4.0, Ranking: 1/94
- National Scholarship Winner, Outstanding Graduate of Tsinghua University

Research Interests

- Mechanism Design
- Large Language Model
- Multi-agent System
- Game Theory
- AI Agents
- Online Algorithm

Publications and Manuscripts

- Jiayuan Liu, Barry Wang, Jiarui Gan, Leon Xie, Mingyu Guo, Vincent Conitzer, “Incentive-Aware Multi-Fidelity Optimization for Generative Advertising in Large Language Models,” Manuscript 2025.
- Jiayuan Liu, Mingyu Guo, Vincent Conitzer, “An Interpretable Automated Mechanism Design Framework with Large Language Models,” Workshop on Information Economics and LLMs at the twenty-sixth ACM Conference on Economics and Computation (EC), July 2025 [\[pdf\]](#).
- Jiayuan Liu, Siwei Wang, Zhixuan Fang, “Policy Gradient Algorithm for Multi-armed Bandits Robust to Adversarial Corruptions,” the twenty-fourth International Conference on Autonomous Agents and Multiagent Systems (AAMAS), May 2025 [\[pdf\]](#).
- Mingyu Guo, Jiayuan Liu, Vincent Conitzer, “Extending Myerson’s Optimal Auctions to Correlated Bidders via Neural Network Interpolation,” the eighth International Conference on Algorithmic Decision Theory (ADT), October 2024 [\[pdf\]](#).
- Jiayuan Liu, Shuran Zheng, Yiling Chen, “Cost-Efficient Information Aggregation in Hierarchical Information Structure,” Manuscript 2023 [\[pdf\]](#).
- Heng Dong, Tonghan Wang, Jiayuan Liu, Chongjie Zhang, “Low-Rank Modular Reinforcement Learning via Muscle Synergy,” the thirty-sixth Conference on Neural Information Processing Systems (NeurIPS), November 2022 [\[pdf\]](#).
- Jiayuan Liu, Canhui Chen, Lulu Zhou, Zhixuan Fang, “Real-Time Recursive Routing in Payment Channel Network: A Bidding-based Design,” the twentieth International Symposium on Modeling and Optimization in Mobile, Ad Hoc and Wireless Networks (WiOpt), September 2022 [\[pdf\]](#).
- Heng Dong, Tonghan Wang, Jiayuan Liu, Chi Han, Chongjie Zhang, “Birds of a Feather Flock Together: A Close Look at Cooperation Emergence via Multi-Agent RL,” Manuscript 2021 [\[pdf\]](#).

Research Intern Experiences

Research Intern, Microsoft Research Asia | Advised by Dr. Siwei Wang

Dec 2022 – Mar 2023

- Research Topic – Multi-armed Bandits Algorithm Robust to Bounded Adversarial Corruptions

Research Intern, University of Chicago | Advised by Prof. Haifeng Xu

Sept 2022 – May 2023

- Research Topic – Optimal Mechanism for Pricing a Machine Learning Model

Research Intern, EconCS Group, Harvard University | Advised by Prof. Yiling Chen

Feb 2022 – Aug 2022

- Research Topic 1 – Cost-efficient Information Aggregation in Hierarchical Information Structure
- Research Topic 2 – Analysis of Extremization Methods in Information Aggregation

Research Intern, Shanghai Qizhi Institute (founded by Prof. Andrew C. Yao) | Advised by Prof. Zhixuan Fang

2021

- Research Topic – Mechanism and Protocol Design in Blockchain Systems

- Project Leader of College Students' Innovative Training Program** (National Program) **Dec 2021 – Dec 2022**
- Research Topic – Platform Economics: Design, Optimization and Regulation
- Student Research Training Program, Tsinghua University** | *Advised by Prof. Zhixuan Fang* **Sept 2021 – Jan 2022**
- Research Topic – Crowdsourcing and Online Learning, with Practical Applications
- Research Intern, the University of Hong Kong** | *Advised by Prof. Zhiyi Huang* **July 2021 – Sept 2021**
- Research Topic – AdWords in Recommendation Systems and Online Bipartite Matching
- Research Intern, Tsinghua University** | *Advised by Prof. Chongjie Zhang* **Apr 2020 – Mar 2021**
- Research Topic – A Close Look at Cooperation Emergence and Leadership Emergence

Awards

- Excellent Graduation Thesis Award, Tsinghua University, 2023
- Second Prize for Outstanding Project in the 2022 Student Research Training (SRT) Program, Tsinghua University, 2022
- Gold Medal in the National Finals of the thirty-fifth China Physics Olympiad (CPhO), 2018
- Ranked 1st among 400 finalists (selected from over 50,000 contestants nationwide through two rounds of preliminaries) in the experiment section of the thirty-fifth CPhO, 2018
- First Prize in the thirty-second Shanghai Adolescent Science and Technology Innovation Contest, 2017

Honors and Scholarships

- Outstanding Graduate of Beijing, Beijing Municipal Commission of Education, 2023
- Outstanding Graduate of Tsinghua University (top 2% university-wide), Tsinghua University, 2023
- Departmental Outstanding Graduate, Institute for Interdisciplinary Information Sciences, Tsinghua University, 2023
- China National Scholarship (top 0.2% nationwide), Ministry of Education of the People's Republic of China, 2022
- Yao Award for Academic and Research Achievements, presented by Dean Andrew C. Yao of IIIS, Tsinghua, 2022
- Tang Lixin Scholarship for Merit Student, Tang Lixin Education Foundation, 2021
- Comprehensive Merit Award (three times), Tsinghua University, 2020, 2021, 2022
- ICBC Scholarship, Industrial and Commercial Bank of China, 2020
- Freshman Scholarship, Tsinghua University, 2019
- Xuetang Scholarship for Merit Student (four times), Tsinghua University, 2019, 2020, 2021, 2022
- Merit Student of No.2 High School of East China Normal University, 2018

Talks and Teaching Experiences

- Teaching Assistant to Prof. Vincent Conitzer in *Computational Microeconomics* course at Carnegie Mellon University, 2024
- Teaching Assistant to Prof. Zhixuan Fang in *Game Theory* course at Tsinghua University, 2023
- Teaching Assistant to Prof. Ran Duan in *Theory of Computation* course at Tsinghua University, 2023
- Gave a talk titled “Two Tracks of Solutions to Blockchain Scalability Problem and Their Economic Implications” at Yao Seminar, Tsinghua University, 2023
- Gave a presentation of my accepted paper titled “Real-Time Recursive Routing in Payment Channel Network: A Bidding-based Design” at WiOpt 2022 conference [[slides](#)] [[video](#)]

Certificates and Skills

Programming Skills: Python, C++, Java, MATLAB, Go, SQL

Tools and Frameworks: L^AT_EX, MySQL, Matplotlib, PyTorch, Git

Language – English: Intermediate Interpreter Certificate, Shanghai Interpretation Accreditation

Leadership / Extracurricular

Voluntary Works

- Committee Member at Carnegie Mellon University Computer Science Department PhD Admissions Committee, 2025
- Volunteer at Tsinghua University Undergraduate Admissions Committee, 2020, 2021

Student Leader

- Class President of Yao Class 2023, Sept 2021 – June 2023