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

- Game Theory
- Economics and Computation
- Incentives in Blockchain System
- Information and Mechanism Design
- Multi-agent System
- Online Algorithm

Publications and Manuscripts

- 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, 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, Siwei Wang, Zhixuan Fang, "Policy Gradient Algorithm for Multi-armed Bandits Robust to Adversarial Corruptions," (in submission).

- Jiayuan Liu, Shuran Zheng, Yiling Chen, "Cost-Efficient Information Aggregation in Hierarchical Information Structure," [pdf] (in submission).

- 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," [pdf] (in submission).

Research Experience

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. 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: LaTeX, MySQL, Matplotlib, PyTorch, Git

Language – English: Intermediate Interpreter Certificate, Shanghai Interpretation Accreditation

Leadership / Extracurricular

Voluntary Works

- Volunteer at Tsinghua University Undergraduate Admissions Committee

Student Leader

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