

# Ruicheng Ao

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## EDUCATION

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09/2019-07/2023    **School of Mathematical Sciences, Peking University**  
**B.S. in Mathematics**  
GPA: 3.9/4.00

09/2023-05/2027    **Institute for Data, Systems, and Society (IDSS) at MIT**  
Expected    **Ph.D in Social & Engineering Systems**  
**Advisor: David Simchi-levi**  
GPA: 5.0/5.0

## RESEARCH INTERESTS

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My research focuses on online **decision making**, encompassing **machine learning**, **online resource allocation problems**, and **experimental design**. I'm interested in exploring data-driven theoretical and algorithmic frameworks with practical applications in various fields, including **revenue management**, **inventory control**, **service systems**, **healthcare**, and **sequential hypothesis testing**.

## PREPRINTS

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1. Ruicheng Ao, Hongyu Chen and David Simchi-Levi, "Prediction-Guided Active Experiments", <https://arxiv.org/abs/2411.12036>
2. Ruicheng Ao, Hengyu Fu, and David Simchi-levi, "Two-stage Online Reusable Resource Allocation: Reservation, Overbooking and Confirmation Call", [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=4990991](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4990991), available on SSRN.
3. Ruicheng Ao, Hongyu Chen, David Simchi-levi, Feng Zhu, "Bayesian Online Multiple Testing: A Resource Allocation Approach", [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=4723579](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4723579), available on SSRN, finalist in *Revenue Management and Pricing 2024 Jeff McGill Student Paper Award*.
4. Cheng Chen, Ruitao Chen, Tianyou Li, Ruicheng Ao, Zaiwen Wen, "Monte carlo policy gradient method for binary optimization", arXiv preprint arXiv:2307.00783, under major review at *Mathematical Programming*.

## PUBLICATIONS

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1. Ruicheng Ao, Shicong Cen, and Yuejie Chi, "Asynchronous Gradient Play in Zero-Sum Multi-agent Games", International Conference on Learning Representations (ICLR), Kigali, Rwanda, May 2023.
2. Jiang Hu, Ruicheng Ao, Anthony Man-Cho So, Minghan Yang, Zaiwen Wen, "Riemannian Natural Gradient Methods", SIAM Journal on Scientific Computing 46 (1), A204-A231.

## WORKING PAPER

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1. Ruicheng Ao, Gan Luo, David Simchi-Levi, "OR for LLM inference, a two-stage control framework".
2. Ruicheng Ao, Jiashuo Jiang, David Simchi-Levi, "Learning Pricing-Based Online Resource Allocation with Misspecified Offline Data".
3. Ruicheng Ao, Jing Dong, "Admission Control for Transfer Request in Emergency Department".

## TEACHING

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1. 6.431x Probability - The Science of Uncertainty and Data (Fall 2024 TA)
2. 6.419x Data Analysis: Statistical Modeling and Computation in Applications (Summer 2024 TA)

## TALKS & PRESENTATIONS

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1. Business School, Sichuan University, 26/11/2024  
Prediction-Guided Active Experiment

2. INFORMS Annual Meeting 2024, Seattle, WA, 22/10/2024

Two-Stage Online Resource Allocation: Reservation, Overbooking and Confirmation Call

## **AWARDS**

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2024	Excellence Award in the Alibaba Global Mathematics Competition (Applied Math)
2024	Finalist, Revenue Management and Pricing 2024 Jeff McGill Student Paper Award
2022	National Scholarship
2022	1st in S.T Yau College Student Mathematics Contest (applied math, team)
2022	Excellence Award in the Alibaba Global Mathematics Competition (Applied Math)
2021	2nd in S.T. Yau College Student Mathematics Contest
2018	Silver medal in China Mathematics Olympic Competition

## **SKILLS & ADDITIONAL EXPERIENCE**

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Programming	Python, C/C++, R, MATLAB, Julia, html
Student Service	Member of Community Department, Student Union, School of Mathematical Sciences, Peking University