CHENGRUI QU

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5 Yiheyuan Rd, Haidian District, Beijing, China, 100871

Research interests

- Theoretical Foundations of Reinforcement Learning
- Learning and Control in Multi-agent Systems
- Life-long Learning Agents

Education

- **California Institute of Technology** *Jun. 2024 - Sep. 2024*
  Summer Undergraduate Research Fellowships (SURF) Pasadena, CA, USA
  ◦ Advisor: Adam Wierman
- **Peking University** *Sep. 2021 - Jun. 2025 (expected)*
  Major: Theoretical and Applied Mechanics Beijing, China
  ◦ GPA: 3.894/4.0, Average Score: 92.5/100, **Rank: 1/39**

Publications & Preprints

- **C. Qu**, L. Shi, K. Panaganti, P. You, and A. Wierman. Hybrid Transfer Reinforcement Learning: Provable Sample Efficiency from Shifted-Dynamics Data, 2024 (in submission to AIStats 2025)
- K. Mukhi, **C. Qu**, P. You, and A. Abate. Distributionally Robust Aggregation of Electric Vehicle Flexibility, 2024 (in submission, **Best Poster Award** in DTU PES Summer School 2024)

Research Experiences

- **Hybrid Transfer Reinforcement Learning: Provable Sample Efficiency From Shifted-Dynamics Data** *2024*
  ***Instructors**: Laixi Shi, Kishan Panaganti Badrinath; **Advisor**: Adam Wierman*
  ◦ Propose a novel RL setting for finite-sample analysis in practical hybrid transfer problems
  ◦ Establish a minimax lower bound on sample complexity in this setting
  ◦ Design an algorithm that provably achieves better sample efficiency than state-of-the-art pure online RL
- **Data-Driven Distributionally Robust Online Pricing with Price-Aware Demand** *2024*
  ***Advisor**: Pengcheng You*
  ◦ Propose an online pricing scheme under price-aware, time-coupled stochastic demand
  ◦ Develop tractable data-driven distributionally optimization methods for practical applications
- **Distributionally Robust Aggregation of Electric Vehicle Flexibility** *2024*
  ***Collaborator**: Karan Mukhi, **Advisor**: Pengcheng You*
  ◦ Study optimal control for electric vehicle charging under high-dimensional stochastic demand
  ◦ Develop distributionally robust methods to characterize the aggregate feasible set
  ◦ Design practical algorithms to compute the feasible set for downstream applications

Honors and Awards

- **Huatai Securities Technology Scholarship** *2024*
- **NSFC 1st Youth Student Basic Research Grant** *2023*
- **National Scholarship (Top undergraduate student award)** *2023*
- **Pacemaker to Merit Student, Peking University** *2023*
- **The First Prize in 14th National Zhou Peiyuan Mechanics Competition (Top 0.3%)** *2023*
- **Merit Student, Peking University** *2022*
- **The First Prize in 37th Chinese Physics Olympiad (Jiangsu Province)** *2020*
- **The First Prize in 34th Chinese Chemistry Olympiad (Jiangsu Province)** *2020*
- **The First Prize in 36th Chinese Maths Olympiad (Jiangsu Province)** *2020*

Teaching Experiences

- **Principle of Economics** *Spring 2024*
  TA, National School of Development, Peking University
- **International Trade** *Spring 2024*
  TA, National School of Development, Peking University

Invited Talks

- **Hybrid Transfer Reinforcement Learning: Provable Sample Efficiency From Shifted-Dynamics Data** *Sep. 2024*
  ORSC Data Science 2024, Beijing
- **Distributionally Robust Aggregation of Electric Vehicle Flexibility** *Mar. 2024*
  School of Data Science, The Chinese University of Hong Kong, Shenzhen

Professional Skills

Programming Skills: C++, Python, MATLAB, CUDA, Shell
Leadership: President of the Jiangsu Cultural Association, Peking University

References

1. **Adam Wierman**
   Carl F Braun Professor, Department of Computing and Mathematical Sciences
   California Institute of Technology
   Email: adamw@caltech.edu

2. **Pengcheng You**
   Assistant Professor, Department of Industrial Engineering and Management
   Peking University
   Email: pcyou@pku.edu.cn