

# Qiu hao Wang (Jerrison)

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## Education

- **City University of Hong Kong** Hong Kong, China  
*Ph.D in Data Science* 2019 - 2024 (expected)
  - Supervisor: Supervisor: Prof. Duan Li and Dr. Chin Pang Ho
  - Research area: Dynamic Decision Making; Optimization Algorithms; Robust Optimization; Reinforcement Learning
- **The Chinese University of Hong Kong** Hong Kong, China  
*M.Sc. in Mathematics* 2018 - 2019
  - Graduated with GPA 3.54/4.00
- **Xi'an Jiaotong University** Xi'an, China  
*B.S. in Statistics* 2014 - 2018
  - Graduated with GPA 3.23/4.00 (Class rank 2)
  - Thesis: Joint Chance Constraints Programming with Copula

## Research Experience

- **School of Data Science** City University of Hong Kong  
*Ph.D Candidate* 2020 -
  - Solve the bus scheduling problem with robust MDP techniques and tend to obtain a robust optimal skip-stop strategy.
  - Proposed the first generic policy gradient method for RMDPs, which monotonically reduces approximation errors to guarantee convergence to a globally optimal policy in both tabular RMDPs and RMDPs with continuous state and action space (practically).
  - Introduced a multilevel method (FPI) to solve a special type of ill-conditioned MDPs, which mainly combines basic first-order iterative methods with multigrid methods to overcome the failure of the classic policy iteration method.
  - Used distributionally robust optimization (DRO) technology to evaluate the robust performance, *i.e.*, expected total reward, VaR or CVaR, by choosing the worst-case heavy-tailed distribution only.
- **Department of Statistics** Xi'an Jiaotong University  
*Undergraduate Student* 2017 - 2018
  - Used Python to catch data sets of S&P 500 and DJIA from Yahoo Finance and applied final time series methods to study the volatility behaviors of these two indexes.

## Publications (Conference)

1. **Wang, Q.H.**, Ho, C. P., Petrik, M., Policy Gradient in Robust MDPs with Global Convergence Guarantee, accepted in the 40th International Conference on Machine Learning (ICML), 2023

## Working Papers

1. **Wang, Q.H.**, Ho, C. P., Fast Policy Iteration for Singularly Perturbed MDPs, under review in SIAM Journal on Control and Optimization.
2. **Wang, Q.H.**, Ho, C. P., Petrik, M., On the Convergence of Policy Gradient in Robust MDPs, Available online.
3. Yu, Z.D., **Wang, Q.H.**, Chow, A.H.F., Ho, C. P., Skip-stop Bus Scheduling using Robust Markov Decision Processes, under review in Transportation Research Part B.

## Academic Activities

### • Research Supervisions

MSc students at City University of Hong Kong (co-supervised with Dr. Chin Pang Ho):

- Qu Tong, Li Jiaxin and Zhang Junjie, Recommendation System for Creating Courses, 2021
- Wong Ka Wai, Li Ka Ho, and Choi Sheung Shing, Recommendation System for Creating Courses, 2021

### • Paper Reviews

- Journal: Machine Learning
- Conference: 26th International Conference on Artificial Intelligence and Statistics (AISTATS 2023), 37th Conference on Neural Information Processing Systems (NeurIPS 2023)

### • Teaching Assistant

City University of Hong Kong

- Optimization for Data Science, in Semester A 2020 and Semester A 2021
- Reinforcement Learning, in Semester B 2021 and Semester B 2022

## Honours

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|---|-------------------------|
| • School-level Award for Excellent Student                      | <i>September, 2017</i>  |
| • School-level Award for Excellent Leader                       | <i>September 2016</i>   |
| • School-level Award for Active Participants in Social Practice | <i>September, 2015</i>  |
| • Siyuan Scholarship for Outstanding Students (three times)     | <i>2015, 2016, 2017</i> |

## Skills

- **Programming and Markup Languages:** Python,  $\text{\LaTeX}$ , C++, R
- **Software:** MATLAB, MS Excel, MS Word, MS PowerPoint