

# Yanqiu Ruan

3 Research Link

Institute of Operations Research and Analytics  
National University of Singapore

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## ACADEMIC APPOINTMENT

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**National University of Singapore**

**Singapore**

**Research Fellow, Institute of Operations Research and Analytics**

**Sep 2025 - Present**

**Advisor: Chung-Piaw Teo**

## EDUCATION

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**Singapore University of Technology and Design(SUTD) - National University of Singapore(NUS) Singapore**

**SUTD-NUS joint program Ph.D. in Operations Research; GPA: 5.09/5**

**Sep 2020-Aug 2025**

**Advisors: Karthik Natarajan, Karthyek Murthy, Xiaobo Li**

**Thesis:** A Nonparametric Approach with Marginals for Consumer Choice and Beyond

**Huazhong University of Technology and Science (HUST)**

**Wuhan, China**

**• Master in Management Science and Engineering; GPA: 3.80/4 (85.62/100)**

**Sep 2017 - Jun 2020**

**Advisor: Kunpeng Li**

**Thesis:** Intelligent AGV dispatching and routing scheduling with applications in semiconductor manufacturing

**• Visiting Scholar at Center for Maritime Studies, NUS**

**Jun-Dec 2019**

**• Bachelor in Logistics Management; GPA: 3.86/4 (87.6/100); Outstanding Graduate Sep 2013 - Jun 2017**

## RESEARCH INTEREST

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**Methodologies:** Optimization Theory & Algorithm, Machine Learning, Discrete Choice Modeling

**Applications:** Data-driven Decision Making, Decision Making under Uncertainty, Revenue Management and Pricing, Transportation

## PUBLICATIONS AND PREPRINTS

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**[1] A Nonparametric Approach with Marginals for Modeling Consumer Choice** (with Xiaobo Li, Karthyek

Murthy, and Karthik Natarajan). ***Minor Revision in Management Science***. [\[arXiv\]](#)

- An extended abstract of this paper appears in the Proceedings of the 24th ACM Conference on Economics and Computation.

**[2] Going from a Representative Agent to Counterfactuals in Combinatorial Choice** (with Karthyek Murthy

and Karthik Natarajan). Under Review at **NeurIPS**, 2025. [\[arXiv\]](#)

**[3] A Unified Analysis for Assortment Planning with Multi-Purchase Using Marginal Distribution Models** (with Zeyu Sun, Xiaobo Li, and Selin Damla Ahipasaoglu). ***Major Revision in Operations Research***, 2023. [\[SSRN\]](#)

**[4] A Nonparametric Approach with Marginals for Modeling Consumer Choice** (with Xiaobo Li, Karthyek Murthy, and Karthik Natarajan). Proceedings of the **24th ACM Conference on Economics and Computation (EC'23)**, Page 1078, 2023. (accepted as a full paper; appeared as an extended abstract) [\[link\]](#)

**[5] Intelligent AGV Routing Scheduling with Applications in Semiconductor Production** (with Kunpeng Li and Tengbo Liu). **Computer Integrated Manufacturing Systems**, 28(9), 2022. [\[link\]](#) (A Chinese Journal Paper)

## WORK IN PROGRESS

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Beyond Classical FTPL: Ambiguity-Optimistic Best-of-Both-Worlds Algorithms for m-Set Semi-Bandits (with Bahar Takesen).

## INDUSTRIAL PROJECTS

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<b>Scoot Add-on Smart Recommendation</b>	<b>Sep 2025 -, SIA-NUS Digital Aviation Corp Lab, Singapore</b>
<b>Scoot Seat and Ancillary Bundle Optimization</b>	<b>Sep 2025 -, SIA-NUS Digital Aviation Corp Lab, Singapore</b>
<b>Core Project Member in Supply Chain Management</b>	<b>Dec 2017 - Sep 2018, HUST, Wuhan, China</b>
Mainly worked on supply chain strategy design and the implementation of the green supply chain in the supply chain management construction scheme for <u>China Communications Construction Co. LTD</u>	

## TALKS

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**Title: Going from a Representative Agent to Counterfactuals in Combinatorial Choice**

- 2025 INFORMS Annual Meeting, Atlanta, US, Oct 2025 (forthcoming)

**Title: A Nonparametric Approach with Marginals for Modeling Consumer Choice**

- 2025 INFORMS International Meeting, Singapore, Jul 2025
- 2024 INFORMS Annual Meeting, Seattle, US, Oct 2024
- Singapore Analytics and Operations Day, NUS, Singapore, Sep 2024
- Next-Gen Scholars Symposium & Analytics for X 2024, NUS, Singapore, Aug 2024
- 2023 INFORMS Annual Meeting, Phoenix, US, Oct 2023
- 15th CSAMSE Annual Conference, Shenzhen, China, Jul 2023
- 24th ACM Conference on Economics and Computations (EC'23), London, UK, Jul 2023 (Virtually)
- 13th POMS - HK International Conference, Hong Kong, China, Jan 2023
- 2022 INFORMS Annual Meeting, Indianapolis, US, Oct 2022

## TEACHING EXPERIENCE

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**Teaching Assistant At SUTD, Singapore**

- 40.530 Statistics (Ph.D. Level), Summer 2023;
- 40.017 Probability and Statistics (Undergraduate Level), Spring 2022;
- 40.015 Simulation Modeling and Analysis (Undergraduate Level), Fall 2021.

**Teaching Assistant At HUST, Wuhan, China**

- Supply Chain Management (Undergraduate Level), 2018 Fall;
- Logistics Management Experiments (Undergraduate Level), 2017 Fall and 2018 Spring;
- Management Integrated Lab (Undergraduate Level), 2016 Fall ;
- Operations Management (Master of Business Administration), 2018 Fall.

## HONORS AND AWARDS

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- Bonder Scholar for the 2024 Doctoral Student Colloquium at INFORMS 2024 Annual Meeting
- SUTD Ph.D. Fellowship, Sep 2020 - Aug 2025
- Graduate Academic Scholarship, First Class in Sep 2017, Second Class in Sep 2018 and Sep 2019
- Outstanding Graduate of HUST, Jun 2017
- Cai Xixian Inspirational Scholarship, Sep 2016
- Advanced Individual Scholarship, 2013-2015

- HUST Cup Women's Basketball Final, 3rd place in 2018, 2nd place in 2017

## COMPLETED PHD COURSES

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- **Courses taken at SUTD:** Linear Optimization, Stochastic Modeling, Statistics, Convex Optimization, Machine Learning, Metaheuristic Optimization, Special Topics in Operations Research (Submodularity and Online Optimization)
- **Courses audited at NUS:** Optimization in Data Science and Machine Learning, Stochastic Foundations of Decision-Aware Learning, Revenue Management, Discrete Optimization and Algorithms

## SERVICE

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- **Reviewer:** European Journal of Operations Research
- **Conference Session Chair:** INFORMS 2023, POMS - HK 2023

## SKILLS

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**Programming:** Python, R, Optimization Solvers, LaTeX

**Language:** English (fluent), Cantonese(native), Mandarin(native)

## REFEREES

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### Karthik Natarajan

Professor

Engineering Systems and Design, Singapore University of Technology and Design

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### Karthyek Murthy

Assistant Professor

Industrial and Systems Engineering, Viterbi School of Engineering, University of Southern California

[karthyek@usc.edu](mailto:karthyek@usc.edu)

### Xiaobo Li

Assistant Professor

Department of Industrial Systems Engineering and Management, National University of Singapore

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