

# JINGWEN TANG

Ph.D. Candidate

Department of Industrial and Operations Engineering, University of Michigan  
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## EDUCATION

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**University of Michigan, Ann Arbor, MI, USA**

Ph.D. in Industrial and Operations Engineering (GPA: 4.0/4.0)

Advisor: Professor Cong Shi

Joint Ph.D. in Scientific Computing

*August 2019 - Present*

*(Expected April 2024)*

*May 2021 - Present*

**Tsinghua University, Beijing, China**

B.E. in Industrial Engineering

*July 2015 - June 2019*

**University of California, Davis, CA, USA**

Study in Statistics

UC Education Abroad Program (UCEAP) Reciprocity Student

*Sep 2017 - Dec 2017*

## RESEARCH INTEREST

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**Methodologies:** Online Learning Algorithms, Machine Learning, Approximation Algorithms

**Applications:** Supply Chain Management, Revenue Management, Service Operations

## WORKING PAPERS/PROJECTS

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1. “Online Learning and Matching for Multiproduct Inventory Systems with General Upgrading”, **Jingwen Tang**, Cong Shi, Izak Duenyas, submitted to ***Production and Operations Management Society***.

*Outlines:* We first characterize the structure of the clairvoyant optimal joint ordering and allocation policy in a multiproduct system with general upgrading, for the full information problem. We then solve the problem with demand learning via a novel a new online learning algorithm termed stochastic gradient descent with perturbed gradient (SGD-PG) approach that achieves an optimal regret bound.

2. “Offline Personalized Pricing with Censored Demand under Causal Inference”, Zhengling Qi, **Jingwen Tang**, Ethan (Xingyuan) Fang, Cong Shi, **Major Revision** in ***Management Science***.

*Outlines:* We study a feature-based pricing problem with demand censoring in an offline data-driven setting. Through the lens of causal inference, we propose a novel data-driven algorithm that is motivated by survival analysis and doubly robust estimation. We quantify the theoretical regret and also demonstrate the efficacy of this proposed approach in large-scale numerical experiments.

3. “Learning in Dual-Sourcing Inventory Systems”, **Jingwen Tang**, Boxiao (Beryl) Chen, Cong Shi, **Major Revision** in ***Manufacturing and Service Operations Management***.

*Outlines:* We propose a two-layer nonparametric learning algorithm to approximate the optimal dual-index policy for the dual sourcing inventory system with backlogged demand. The algorithm admits an optimal regret bound and integrates stochastic bandits, sample average approximation techniques and simulation-based methods in a seamless and non-trivial fashion.

4. “Dynamic Assortment Optimization Problem under Contextual BTL Model”,  
**Jingwen Tang**, Esmaeil Keyvanshokoo, Cong Shi, working paper.

*Outlines:* We consider the dynamic assortment optimization problem with the demand represented by a contextual Bradley–Terry–Luce (BTL) model.

## PAPERS ACKNOWLEDGED

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1. Levi, Retsef and Rajan, Manoj and Singhvi, Somya and Zheng, Yanchong, Unifying Agricultural Wholesale Markets: Impact on Market Prices and Farmers’ Profitability (December 18, 2019). Proceedings of the **National Academy of Sciences**, PNAS February 4, 2020 117 (5) 2366-2371; first published January 21, 2020; <https://doi.org/10.1073/pnas.1906854117>

## CONFERENCE PRESENTATIONS

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1. Online Learning for Dual Index Policies in Dual Sourcing Systems, Jingwen Tang, Boxiao (Beryl) Chen, Cong Shi, presented at INFORMS 2022 (Indianapolis, IN).

## INDUSTRY EXPERIENCE

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### **Amazon**

May 2022 - Aug 2022

Research Scientist Intern, MOP (Modeling and Optimization), Bellevue, WA, USA

## HONORS AND AWARDS

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<i>Rackham Travel Grant at University of Michigan</i>	<i>2022</i>
<i>Graduate Fellowship by Industrial and Operations Engineering at University of Michigan</i>	<i>2019</i>
<i>Technology Innovation Award by Tsinghua University</i>	<i>2018</i>
<i>Meritorious Winner of 2018 MCM/ICM as team leader</i>	<i>2018</i>
<i>CSC Scholarships by China Scholarship Council</i>	<i>2017</i>
<i>Star Student of Winter Time Social Practice Program</i>	<i>2016</i>
<i>Guanghua Scholarships by Tsinghua University</i>	<i>2016</i>
<i>Academic Excellence Reward by Tsinghua University</i>	<i>2016</i>
<i>Social Practice Excellence Reward by Tsinghua University</i>	<i>2016</i>
<i>First Place in the 30<sup>th</sup> National Mathematical Olympiad in Jiangsu Province</i>	<i>2015</i>
<i>First Place in the 32<sup>nd</sup> Chinese Physics Olympiad in Jiangsu Province</i>	<i>2015</i>

## TEACHING/MENTORING

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### **Graduate Student Instructor, University of Michigan**

- IOE 511/Math 562: Continuous Optimization Methods *Winter 2021*
  - Instructor: Prof. Albert S. Berahas
  - Responsibilities: weekly office hours, homework grading
- IOE611/MATH633: Nonlinear Programming *Fall 2021*
  - Instructor: Prof. Salar Fattahi
  - Responsibilities: weekly office hours, homework grading
- IOE516: Stochastic Process II *Winter 2022, 2023*
  - Instructor: Prof. Cong Shi
  - Responsibilities: weekly office hours, homework grading
- IOE541: Optimization Methods in Supply Chain *Fall 2022*

- Instructor: Prof. Cong Shi
- Responsibilities: weekly office hours, homework grading

### **IOE Ph.D. Mentor Program, University of Michigan**

- Geyu Liang, IOE PhD Student

*2021 - 2022*

### **SERVICES AND PROFESSIONAL ACTIVITIES**

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- Graduate Student Coordinator, Department of Industrial and Operations Engineering, University of Michigan July 2021 - present
- Member of the Student Leadership Board, Department of Industrial and Operations Engineering, University of Michigan July 2021 - present
- Reviewer for Operations Research Letters

### **TECHNICAL STRENGTHS**

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**Programming Languages:** C, C++, Java, Python, Matlab, R, SAS, SQL

**Packages:** CPLEX, Gurobi, OpenMP, MPI, CUDA