JINGWEN TANG

Ph.D. Candidate

Department of Industrial and Operations Engineering, University of Michigan

(+1)734-882-9108 ⋄ tjingwen@umich.edu ⋄ 2815 IOE, 1205 Beal Avenue, Ann Arbor

EDUCATION

University of Michigan, Ann Arbor, MI, USA *August 2019 - Present*
Ph.D. in Industrial and Operations Engineering (GPA: 4.0/4.0) *(Expected April 2024)*
Advisor: Professor Cong Shi
Joint Ph.D. in Scientific Computing *May 2021 - Present*

Tsinghua University, Beijing, China *July 2015 - June 2019*
B.S. in Industrial Engineering

University of California, Davis, CA, USA *Sep 2017 - Dec 2017*
Study in Statistics
UC Education Abroad Program (UCEAP) Reciprocity Student

RESEARCH INTEREST

Methodologies: Online Learning Algorithms, Machine Learning, Approximation Algorithms
Applications: Supply Chain Management, Revenue Management, Service Operations

JOURNAL PUBLICATIONS

1. "Online Learning for Dual Index Policies in Dual Sourcing Systems",
Jingwen Tang, Boxiao (Beryl) Chen, Cong Shi, ***Manufacturing and Service Operations Management***, to appear.

   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.

WORKING PAPERS/PROJECTS

1. "Online Learning and Matching for Multiproduct Inventory Systems with General Upgrading",
Jingwen Tang, Cong Shi, Izak Duenyas, under review.

   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 Feature-Based Pricing under Censored Demand: A Causal Inference Approach",
Jingwen Tang, Zhengling Qi, Ethan (Xingyuan) Fang, Cong Shi, under review.

   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. "Remunerating Newsvendor Problem in a Two-Sided Market",
Jingwen Tang, Cong Shi, Izak Duenyas, under review.

Outlines: We introduce a new model, the "remunerating newsvendor" problem, which extends the classical price-setting newsvendor problem to incorporate remuneration decisions in two-sided markets. We propose a new algorithm called Bandit Bisection Search (BBS) to solve the incomplete information problem for which matching upper and lower regret bounds are established.

PAPERS ACKNOWLEDGED

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

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

2. Online Learning for Dual Index Policies in Dual Sourcing Systems, Jingwen Tang, Boxiao (Beryl) Chen, Cong Shi, presented at Amazon Modeling and Optimization (MOP) Lunch and Learn Seminar.

INDUSTRY EXPERIENCE

Amazon   May 2022 - Aug 2022
Research Scientist Intern, MOP (Modeling and Optimization), Bellevue, WA, USA
Amazon   May 2023 - Aug 2023
Research Scientist Intern, MOP (Modeling and Optimization), Bellevue, WA, USA

HONORS AND AWARDS

Richard C. Wilson Prize for Best Student Paper	*2023*
Rackham Travel Grant at University of Michigan	*2022, 2023*
Graduate Fellowship by Industrial and Operations Engineering at University of Michigan	*2019*
Technology Innovation Award by Tsinghua University	*2018*
Meritorious Winner of 2018 MCM/ICM as team leader	*2018*
CSC Scholarships by China Scholarship Council	*2017*
Star Student of Winter Time Social Practice Program	*2016*
Guanghua Scholarships by Tsinghua University	*2016*
Academic Excellence Reward by Tsinghua University	*2016*
Social Practice Excellence Reward by Tsinghua University	*2016*
First Place in the 30th National Mathematical Olympia in Jiangsu Province	*2015*
First Place in the 32nd Chinese Physics Olympia in Jiangsu Province	*2015*

TEACHING/MENTORING

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

- 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 *Production and Operations Management*, *Operations Research Letters*

TECHNICAL STRENGTHS

Programming Languages: C, C++, Java, Python, Matlab, R, SAS, SQL
Packages: CPLEX, Gurobi, OpenMP, MPI, CUDA