JINGWEN TANG

Ph.D. Candidate

Department of Industrial and Operations Engineering, University of Michigan

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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.E. 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

WORKING PAPERS/PROJECTS

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 Keyvanshokooh, 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

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

INDUSTRY EXPERIENCE

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

HONORS AND AWARDS

Rackham Travel Grant at University of Michigan	*2022*
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*

GRADUATE COURSEWORK

- IOE 512 Dynamic Programming
- IOE 515 Stochastic Process I
- IOE 516 Stochastic Process II
- IOE 541 Optimization Methods in Supply Chains
- IOE 600 Function Space Methods in System Theory
- IOE 610 Linear Programming II
- IOE 611 Nonlinear Programming
- IOE 612 Network Flows
- IOE 614 Integer Programming
- IOE 691 Approximation Algorithms
- EECS 587 Parallel Computing
- EECS 598-002 Reinforcement Learning
- EECS 598-015 Randomness and Computation
- STATS 625 Probability and Random Processes I

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 Operations Research Letters

TECHNICAL STRENGTHS

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