WENXUAN LIU

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EDUCATION

- **Columbia University**, New Tork, NY — Ph.D. Candidate in Operations Research (advised by Adam N. Elmachtoub, Tianyi Lin), 2024-Present, GPA 4.05/4.3
- **Tsinghua University**, Beijing, China — B.S. in Industrial Engineering (Minor: Software Engineering) 2019-2024, GPA: 3.98/4.0 (Rank 1/67)

PUBLICATION AND PREPRINTS

1. Wenxuan Liu, X. Liu, M. Liu, H. Qin and Z. Zhang, Tackling Decision Dependency in Contextual Stochastic Optimization, Production and Operations Management, 2024, major revision.

INDUSTRY EXPERIENCE

Qingzhi Optimization, Tianjin, China, *Optimization Engineer* 2021-2022

- Joined as one of the earliest member in this start-up and worked on several projects (led the whole technical part of those projects and negotiate with customers as a technical staff).
- Production planning for a food company (6 workshops, 20+ products) with a generalizable scheduling model. Our model reduced the planning time from days to hours and could accommodate new products smoothly.
- Developed a production scheduling system for a manufacturer (43 products, 500+ processes). Our model reduced the planning time and increased their device utility by 20% in their first-turn testing.

RESEARCH EXPERIENCES

1. Adam N. Elmachtoub, Tianyi Lin, Wenxuan Liu(α-β), Model Extraction Attacks in Contextual Optimization. Working paper.

   Developed a novel model-extraction attack on contextual optimization framework. Proposed an attacking framework that allows an attacker to recover a decision maker's predictive model and developed a defense mechanism in responding to threats.

2. Wenxuan Liu, X. Liu, M. Liu, H. Qin, Z. Zhang, Tackling Decision Dependency in Contextual Stochastic Optimization. Under Review.

   Focused on the decision dependent contextual optimization (decision will affect the randomness of model parameters). Proposed the contextual gradient and the corresponding contextual gradient-based algorithm with convergence guarantee to address the challenge of decision dependency.

3. Wenxuan Liu, R. Zhu and H. Qin, Dynamic Pricing with Price Protection Guarantee. Working paper.

   Investigated online learning algorithms for dynamic pricing under "price protection" guarantees (refunds to earlier buyers if price drops). Developed online algorithms with near-optimal regret bounds for single-product pricing and extended the analysis to multi-product cases.

TALKS

- Tackling Decision Dependency in Contextual Stochastic Optimization. *2025 Purdue Supply Chain & Operations Management Conference, (August, 2025)*

SKILLS AND AWARDS

Skills: Python; C/C++; (basic) Java, R, MATLAB. Proficient in machine learning, prescriptive analytics, and optimization (linear/integer programming, dynamic programming).

Awards: Columbia University IEOR Fellowship (2024); Outstanding Graduate of Beijing (2024); Academic Excellence & Innovation Scholarships, Tsinghua University (2022-2023); Comprehensive Excellence Scholarship, Tsinghua University (2020-2021).