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RESEARCH INTERESTS	Stochastic modeling, service operations management, behavioral queueing theory, learning in queueing, reinforcement learning	
	<ul style="list-style-type: none"> • My primary research interests are stochastic modeling and optimization of modern service systems with consideration of individual human behavior and imperfect systemic information. My research employs tools from applied probability, game theory, optimization, statistics, and learning theory (in particular, online learning and reinforcement learning). • My current research studies, in the context of queueing systems, (i) how the strategic behavior of human customers and human servers influence service system design, and (ii) how analytical tools can enhance performance outcomes when full knowledge of the system is unavailable. 	
EDUCATION	The University of Chicago Booth School of Business	Chicago, IL
	<ul style="list-style-type: none"> • Ph.D. in Operations Management (Minor in Applied Probability) 2023 (expected) Advisor: Professor Amy R. Ward • M.B.A. 2022 	
	Tsinghua University	Beijing, China
	<ul style="list-style-type: none"> • B.S. in Industrial Engineering 2018 • B.A. in Economics 2018 	
PUBLICATIONS & PAPERS UNDER REVIEW	<p>[1] Yueyang Zhong, Ragavendran Gopalakrishnan, Amy R. Ward. 2021. Behavior-Aware Queueing: The Finite-Buffer Setting with Strategic Servers. Minor Revision at <i>Operations Research</i>.</p> <ul style="list-style-type: none"> • This foundational work develops a game-theoretic queueing framework to study how server work speed is affected by staffing level and wage when the queue buffer size is finite. • Finalist, 2022 INFORMS IBM Best Student Paper Award <p>[2] Yueyang Zhong, John R. Birge, Amy R. Ward. 2022. Learning the Scheduling Policy in Time-Varying Multiclass Many Server Queues. Major Revision at <i>Operations Research</i>.</p> <ul style="list-style-type: none"> • This is the first performance guarantee for the learning-to-schedule problem with time-varying arrivals, customer abandonment, and general service and patience distributions. <p>[3] Yueyang Zhong, Amy R. Ward, Amber L. Puha. 2022. Asymptotically Optimal Idling in the GI/GI/N+GI Queue. Published in <i>Operations Research Letters</i>.</p> <ul style="list-style-type: none"> • An idling policy is proved to be asymptotically optimal in a fully general many-server queue with impatient customers, when servers trade off throughput with fatigue. <p>[4] Yueyang Zhong, YeeMan Bergstrom, Amy R. Ward. 2020. Data-Driven Market-Making via Model-Free Learning. Published in <i>In Proceedings of the Twenty-Ninth International Joint Conference on Artificial Intelligence (IJCAI-20): Special Track on AI in FinTech</i>.</p> <ul style="list-style-type: none"> • This develops a Q-learning-based algorithm to guide how to sequentially place limit orders. The algorithmic performance passed the backtest of our partner market-making firm. 	
WORK IN PROGRESS	<p>[a] Yueyang Zhong, Zhixi Wan, Zuo-Jun Max Shen. 2020. Queueing Versus Surge Pricing Mechanism: Efficiency, Equity, and Consumer Welfare. Reject and Resubmit at <i>Management Science</i>.</p> <ul style="list-style-type: none"> • This uses a data-driven game-theoretic queueing model to study the operational benefits of a FCFS queueing mechanism over the commonly used dynamic pricing mechanism. • Finalist, 2021 INFORMS Conference on Service Science Best Student Paper Award 	

- [b] **Yueyang Zhong**, Ragavendran Gopalakrishnan, Amy R. Ward. Some Properties of the Erlang B and C Formulae. 2022. *Working paper (available upon request)*.
 - This derives some asymptotic properties of Erlang B and C formulae, which are key building blocks to study queueing systems when using the asymptotic approximation approach.
- [c] **Yueyang Zhong**, Ragavendran Gopalakrishnan, Amy R. Ward. Behavior-Aware Queues with Strategic Arrivals and Strategic Servers. 2022. *In preparation*.
 - This extends [1] to study the complicated interplay between customers and servers, and a price-of-anarchy result is discovered. A working paper is expected by November, 2022.
- [d] **Yueyang Zhong**, John R. Birge, Amy R. Ward. Learning to Schedule in Multiclass Many Server Queues with Abandonment: An Instance-Independent Regret. 2022. *In preparation*.
 - This extends [2] to concern a worst-case performance guarantee. A phased-UCB algorithm with forced exploration is provably optimal. A working paper is expected by June, 2023.
- [e] **Yueyang Zhong**, Ragavendran Gopalakrishnan, Amy R. Ward. An Experimental Investigation of Strategic Server Behavior in Queueing Contexts. 2022. *In progress*.
 - The experiment has been pre-registered on AsPredicted.org, approved by IRB, and completely coded up. We plan to launch it on Prolific to collect data by October, 2022.

HONORS AND AWARDS

- Finalist, IBM Best Student Paper Award, INFORMS 2022
- Finalist, Best Service Science Student Paper Award, INFORMS Conference on Service Science 2021
- Ph.D. Fellowship, Booth School of Business 2018–2023
- Distinguished Undergraduate Thesis Award, Tsinghua University 2018
- Outstanding Undergraduate Award, Tsinghua University 2018
- First Prize, Chinese Physics Olympiad 2014

PRESENTATIONS

- Behavior-Aware Queueing: The Finite-Buffer Setting with Strategic Servers [1]
 - INFORMS Annual Meeting Oct 2022
 - Young Researchers Workshop, Cornell University (Poster), Ithaca Oct 2022
 - CORS/INFORMS International Conference, Vancouver, Canada June 2022
 - POMS, Virtual April 2022
 - MSOM Conference Meeting, Virtual June 2021
 - Stochastic Systems Seminar, Mathematical Sciences, UCSD, Virtual April 2021
 - INFORMS Annual Meeting, Virtual Nov 2020
 - INFORMS Annual Meeting, Phoenix, AZ Nov 2018
- Learning the Scheduling Policy in Time-Varying Multiclass Many Server Queues [2]
 - INFORMS Annual Meeting Oct 2022
 - International Conference of the Chinese Scholars Association for Management Science and Engineering (CSAMSE), Virtual July 2022
 - CORS/INFORMS International Conference, Vancouver, Canada June 2022
 - MOILS Seminar, Stern School of Business, NYU, Virtual Feb 2022
 - INFORMS Annual Meeting, Anaheim, CA Oct 2021
- Queueing Versus Surge Pricing Mechanism: Efficiency, Equity, and Consumer Welfare [a]
 - INFORMS Conference on Service Science, Virtual Dec 2020
 - Mechanism Design for Social Good (MD4SG), Virtual Aug 2020
 - INFORMS Annual Meeting, Seattle, WA Oct 2019
- Data-Driven Market-Making via Model-Free Learning [4]
 - POMS, Virtual May 2021
 - IJCAI-PRICAI, Virtual Jan 2021

TEACHING EXPERIENCE	<p>The University of Chicago Booth School of Business Teaching Assistant (MBA Program)</p> <p>Applied Regression Analysis (MBA core, 180+ students) <i>Fall 2020, Fall 2021</i></p> <ul style="list-style-type: none"> • Held weekly R review sessions to assist students with R programming. <p>Operations Management: Business Process Fundamentals (MBA core, 180+ students) <i>Winter 2020</i></p> <ul style="list-style-type: none"> • Independently held two review sessions, and prepared midterm and final exam questions. <p>Managing Service Operations (MBA elective, 80+ students) <i>Winter 2022</i></p> <ul style="list-style-type: none"> • Supervised student groups developing case materials in collaboration with multiple companies for the final project, independently held final review session, and led weekly office hours.
INDUSTRY EXPERIENCE	<p>Pinterest Labs Remote Research Intern, Ads Marketplace team <i>June 2021–Sept 2021</i></p> <ul style="list-style-type: none"> • Designed and implemented a causal reinforcement learning algorithm to dynamically control the ad load leading to over 30% improvement in the yearly ad revenue from offline evaluation. <p>Blue Fire Capital, LLC Chicago, IL Research Intern, Data Science Group <i>July 2019–Sept 2019</i></p> <ul style="list-style-type: none"> • Developed a reinforcement learning based trading strategy, which passed the firm’s backtest with a Sharpe ratio above 3 and tripled the cumulative PnL over one month; see [4] for reference. <p>DiDi Beijing, China Research Intern, Research Center of Innovation and Operations <i>Jan 2018–July 2018</i></p> <ul style="list-style-type: none"> • Built a theoretical queueing model to explain the firm’s strategy transition from a surge pricing mechanism to a virtual queueing mechanism, which improves the passenger request fulfillment rate by 30.6% based on large-scale data with 10M+ users; see [a] for reference.
ACADEMIC SERVICE	<p>Ad hoc Reviewer: <i>Operations Research, Mathematics of Operations Research, Operations Research Letters, Service Science, INFORMS Conference on Service Science</i></p> <p>Organizer: Session chair for INFORMS Annual Meeting 2021, CORS 2022.</p> <p>Mentor: Advise Awaid Yasin (Master’s student, the University of Chicago Division of Social Sciences) on experimental research [e]; Tutor students in the MBA program at the University of Chicago Booth School of Business on operations- and statistics-related MBA courses.</p>
SELECTED PHD COURSES	<p>Linear Programming, Convex Optimization, Infinite Dimensional Optimization, Dynamic Programming, Approximate Dynamic Programming, Stochastic Optimization, Online Optimization, Real Analysis, Measure-Theoretic Probability I, III, Stochastic Processes, Brownian Motion and Stochastic Calculus, Queueing Theory, Dynamic Control of Stochastic Networks, Stochastic Calculus and Queueing Applications, Queueing Models for Service Operations Management, Networks: Introduction to Modeling and Analysis, Machine Learning, Statistical Inference, Foundations of Advanced Quantitative Marketing, Microeconomics I, II, Macroeconomics.</p>
SKILLS AND OTHERS	<p>Language: Chinese (native), English (fluent)</p> <p>Data/Statistical Tools: R, SQL</p> <p>Optimization Tools: CPLEX, GUROBI, AMPL</p> <p>Programming Language: Python, C/C++, JAVA</p> <p>Hobbies: Piano, Yoga, Line-drawing, Calligraphy, Traveling, Photography</p>

REFERENCES

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