Application to Digital Economics and AI Tutorial (2025)

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1 Course Work

My name is Xingchen (Cedric) Xu, and I am a fourth-year Ph.D. candidate in Information Systems at the University of Washington. In addition to my primary field of study, I have pursued minors in Marketing, Economics, and Statistics. Prior to embarking on my doctoral studies, I completed my undergraduate degree in Information Systems at Tsinghua University. My coursework includes machine learning (reinforcement learning), dynamic optimization, causal inference, microeconomic theory, applied game theory, stochastic models, and structural models. A comprehensive list of PhD-level courses I have completed is provided in Appendix A.

2 Research Interests

I envision a future characterized by a complex network of interactions among humans, artificial intelligence (AI), humans augmented by AI, and AI systems operating with humans in the loop. This intricate ecosystem encompasses multiple types of agents and their sophisticated interactions. To comprehend the dynamics within such a world, my research is structured into two primary phases.

Initially, I aim to investigate the behavior of these agents by examining their search strategies, computational processes (including learning), and decision-making mechanisms. Concurrently, I analyze market-level dynamics within multi-sided markets and networks. This dual focus allows for a comprehensive understanding of how individual agent behaviors influence and are influenced by broader market phenomena. Leveraging the insights gained from the first phase, the overarching objective of my research is to enhance AI systems, optimize market designs, and inform policy regulations. These efforts are directed towards maximizing overall welfare and ensuring its equitable distribution among all stakeholders.

To achieve these goals and maintain a holistic perspective, I have authored several papers on topics including algorithmic collusion, the adoption dynamics of generative AI (GenAI), the impact of GenAI on the gig economy, the dark aspects of social networks, and the interaction between user-generated content (UGC) and political consumerism. A selection of my recent works is provided in Appendix B. I am fortunate to conduct my research under the mentorship of Professors Yong Tan, Uttara M. Ananthakrishnan, Stephanie Lee, and Yanzhi Wang. Additionally, I am deeply honored to collaborate with colleagues across various disciplines, fostering a multidisciplinary approach to exploring these multifaceted topics.

Appendix A: Full Coursework List

- Causal Inference and Societal Impact of Technology (Uttara M. Ananthakrishnan)
- Data, Learning, and Decision-Making (Wanning Chen)
- Dynamic Choice Models and Counterfactual Reasoning (Hema Yoganarasimhan)
- Adaptive Experimentation (Lalit Jain)
- Causal Inference and Structural Econometric Models (Yong Tan)
- Big Data and Machine Learning in Finance (External - Semyon Malamud)
- Marketing Performance Measurement (Natalie Mizik)
- Econometrics (Thomas S Richardson, Jing Tao)
- The Structural and Counterfactual Theory of Causation (Carlos Cinelli)
- Microeconomics (Quan Wen, Kar-yiu Wong)
- Applied Game Theory (Jeffrey D. Shulman)
- Stochastic Models for Research in Business Management (Shi Chen)
- Advanced Topics in Inventory Management (Kamran Moinzadeh)
- Stochastic Models: Queuing and Simulation (Kamran Moinzadeh)

Appendix B: Part of Recent Works

(* denotes first author works or joint first author works)

1. * "Algorithmic Collusion or Competition: the Role of Platforms' Recommender Systems," with Stephanie Lee, Yong Tan.
    - *Under second-round review at Management Science.*
    - *Preliminary version appears in WDS 2023 (Phoenix).*
2. "Political Consumerism via Product Attributes: An Empirical Analysis of "Black-Owned Business" Reviews on Yelp.com," with Uttara M Ananthakrishnan, Maria Mitkina, Yong Tan.
    - *Under third-round review at Management Science.*
3. * "Social Audience Size as a Reference Point: Evidence from a Field Experiment," with Qili Wang, Yizhi Liu, Liangfei Qiu.
    - *Under fourth-round review at Management Science.*

- *Preliminary version appears in POMS 2022 (Virtual), CIST 2022 (Indiana), BBTC 2023 (Miami).*

4. "Fully Open Source Moxin-7B Technical Report," with Moxin Team.
    - *Codes, data, and reports of a Fully Open-sourced LLM are publicly available.*
5. ***** "Generate the Future of Work through AI: Empirical Evidence from Online Labor Markets," with Jin Liu, Xi Nan, Yongjun Li, Yong Tan.
    - *Under second-round revision at Information Systems Research.*
    - *WITS Best Paper Runner Up, 2023.*
    - *Preliminary version appears in Biz&GenAI 2023 (Wharton@San Francisco), WDS 2023 (Phoenix), AIMLBA 2023 (Temple@Philadelphia), WITS 2023 (Hyderabad, India), CMIC 2024 (Zhengzhou, China), INFORMS 2024 (Seattle), CIST 2024 (Seattle), POMS 2025 (Atlanta).*
6. "Learning to Adopt Generative AI," with Lijia Ma, Yumei He, Yong Tan.
    - *Under review at Information Systems Research.*
    - *Preliminary version appears in Biz&GenAI 2024 (Wharton@San Francisco), INFORMS 2024 (Seattle), CIST 2024 (Seattle), AIMLBA 2024 (Yale@New Haven), POMS 2025 (Atlanta).*
7. ***** "Search between the Lines: A Multimodel Deep Structural Model and LLM-based Optimization," with Jin Liu, Yongjun Li, Yong Tan.
    - *In preparation for submission to Management Science.*
    - *Preliminary version appears in POMS 2025 (Atlanta).*
8. ***** "Leverage Generative AI with the Assistance of Generative AI: A Large-scale Randomized Field Experiment," with Yumei He, Chuang Dai, Rui Luo.
    - *In preparation for submission to Nature Human Behavior.*
9. "Enhancing User Privacy Through Ephemeral Sharing Design: Experimental Evidence from Online Dating," with Yumei He, Ni Huang, Yili Hong, De Liu.
    - *Information Systems Research, Forthcoming.*
    - *ICIS Best Paper in IS Design, Development and Project Management, 2021.*
    - *Preliminary version appears in CODE 2020 (MIT), WISE 2020 (Virtual), HCISS 2021 (Virtual), DSI 2021 (Atlanta), CSWIM 2021 (Virtual), ICIS 2021 (Austin).*
10. ***** "Analytical AI in the age of Generative AI," with Zhenglun Kong, Yumei He, Yanzhi Wang, Yong Tan.
    - *In preparation for submission to Nature Computational Science.*