MINGZHANG YIN

Research areas: Bayesian Statistics ⋄ Causal Inference ⋄ Marketing
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EDUCATION

Ph.D. Statistics, The University of Texas at Austin 2015 - 2020

Thesis advisor: Prof. Mingyuan Zhou

B.Sc. Mathematics and Applied Mathematics, Fudan University 2011 - 2015

Undergraduate Thesis Advisor: Prof. Zhijie Cai

APPOINTMENTS

Assistant Professor August 2022 -
Department of Marketing, Warrington College of Business
Department of Statistics (courtesy appointment)
The University of Florida

Postdoctoral Research Scientist 2020 - 2022
Columbia University

Mentor: Profs. David M. Blei and Simon Tavaré

JOB DESCRIPTION

Teaching Marketing Analytics (MAR 6669) for Master's students in business school. The course website is https://mingzhang-yin.github.io/courses/analytics/spring23r/analytics23s-r.html

Mentoring graduate students to conduct marketing research. Current students: Weiran Lin, Ruijiang Gao.

Conduct research in marketing and statistics. Analyze public shopping data to understand consumer behaviors and design recommendation systems. Conduct Bayesian data analysis and causal inference.

PUBLICATIONS

* = Equal contribution

- **Mingzhang Yin**, Claudia Shi, Yixin Wang, David M. Blei. "Conformal Sensitivity Analysis for Individual Treatment Effects." Journal of the American Statistical Association (JASA-T&M), 2022
- Wenshuo Guo, **Mingzhang Yin**, Yixin Wang, Michael I. Jordan. "Partial Identification with Noisy Covariates: A Robust Optimization Approach." Conference on Causal Learning and Reasoning (CLeaR), 2021.
- Choudur Lakshminarayan and **Mingzhang Yin**. "Topological data analysis in digital marketing." Applied Stochastic Models in Business and Industry, 2020
- Zhendong Wang*, Ruijiang Gao*, **Mingzhang Yin***, Mingyuan Zhou, David M. Blei. "Probabilistic Conformal Prediction Using Conditional Random Samples." AISTATS, 2023.
- **Mingzhang Yin**, Yixin Wang, David M. Blei. "Optimization-based Causal Estimation from Heterogenous Environments." In submission. arXiv 2109.11990, 2021.
- **Mingzhang Yin**, Nhat Ho, Bowei Yan, Xiaoning Qian, Mingyuan Zhou. "Probabilistic Best Subset Selection via Gradient-Based Optimization." In submission, arXiv 2006.06448, 2020.

- Junzhe Shao, **Mingzhang Yin**, Xiaoxuan Cai, Linda Valeri. "Generalized Synthetic Control Method with State-Space Model." Accepted by Workshop on Causality for Real-world Impact, 2022.
- Russell Z Kunes, **Mingzhang Yin**, Max Land, Doron Haviv, Dana Pe'er, Simon Tavaré. "Gradient Estimation for Binary Latent Variables via Gradient Variance Clipping." AAAI, 2022.
- **Mingzhang Yin**, George Tucker, Mingyuan Zhou, Sergey Levine and Chelsea Finn. "Meta-Learning without Memorization." ICLR, 2020.
- Yuguang Yue, Yunhao Tang, **Mingzhang Yin** and Mingyuan Zhou. "Discrete Action On-Policy Learning with Action-Value Critic." AISTATS, 2020.
- **Mingzhang Yin**, YX Rachel Wang and Purnamrita Sarkar. "A Theoretical Case Study of Structured Variational Inference for Community Detection." AISTATS, 2020.
- Siamak Zamani Dadaneh, Shahin Boluki, **Mingzhang Yin**, Mingyuan Zhou and Xiaoning Qian. "Pairwise Supervised Hashing with Bernoulli Variational Auto-Encoder and Self-Control Gradient Estimator." UAI, 2020
- **Mingzhang Yin***, Yuguang Yue* and Mingyuan Zhou. (*equal contribution) "ARSM: Augment-REINFORCE-Swap-Merge Estimator for Gradient Backpropagation Through Categorical Variables." ICML, 2019.
- **Mingzhang Yin** and Mingyuan Zhou. "ARM: Augment-REINFORCE-Merge Gradient for Stochastic Binary Networks." ICLR, 2019.
- **Mingzhang Yin** and Mingyuan Zhou. "Semi-implicit Variational Inference." ICML, 2018.
- **Mingzhang Yin** and Mingyuan Zhou. "Semi-Implicit Generative Model." BDL workshop, 2018.
- Bowei Yan, **Mingzhang Yin** and Purnamrita Sarkar. "Convergence of Gradient EM for Multi-component Gaussian Mixture." NeurIPS, 2017.

WORKING PROJECTS

- Temporal Point Process for the Customer Journey.
  We use the public dataset to understand user skipping behaviors. The aim of this project is to delve into the intricate dynamics of user behavior on Spotify, focusing specifically on what prompts users to skip tracks. Leveraging public dataset available from Spotify, we aim to construct an innovative model based on a statistics model called Temporal Point Processes (TPP) to capture the temporal dynamics and inherent patterns in user interactions.
- Visualizing the Evolvement of Multi-User Activities on Content Platforms: A Multi-Dynamic Poisson System
  In this project, we propose to develop a 'Multi-Dynamic Poisson System' to capture, model, and visualize the evolution of multi-user activities on digital content platforms. Drawing upon large-scale, time-stamped user interaction data, our innovative system will leverage Poisson processes to track temporal dynamics and user-specific preferences in a unified framework. Our key aim is to visually represent the transformation of user engagement patterns over time, offering nuanced insights into how content consumption, social interaction, and community engagement evolve. This project promises valuable outcomes for improving user experience design, content recommendation algorithms, and engagement strategies on digital platforms.
- Conjoint Analysis with Adaptive Survey Design
  This project focuses on enhancing the efficiency and relevance of conjoint analysis by integrating an adaptive survey design approach. The goal is to optimize the process of gathering consumer preference data, making it more responsive to the respondent's answers in real-time. By dynamically adjusting questions based on previous responses, we aim to reduce respondent burden and improve the quality of collected data. The resultant adaptive conjoint analysis framework will not only provide more accurate

estimations of preference structures, but also pave the way for more personalized and responsive market research methodologies.

RECENT TALKS/PRESENTATIONS

- Invited talk. "Causal Inference for Individual Treatment Effects", AI2Heal Datathon, University of Florida Jan. 2023
- Invited talk. "Conformal Sensitivity Analysis for Individual Treatment Effects", Statistics Seminar, University of Florida Oct. 2022
- Invited talk. "Conformal Sensitivity Analysis for Individual Treatment Effects", IROM Seminar, University of Texas at Austin Oct. 2022
- Invited talk. "Partial Identification of Causal Effects via a Modern Optimization Lens", Econometrics Seminar, Boston University Mar. 2022
- Colloquium talk. Department of Quantitative Theory & Methods, Emory University Feb. 2022
- Colloquium talk. Warrington College of Business, University of Florida Jan. 2022
- Colloquium talk. Department of Statistics, Texas A&M University Jan. 2022
- Colloquium talk. Department of Statistics, Iowa State University Jan. 2022
- Colloquium talk. University of Notre Dame, Department of Applied and Computational Mathematics and Statistics Jan. 2022.
- Colloquium talk. University of Iowa, Tippie College of Business Dec. 2021.
- Invited talk. "Data analysis with Heterogeneous Datasets", Microsoft Research, Cambridge, MA Oct. 2021
- Invited talk. "Semi-Implicit Variational Inference", University of California, Irvine Feb. 2020
- Invited talk. "The Big Problem with Meta-Learning and How Bayesians Can Fix It, *Bayesian Deep Learning Workshop*, Vancouver Dec. 2019
- Short presentation. "Efficient Discrete Optimization with Correlated Samples", *ICML*, Long Beach June 2019
- Seminar talk. "Antithetic Sampling and Control Variates in Learning Binary Networks", *UT Austin Statistics Seminar*, Austin Dec. 2018
- Long presentation. "Black-box Variational Inference and Uncertainty Estimation", *ICML*, Stockholm July 2018

TEACHING AND ADVISING EXPERIENCE

Instructor, Marketing Analytics II	Spring 2023
Teaching Assistant, Introduction to Probability and Statistics	Fall 2017, Fall 2019
Teaching Assistant, Bayesian Statistical Methods	Spring 2016, Spring 2017
Teaching Assistant, Statistics in Market Analysis	Fall 2015, Spring 2016, Spring 2018
Teaching Assistant, Design and Analysis of Experiments	Spring 2017
Teaching Assistant, Linear Algebra	Fall 2018
Teaching Assistant, Bayesian deep learning	Spring 2019
Undergraduate Mentorship, Directed Reading Program, UT Math Department	Fall 2018, Spring 2019

SELECTED AWARDS AND HONORS

Graduate School Professional Development Award	2017, 2019
Google Archimedes Award	2019
The Graduate Continuing Bruton Fellowship	2018, 2019