

# Jiacheng Zou

[jiachengzou@stanford.edu](mailto:jiachengzou@stanford.edu) | +1 650.223.4385 | [Personal Website](#) | Expected graduation: July, 2024

## Education

<b>Stanford University</b>	Stanford, CA
PhD in Management Science & Engineering, with PhD Minor in Statistics.	2018 - Present
MS in Management Science & Engineering.	2016 - 2018
<b>Tianjin University of Finance and Economics</b>	Tianjin, China
BS Economics in Financial Engineering.	2012 - 2016

## Research Interests

Econometrics, Applied Statistics, Causal Inference, Healthcare, FinTech, Human-AI Interaction.

## Research

- Inferences of Large Panels with Many Variables** Coauthor: Markus Pelger  
*Job Market Paper*  
We identify, formulate and provide a solution for a new class of *multiple testing* problems, which arises after using machine learning on different individuals. Regularized machine learning methods complicates which statistical hypotheses to test, since the models can use different variables for different individuals. We formalize this problem as a two-dimensional hypotheses test, and combine post-selection inference with a novel multiple testing method to control for false discoveries. Empirically, we select sparse risk factors from a factor zoo of 114 variables, to explain 243 doubly-sorted U.S. stock portfolio returns.
- Learning Bipartite Relationship Graph with Applications for National Kidney Allocation Policy Evaluations** Coauthors: Johan Ugander, Itai Ashlagi  
Does exchange occur due to supply-demand relationship, beyond consideration of quality on *two-sided platforms*? We use the potential outcome framework from causal inference to define dyadic relationships. Leveraging repeated observations of interactions in the platform to construct supplier fixed effects, we propose a multiple testing method to adjust for platform size and control for false discoveries. We study the U.S. deceased donor kidney allocation system by analysis of > 500,000 deceased donor acceptance decisions of 90 Transplant Centers. The learned relationship graph between Transplant Centers and Organ Procurers provides new information that can help explain the acceptance rate differences across the country, even after we use machine learning to control for medical, logistical and patient priority contexts.
- AI Assistance in US Deceased Donor Kidney Allocation: an Information Nudge Experiment** Coauthors: Itai Ashlagi, Paulo Somaini, Nikhil Agarwal, Grace Guan  
We use medical, geographical and temporal information to identify at-risk cadaveric kidneys, through an AI-generated donor risk score. We design a retrospective *Randomized-Control Trial* to analyze how this AI generated information influences the decisions of practitioners in an IRB/HRSA-approved study.

#### 4. Large Dimensional Change Point Detection

Coauthors: Yang Fan, Markus Pelger

We study *change point detection* with hundreds of time series and unknown number of change points. We propose using multiple testing after LASSO screening to exactly recover change point positions, providing trade-off of power versus false discovery. We provide FWER control theory. In simulations, we showed 20% lift in F1 scores against benchmarks of Dynamic Programming search.

#### 5. Risk Premia Analysis in Post-Dodd-Frank MBS

Coauthor: Kay Giesecke

We study the different risk premia of Mortgage-Backed (MBS) Securities and To-Be-Announced (TBA) Securities. We price both classes of assets with detailed mortgage characteristics and deep neural networks. Our comparative studies capture the credit sharing distribution among different types of investors, and inform regulators of the MBS markets.

### Conference presentations

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- **Inferences of Large Panels with Many Variables**

INFORMS 2023 (Phoenix), North American Summer Meeting of the Econometric Society 2023 (UCLA), Asian Meeting of the Econometric Society 2023 (Tsinghua, virtual), Western Conference on Math Finance 2023 (UC Berkeley), NBER-NSF SBIES 2022 (WUSTL), California Econometrics 2022 (Stanford).

- **AI Assistance in US Deceased Donor Kidney Allocation**

NeurIPS 2023 Workshop on Learning from Time Series for Health (New Orleans, coauthor presented), INFORMS 2022 (Indianapolis).

- **Large Dimensional Change Point Detection**

ICML 2023 Workshop on Structured Probabilistic Inference & Generative Modeling (Honolulu, virtual).

### Teaching experiences

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**Master's/MBA** level courses at Stanford University

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| 1. MS&E 211X, Introduction to Optimization (Linear Programs, Lagrange Multipliers) | 2019               |
| 2. MS&E 245A, Investment Science (Mortgages, Bonds, CAPM & FF3)                    | 2020 (Twice), 2021 |
| 3. MS&E 245B, Advanced Investment Science (Black-Scholes Option Pricing)           | 2018               |
| 4. Saudi Industrial Development Fund Credit Analyst Mini-MBA Program               | 2019, 2020, 2021   |

**Undergraduate** level course at Stanford University

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| 1. MS&E 121, Introduction to Stochastic Modeling (Basic Markov Chains & CTMC) | 2020 |
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Cumulatively served ~**400 students** and received overall teaching evaluations of **>4 out of 5**.

### References

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**Markus Pelger** ([mpelger@stanford.edu](mailto:mpelger@stanford.edu)), Assistant Professor in MS&E, Stanford University

**Itai Ashlagi** ([iashlagi@stanford.edu](mailto:iashlagi@stanford.edu)), Professor in MS&E, Stanford University

**Kay Giesecke** ([giesecke@stanford.edu](mailto:giesecke@stanford.edu)), Professor in MS&E and ICME, Stanford University

### Services

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**Referee** - ICML, NeurIPS, Management Science.

**Organizer** - Stanford Advanced Financial Technology Lab Doctoral Seminar.

**Member** - First-generation Low-income Student Club of Stanford, Stanford Allies for Women in Science and Engineering, Stanford MS&E Admission Committee.

## Industry experiences

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<b>Meta</b> (Formerly: Facebook)	Data Scientist Intern	2022	Menlo Park, CA
<b>Siemens</b>	Software Project Management Intern	2016	Beijing, China