

# Jiacheng Zou

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## Education

### Stanford University

Stanford, CA

PhD in Management Science & Engineering, with PhD Minor in Statistics.

2024 (Exp.)

MS in Management Science & Engineering.

2018

### Tianjin University of Finance and Economics

Tianjin, China

BS Economics in Financial Engineering.

2016

## Research Interests

Applied Statistics, Healthcare.

## Research

### 1. Inferences of Large Panels with Many Variables

*Job Market Paper*

Coauthor: Markus Pelger

We formulate and provide a solution for a new class of *multiple testing* problems, which arise after using machine learning on different individuals. Regularized machine learning methods can use different variables for different individuals, which complicates the statistical variable selection problem. 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.

### 2. Learning Relationship Graph with Application in Organ 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 US deceased donor kidney allocation system by analyzing > 300,000 deceased donor acceptance decisions from 65 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.

### 3. Improving Deceased Donor Kidney Allocation with Machine Learning

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 the simulations, we showed a 20% increase in F1 scores against the benchmarks of the Dynamic Programming search.

### Conference presentations

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#### Inferences of Large Panels with Many Variables

- INFORMS Annual Meeting 2023
- North American Summer Meeting of the Econometric Society 2023
- Asian Meeting of the Econometric Society 2023
- Western Conference on Math Finance 2023
- NBER-NSF Seminar on Bayesian Inference in Econometrics and Statistics 2022
- California Econometrics Conference 2022

#### Improving Deceased Donor Kidney Allocation with Machine Learning

- NeurIPS Workshop on Learning from Time Series for Health (co-author presented, spotlight) 2023
- INFORMS Annual Meeting 2022

#### Large Dimensional Change Point Detection

- ICML Workshop on Structured Probabilistic Inference & Generative Modeling 2023

### Teaching experiences

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Teaching Assistant, Stanford University (2=Master's level, 1=Undergraduate level)

1. **MS&E 245A: Investment Science** (Fixed income, stocks, portfolio optimization) 2020 (Twice), 2021
2. Saudi Industrial Development Fund Credit Analyst professional education program 2019, 2020, 2021
3. **MS&E 121: Introduction to Stochastic Modeling** (Markov chains) 2020
4. **MS&E 211X: Introduction to Optimization** (Linear programs, Lagrange multipliers) 2019
5. **MS&E 245B: Advanced Investment Science** (Black-Scholes Option Pricing) 2018

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

### Service

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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 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 |