Jiacheng Zou

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Education

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

Research Interests

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

Research

(1) **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.

(2) **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, and leverage repeated observations of interactions in the platform to identifies edges that have statistically significant fixed effects. Learning of the fixed effects allows machine learning estimators, such as boosting forests, to control for covariates. The learned graph controls for falsely discovered edges via multiple testing. 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 graph provides characteristics that can help explain the acceptance rate differences across the country.

(3) **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 a novel donor risk score. The score is the predicted probability of non-utilization, estimated by random forests. 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 comparitive studies capture the credit sharing distribution among different types of investors, and inform regulators of the MBS markets.

Talks

- **Inferences of Large Panels with Many Variables**
  INFORMS 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 SBIES 2022, California Econometrics 2022.
- **AI Assistance in US Deceased Donor Kidney Allocation**
  NeurIPS 2023 Workshop on Learning from Time Series for Health (Spotlight), INFORMS 2022.
- **Large Dimensional Change Point Detection**
  ICML 2023 Workshop on Structured Probabilistic Inference & Generative Modeling.

Teaching experiences

Master's/MBA level courses at Stanford University

(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

(1)	MS&E 121, Introduction to Stochastic Modeling (Basic Markov Chains & CTMC)	2020

Cumulatively served ~**400 students** and received overall teaching evaluations of >**4 out of 5**.

References

Markus Pelger (mpelger@stanford.edu), Assistant Professor in MS&E, Stanford University
Itai Ashlagi (iashlagi@stanford.edu), Professor in MS&E, Stanford University
Kay Giesecke (giesecke@stanford.edu), Professor in MS&E and ICME, Stanford University

Services

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

Meta (Formerly: Facebook)	Data Scientist Intern	2022	Menlo Park, CA
Lianhai Capital	Quant Trading Intern	2016	Beijing, China
Siemens	Software Project Management Intern	2016	Beijing, China