

Academic Positions

- 2023– **Assistant Professor**, Department of Data Sciences and Operations, USC
2021–2023 **Foundations of Data Science Institute Postdoc Fellow**, UC Berkeley
Advisors: Peng Ding, Jasjeet Sekhon, Bin Yu

Education

- 2017–2020 **PhD Electrical Engineering and Computer Science**, MIT
Thesis: “Causal Inference: a Tensor’s Perspective”
Advisor: Devavrat Shah
2015–2017 **MS Electrical Engineering and Computer Science**, MIT
Thesis: “Robust Synthetic Control”
Advisor: Devavrat Shah
2011–2015 **BS Electrical and Computer Engineering**, UC San Diego
Advisors: Sujit Dey, Mohan Trivedi

Research Interests

Causal inference, high-dimensional statistics, machine learning

Industry Experience

- 2022–2023 **Uber Technologies**
Technical Consultant
2021–2022 **TauRx Therapeutics**
Technical Consultant
2018 **Facebook**
Core Data Science Research intern

Selected Awards

- 2024 USC General Education Teaching Award
2021 INFORMS George B. Dantzig Dissertation Award, 2nd place
2021 MIT George Sprowls PhD Thesis Award in Artificial Intelligence & Decision-making, 1st place
2021 NSF I-Corps Grant, \$50k
2017–2020 Draper Fellowship
2015–2018 National Physical Science Consortium Fellowship (funded by National Security Agency)
2015–2016 MIT EECS Advanced Television and Signal Processing Fellowship

Publications

Note: “♣” denotes alphabetical ordering by last name. “*” denotes equal contribution.

12. “On Model Identification and Out-of-Sample Prediction of Principal Component Regression: Applications to Synthetic Controls”
♣ Anish Agarwal, Devavrat Shah, **DS**
○ Journal: *Journal of Machine Learning Research*, 2025
○ Software: <https://github.com/deshen24/principal-component-regression>

11. "Obtaining Personalized Predictions from a Randomized Controlled Trial on Alzheimer's Disease"
DS, Anish Agarwal, Vishal Misra, Bjoern Schelter, Devavrat Shah, Helen Shiells, Claude Wischik
 ○ Journal: *Scientific Reports*, 2024
10. "Same Root Different Leaves: Time Series and Cross-Sectional Methods in Panel Data"
DS, Peng Ding, Jasjeet Sekhon, Bin Yu
 ○ Journal: *Econometrica*, 2023
 ○ Software: <https://github.com/deshen24/panel-data-regressions>
9. "Causal Matrix Completion"
 ♣ Anish Agarwal, Munther Dahleh, Devavrat Shah, **DS**
 ○ Conference: *Conference on Learning Theory (COLT)*, 2023
 ○ Software: <https://github.com/deshen24/syntheticNN>
8. "Public Health Implications of Opening NFL Stadiums during the COVID-19 Pandemic"
 Bernardo Garcia Bulle Bueno*, **DS***, Devavrat Shah, Anette Peko Hosoi
 ○ Journal: *Proceedings of the National Academy of Sciences (PNAS)*, 2022
7. "Causal Imputation via Synthetic Interventions"
 Chandler Squires*, **DS***, Anish Agarwal, Devavrat Shah, Caroline Uhler
 ○ Conference: *Causal Learning and Reasoning (CLear)*, 2022
6. "PerSim: Data-efficient Offline Reinforcement Learning with Heterogeneous Agents via Personalized Simulators"
 ♣ Anish Agarwal, Abdullah Alomar, Varkey Alumootil, Devavrat Shah, **DS**, Zhi Xu, Cindy Yang
 ○ Conference: *Neural Information Processing Systems (NeurIPS)*, 2021
5. "Synthetic Interventions"
 ♣ Anish Agarwal, Devavrat Shah, **DS**
 ○ Workshop: *Neural Information Processing Systems (NeurIPS) Workshop on Causal Inference & Machine Learning*, 2019
4. "On Robustness of Principal Component Regression"
 ♣ Anish Agarwal, Devavrat Shah, **DS**, Dogyoon Song
 ○ Journal: *Journal of the American Statistical Association (JASA)*, 2021
 ○ Conference: *Neural Information Processing Systems (NeurIPS)*, 2019
 [oral presentation: top 0.5% of total submissions]
3. "Multi-dimensional Robust Synthetic Control"
 ♣ Jehangir Amjad, Vishal Misra, Devavrat Shah, **DS**
 ○ Journal: *Proceedings of the ACM on Measurement and Analysis of Computing Systems (POMACS)*, 2019
 ○ Conference: *Sigmetrics*, 2019
2. "Model Agnostic Time Series Analysis via Matrix Estimation"
 ♣ Anish Agarwal, Jehangir Amjad, Devavrat Shah, **DS**
 ○ Journal: *Proceedings of the ACM on Measurement and Analysis of Computing Systems (POMACS)*, 2018
 ○ Conference: *Sigmetrics*, 2019
 ○ Workshop: *Neural Information Processing Systems (NeurIPS) Workshop on Time Series*, 2017
 [best poster award]
1. "Robust Synthetic Control"
 ♣ Jehangir Amjad, Devavrat Shah, **DS**
 ○ Journal: *Journal of Machine Learning Research (JMLR)*, 2018
 ○ Workshop: *INFORMS*, 2017
 [best poster runner-up award]

Technical Report

1. "Two Burning Questions on COVID-19"
 ♣ Anish Agarwal, Abdullah Alomar, Arnab Sarker, Devavrat Shah, **DS**, Cindy Yang, 2020
 ○ MIT News

Preprints and Works Under Review

4. “Algebraic and Statistical Properties of the Partially Regularized Ordinary Least Squares Interpolator”
Letian Yang, **DS**
3. “The Ordinary Least Squares Interpolator for Econometrics”
DS*, Dogyoon Song*, Peng Ding, Jasjeet Sekhon
2. “Synthetic Interventions: Extending Synthetic Controls to Multiple Treatments”
♣ Anish Agarwal, Devavrat Shah, **DS**

Selected Talks

- 2025
 - Taipei Symposium and the ICSA International Conference (Taipei, Taiwan)
 - INFORMS (Atlanta)
 - Cal Poly in San Luis Obispo Economics Seminar
 - Econometrics and Statistics EcoSta (Tokyo, Japan)
 - SIGMETRICS (Stony Brook)
 - MIT Stochastics and Statistics Seminar
 - Stanford Statistics Seminar
- 2024
 - IMS International Conference on Statistics and Data Science (Nice, France)
 - The Conference on Statistical Learning and Data Science (Newport Beach)
 - IMS New Researchers Conference (Portland)
 - WNAR Conference (Fort Collins)
 - The Institute of Statistical Mathematics (Tachikawa, Japan)
- 2023
 - INFORMS (Phoenix)
 - Joint Statistical Meeting (Toronto)
 - ACM FCRC (Orlando)
 - ICSA Applied Statistics Symposium (Michigan)
- 2022
 - American Causal Inference Conference (UC Berkeley)
 - Synthetic Controls Methods Workshop (Princeton)
 - Tutorial at International Symposium for Information Theory (Helsinki, Finland)
 - Purdue University’s Causal Machine Learning for Novel Settings Boot Camp
 - INFORMS (Indianapolis)
 - UC Berkeley Econometrics Seminar
 - Stanford Econometrics Seminar
 - UCLA Information Theory and Systems Laboratory Group Meeting
 - Stanford Data-Driven Decisions and Inference Group Meeting
 - IMS International Conference on Statistics and Data Science (Florence, Italy)
 - Computational and Methodological Statistics (King’s College London, UK)
- 2021
 - Simons Institute (UC Berkeley)
 - Uber Marketplace
 - Online Causal Inference Seminar (Stanford)
 - INFORMS (Anaheim)

Teaching

- 2024 USC BUAD 310: Applied Business Statistics
- 2019 MIT EECS 6.s077: Introduction to Data Science and Statistics
- 2014-2015 UC San Diego ECE 35: Introduction to Analog Circuit Design
- 2014-2015 UC San Diego ECE 25: Introduction to Digital Circuit Design

Refereeing Service

Algorithmic Learning Theory, Annals of Statistics, Biometrika, Econometrica, Journal of American Statistical Association, Journal of Applied Econometrics, Journal of Machine Learning Research, Management Science, NeurIPS, Quantitative Economics

Academic References

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