David Bruns-Smith

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POSITIONS

Stanford Data Science, Postdoctoral Fellow *September 2024 -*
Advisor: Guido Imbens

EDUCATION

University of California, Berkeley *September 2024*
Ph.D. in Computer Science
Advisors: Avi Feller and Emi Nakamura

Yale University *May 2015*
B.S. in Electrical Engineering and Computer Science

PEER-REVIEWED PUBLICATIONS

Multiaccurate Estimators Can Be Simultaneously Robust and Efficient
David Bruns-Smith, Zhongming Xie, and Avi Feller
To appear at Neurips 2025
∗ Spotlight paper, 3% acceptance rate

Augmented Balancing Weights as Linear Regression
David Bruns-Smith, Oliver Dukes, Avi Feller, and Betsy Ogburn
Journal of the Royal Statistical Society Series B: Statistical Methodology, 2025
∗ Royal Statistical Society Discussion Paper

Using Supervised Learning to Estimate Inequality in the Size and Persistence of Income Shocks
David Bruns-Smith, Avi Feller, and Emi Nakamura
ACM Conference on Fairness, Accountability, and Transparency (FAccT), 2023

Outcome Assumptions and Duality Theory for Balancing Weights
David Bruns-Smith and Avi Feller
International Conference on Artificial Intelligence and Statistics (AISTATS), 2022

Model-Free and Model-Based Policy Evaluation When Causality is Uncertain
David Bruns-Smith
International Conference on Machine Learning (ICML), 2021

WORKING PAPERS

Two-Stage Machine Learning for Nonparametric Instrumental Variable Regression
(Job Market Paper)
David Bruns-Smith
Oral presentation at the American Causal Inference Conference (ACIC), 2025

Robust Fitted-Q-Evaluation and Iteration under Sequentially Exogenous Unobserved Confounders
David Bruns-Smith and Angela Zhou
Submitted to Management Science. An earlier version was presented at INFORMS 2023.

Disentangling Age, Time, and Cohort Effects in Income Inequality: A Proxy Machine Learning Approach
David Bruns-Smith, Emi Nakamura, and Jón Steinsson
In preparation.

Synthetic Panel Generation
Joonhyuk Lee, David Bruns-Smith, and Guido Imbens
In preparation.

HIGH PERFORMANCE COMPUTING PUBLICATIONS

Genesis: a Hardware Acceleration Framework for Genomic Data Analysis
Tae Jun Ham, David Bruns-Smith, Brendan Sweeney, Yejin Lee, Seong Hoon Seo, U. Gyeong Song, Young H. Oh, Krste Asanovic, Jae W. Lee, and Lisa Wu Wills
International Symposium on Computer Architecture (ISCA), 2020
∗ IEEE Micro Top Picks and ISCA@50 Retrospective.

Enhancing Network Visibility and Security Through Tensor Analysis
Muthu Baskaran, Thomas Henretty, James Ezick, Richard Lethin, and David Bruns-Smith.
Future Generation Computer Systems, 2019.

FPGA-Accelerated INDEL Realignment in the Cloud
Lisa Wu Willis, David Bruns-Smith, Frank A. Nothaft, Qijing Huang, Sagar Karandikar, Johnny Le, Andrew Lin, Howard Mao, Brendan Sweeney, Krste Asanovic, David Patterson, Anthony Joseph.
IEEE International Symposium on High-Performance Computer Architecture (HPCA), 2019.

A Quantitative and Qualitative Analysis of Tensor Decompositions on Spatiotemporal Data Tom Henretty, Muthu Baskaran, James Ezick, David Bruns-Smith, and Tyler A. Simon. *IEEE Conference on High Performance Extreme Computing (HPEC)*, 2017.

Memory-Efficient Parallel Tensor Decompositions Muthu Baskaran, Tom Henretty, Benoit Pradelle, M. Harper Langston, David Bruns-Smith, James Ezick, and Richard Lethin.
IEEE Conference on High Performance Extreme Computing (HPEC), 2017
∗ Best Paper Award

Accelerated Low-Rank Updates to Tensor Decompositions Muthu Baskaran, M. Harper Langston, Tahina Ramananandro, David Bruns-Smith, Tom Henretty, James Ezick, and Richard Lethin. *IEEE Conference on High Performance Extreme Computing (HPEC)* 2016

Cyber Security Through Multidimensional Data Decompositions
David Bruns-Smith, Muthu M. Baskaran, James Ezick, Tom Henretty, and Richard Lethin.
IEEE Cybersecurity Symposium, 2016.

AWARDS AND HONORS

Royal Statistical Society Discussion Paper	2025
Outstanding Graduate Student Instructor Award, UC Berkeley	2022
IEEE Micro Top Picks (top 12 papers of the year in computer architecture)	2020
ISCA@50 Retrospective (98/1077 papers selected from the last 25 years)	2020
Labor Science Fellowship, Berkeley Opportunity Lab	2019
EECS Departmental Fellowship, UC Berkeley	2017
Best Paper Award, IEEE Conference on High Performance Extreme Computing	2017

PATENTS

"System and methods for selective expansive recursive tensor analysis," Muthu Baskaran, David Bruns-Smith, James Ezick, Richard Lethin. US Patent App. 17/086,772, 2021.

TEACHING EXPERIENCE

UC Berkeley, Graduate Student Instructor

Econ 101B: Macroeconomics (Math Intensive)	Fall 2020
Data 102/Stat 102: Data, Inference, and Decisions	Spring 2022

INVITED TALKS/PRESENTATIONS

Keynote Speaker, Royal Statistical Society International Conference	2025
American Causal Inference Conference, Oral Presentation	2025
Guest Lecture at USC Marshall	2025
Stanford Econometrics Lunch	2025
Online Causal Inference Seminar	2025
Stanford Data-Driven Decisions Seminar	2024
Berkeley Econometrics Seminar	2023
INFORMS Annual Meeting, Oral Presentation	2023
Simons Workshop on Multi-Group Fairness and Applications	2023
American Causal Inference Conference, Oral Presentation	2023
Stanford Data-Driven Decisions Seminar	2023
Netflix Experimentation Group	2023
Berkeley Political Methodology Workshop	2023
Machine Learning in Economics Summer Institute at Chicago Booth	2022

SERVICE

Co-organizer, Neurips MLECON Workshop 2021

Referee for: *Journal of the American Statistical Association, Journal of Causal Inference, Journal of the Royal Statistical Society Series B, AISTATS, FAccT, AAAI.*

INDUSTRY RESEARCH POSITIONS

Google DeepMind 2023-2024
PhD Student Researcher hosted by Alex D'Amour

Reservoir Labs, New York, NY 2015-2017
Research Engineer