Alexander Franks

Assistant Professor
Department of Statistics and Applied Probability
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RESEARCH INTERESTS	Multivariate analysis; causal inference; missing data; covariance estimation; large p, small n; data integration; measurement error; analysis of "omics" data; sports statistics;

PREVIOUS POSITIONS

University of Washington, Seattle, WA   2015-2017
Moore/Sloan Data Science and WRF Innovation in Data Science Postdoctoral Fellow

EDUCATION

Harvard University, Cambridge, MA   2010-2015
Ph.D., Statistics

Brown University, Providence, RI   2005-2010
ScM, Applied Math., 2010
BA, Computer Science and Applied Math, 2009
- Graduated with Honors

TEACHING

- PSTAT 197: Data Science Capstone (2020/2021)
- PSTAT 195: Data Science Applications and Analysis (2020)
- INT15: Data Science Principles and Techniques (2019)
- PSTAT115: Introduction to Bayesian Data Analysis (2018, 2019, 2020)
- PSTAT131: Introduction to Statistical Machine Learning (2017 twice, 2018)
- PSTAT262: High-dimensional Covariance Estimation (2018)

ADVISING

Thesis Committee Chair
- Fanqi Meng, PhD student, UCSB PSTAT (2017-cur, advisor)
- Jiajing Zheng, PhD student, UCSB PSTAT (2018-cur, advisor)
- Yi Zheng, PhD student, UCSB PSTAT (2018-cur, advisor)
- Ke Wang, PhD student, UCSB PSTAT (2018-cur, co-advising)
- Megan Elcheikhali, PhD student, UCSB PSTAT (2018-cur)

Thesis Committee Member
- Arya Pourzanjiani, PhD, UCSB Computer Science (graduated 2019)
- Richard Jiang, PhD Student, UCSB Computer Science (advanced to candidacy)
- Alice Lepissier, PhD Student UCSB Bren School (advanced to candidacy)
- Javier Zapata, PhD Student, UCSB PSTAT (advanced to candidacy)
- Rachel Redberg, PhD Student, UCSB Computer Science (advanced to candidacy)
- Alexander Bernstein, PhD Student, PSTAT (advanced to candidacy)

SERVICE

- 2019-2021 Chair of the Data Science Committee
- 2019-2021 StatLab Director
- 2018-2020 Department Seminar Organizer
- 2017-2018 Member Department Computing Committee
- 2017-2018 Liaison Department Library Liaison

PAPERS

Submitted

Jiajing Zheng, Alexander D'Amour, and **Alexander Franks**. Copula-based sensitivity analysis for multi-treatment causal inference with unobserved confounding. *arXiv preprint arXiv:2102.09412*, 2021.

Nathan Hwangbo, Xinyu Zhang, Daniel Raftery, Haiwei Gu, Shu-Ching Hu, Thomas J Montine, Joseph F Quinn, Kathryn A Chung, Amie L Hiller, Dongfang Wang, et al. An aging clock using metabolomic CSF. *bioRxiv*, 2021.

Ke Wang, Sang-Yun Oh, and **Alexander Franks**. Learning gaussian graphical models with latent confounders. *TBD*, 2021.

Franks, Alexander. Reducing subspace models for large-scale covariance regression. *arXiv preprint arXiv:2010.00503*, 2020.

Kelly M Thomasson, **Alexander Franks**, Henrique Teotónio, and Stephen R Proulx. Testing the adaptive value of sporulation in budding yeast using experimental evolution. *bioRxiv*, 2020.

Published / In Press

2020   **Alexander M. Franks**, Edoardo M. Airoldi, and Donald B. Rubin. Nonstandard conditionally specified models for nonignorable missing data. *Proceedings of the National Academy of Sciences*, 2020.

Zachary Terner and **Alexander Franks**. Modeling player and team performance in basketball. *Annual Review of Statistics and Its Application*, 8, 2020.

2019   **Alexander M Franks** and Peter Hoff. Shared subspace models for multi-group covariance estimation. *Journal of Machine Learning Research*, 20(171):1–37, 2019.

Alexander M Franks, Alexander DAmour, and Avi Feller. Flexible sensitivity analysis for observational studies without observable implications. *Journal of the American Statistical Association*, pages 1–33, 2019.

Albert Chen, **Alexander Franks**, and Nikolai Slavov. Dart-id increases single-cell proteome coverage. *PLos Computational Biology*, Just accepted.

2018   **Alexander M Franks**, Florian Markowetz, Edoardo M Airoldi, et al. Refining cellular pathway models using an ensemble of heterogeneous data sources. *The Annals of Applied Statistics*, 12(3):1361–1384, 2018

Jessica M Hoffman, Kate E Creevy, **Alexander Franks**, Dan G O'Neill, and Daniel EL Promislow. The companion dog as a model for human aging and mortality. *Aging cell*, 17(3):e12737, 2018

2017   **Alexander Franks**, Edoardo Airoldi, and Nikolai Slavov. Post-transcriptional regulation across human tissues. *PLoS computational biology*, 13(5):e1005535, 2017.

2016	**Alexander Franks**, Alexander D'Amour, Daniel Cervone, and Luke Bornn. Meta-analytics: Tools for understanding the statistical properties of sports metrics. *Journal of Quantitative Analysis of Sports*, In Press. https://arxiv.org/pdf/1609.09830.pdf.
2015	**Alexander Franks**, Andrew Miller, Luke Bornn, and Kirk Goldsberry. Characterizing the spatial structure of defensive skill in professional basketball. *Annals of Applied Statistics*, 2015. http://arxiv.org/abs/1405.0231
	Gábor Csárdi, **Alexander Franks**, David S Choi, Edoardo M Airoldi, and D. Allan Drummond. Accounting for experimental noise reveals that transcription dominates control of steady-state protein levels in yeast. *PLoS Genetics*, 2015. http://www.plosgenetics.org/article/Metrics/info:doi/10.1371/journal.pgen.1005206.
	Edward WJ Wallace, Jamie L Kear-Scott, Evgeny V Pilipenko, Michael H Schwartz, Pawel R Laskowski, Alexandra E Rojek, Christopher D Katanski, Joshua A Riback, Michael F Dion, **Alexander M Franks**, et al. Reversible, specific, active aggregates of endogenous proteins assemble upon heat stress. *Cell*, 162(6):1286–1298, 2015.
	Lo-Hua Yuan, Anthony Liu, Alec Yeh, Aaron Kaufman, Andrew Reece, Peter Bull, **Alexander Franks**, Sherrie Wang, Dmitri Illushin, and Luke Bornn. A mixture-of-modelers approach to forecasting ncaa tournament outcomes. *Journal of Quantitative Analysis in Sports*, 11(1):13–27, 2015.
2014	**Alexander M. Franks**, Gábor Csárdi, D. Allan Drummond, and Edoardo M. Airoldi. Estimating a structured covariance matrix from multilab measurements in high-throughput biology. *Journal of the American Statistical Association*, 110(509):27–44, 2015.
2013	Hygor Piaget M. Melo, **Alexander Franks**, André A. Moreira, Daniel Diermeier, José S. Andrade Jr, and Luís A. Nunes Amaral. A solution to the challenge of optimization on "golf-course"-like fitness landscapes. *PloS one*, 8(11):e78401, 2013.

Other Publications

Luke Bornn, Daniel Cervone, **Alexander Franks**, and Andrew Miller. Studying basketball through the lens of player tracking data. In *Handbook of Statistical Methods for Design and Analysis in Sports*. Chapman and Hall/CRC, 2016.

Media

Dana Mackenzie and Barry Cipra. *What's happening in the mathematical sciences. Volume 10*. American Mathematical Society, 2015.

INVITED TALKS

- Bayesian Covariance Estimation with Applications in High-throughput Biology Invited Talk, UT Austin, Department of Statistics and Data Science (February 2017)
- February 2017 Bayesian Covariance Estimation with Applications in High-throughput Biology Invited Talk, Duke University, Statistical Science
- February 2017 Bayesian Covariance Estimation with Applications in High-throughput Biology Invited Talk, UC Berkeley, Department of Statistics
- February 2017 Bayesian Covariance Estimation with Applications in High-throughput Biology Invited talk, Fred Hutchinson Cancer Research Institute
- February 2017 Bayesian Covariance Estimation with Applications in High-throughput Biology Invited talk, Cornell University, Department of Statistical Science
- February 2017 Bayesian Covariance Estimation with Applications in High-throughput Biology Invited talk, Brown University, Department of Biostatistics
- February 2017 Information-sharing schemes for complex data analysis: Examples from high-throughput biology and professional basketball
- Invited talk, Northwestern University, Department of Computer Science / Department of Statistics
- February 2017 Information-sharing schemes for complex data analysis: Examples from high-throughput biology and professional basketball
- Invited talk, Temple University, Department of Statistical Science
- February 2017 Information-sharing schemes for complex data analysis: Examples from high-throughput biology and professional basketball Invited talk, University of Toronto, Statistical Sciences
- October 2017 What Basketball Taught Me About Big Data: Analyzing Player Tracking Data in The NBA UCSB Big Data Research Symposium
- November 2017 From Pixels to Points: Using Tracking Data to Measure Performance in Professional Basketball Invited talk / UCSB Spatial Center
- February 2018 Bayesian Covariance Estimation with Applications in High-throughput Biology
- Invited seminar/ UC Santa Cruz, Statistics Department
- February 2018 Bayesian Covariance Estimation with Applications in High-throughput Biology
- March 2018 Identifiability in Causal Inference Invited talk, Evidation LLC, Santa Barbara CA
- June 2018 Bayesian Covariance Estimation with Applications in High-throughput Biology Invited talk Annual Meeting of the Statistical Society of Canada (SSC)
- July 2018 From Pixels to Points: Using Tracking Data to Measure Performance in Professional Basketball Invited talk, GRAPHIQ LLC / Amazon.com Inc., Santa Barbara CA Current Review Period
- January 2019 Statistical Models for the Metabolomics of Neurodegenerative disease Invited talk, Kavli BRAIN Showcase, UC Santa Barbara
- May 2019 Invited talk, University of Washington Biostatistics
- May 2019 Invited Talk, University of Washington, eScience Institute
- May 2019 Invited Talk, UCLA Statistics Department
- August 2020 Invited Talk, Joint Statistical Meetings —
- March 2021, Invited Talk, ENAR