Alexander Franks

Assistant Professor
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RESEARCH INTERESTS

Multivariate analysis; covariance estimation; large p, small n; data integration; measurement error; analysis of "omics" data; missing data; spatial-temporal 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, **4.0** (out of 4) cumulative GPA

SELECTED HONORS

- ASA W. J. Youden Award in Interlaboratory Testing (2015)
- Best Research Paper Award - MIT Sloan Sports Analytics Conference (2015)
- Best Post-Qualifying Talk Award - Harvard University Statistics Department (2014)
- Junior Travel Award, ISBA 2014
- IBM Best Student Paper Award - New England Statistics Symposium (2013)
- Bok Center Certificate of Distinction in Teaching (2012 and 2013), Harvard
- Best Graduate Student Talk - Harvard Symposium on Applied Statistics (2012)
- Smith Family Graduate Fellowship (2011), Harvard University
- Undergraduate Teaching and Research Award (2007), Brown University

PAPERS

Recently Submitted

Alexander Franks, Alexander D'Amour, and Avi Feller. Flexible sensitivity analysis for observational studies without observable implications. *arXiv preprint arXiv:1809.00399*, 2018. https://arxiv.org/abs/1809.00399.

Albert Chen, **Alexander Franks**, and Nikolai Slavov. Dart-id increases single-cell proteome coverage. *bioRxiv*, page 399121, 2018. https://www.biorxiv.org/content/early/2018/08/23/399121.

Alexander Franks and Peter Hoff. Shared subspace models for multi-group covariance estimation. http://arxiv.org/pdf/1607.03045v2.pdf.

Alexander Franks, Edoardo M Airoldi, and Donald Rubin. Condtionally specified models for non-ignorable missing data. `http://arxiv.org/pdf/1603.06045v1.pdf`.

Published / In Press

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

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`

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.

2015 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`.

2015 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.

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.

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.

Previous Grants

National Institutes of Health. *Multi-group covariance models for metabolomic analyses of neurodegenerative disease.* (R03 CA211160, Co-Investigator). 2016-2017

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.* 2015.

INVITED TALKS

- Joint Statistical Meetings (2016)
- ISBA World Meeting (2016)
- Special Seminar, Department of Biostatistics, UCLA (2015)
- Special Seminar, Department of Biostatistics, Harvard University (2015)
- MIT Sloan Sports Analytics Conference (2015)
- Amherst Sports Analytics Forum (2015)

TEACHING EXPERIENCE

Department of Statistics and Applied Probability,
University of California, Santa Barbara Sep. 2017 - Present
Professor

- PSTAT115: Introduction to Bayesian Data Analysis (2018)
- PSTAT131: Introduction to Statistical Machine Learning (2017, 2018)
- PSTAT262: High-dimensional Covariance Estimation (2018)

Department of Statistics, Harvard University Sep. 2011 - 2015
Teaching Fellow

- STAT120: Introduction to Applied Bayesian Inference (2014)
- STAT183: Learning From Big Data (2014)
- STAT230: Multivariate Analysis (2013)
- STAT111: Introduction to Statistical Inference (2012)
- STAT220: Bayesian Data Analysis (2012)
- STAT104: Introduction to Quantitative Methods for Economics (2011)

Head Teaching Fellow

- STAT111: Introduction to Statistical Inference (2013)

Department of Computer Science, Brown University Sep. 2007 - May 2009
Head Teaching Fellow

- Introduction to Artificial Intelligence (2007, 2008)

PROFESSIONAL EXPERIENCE

thefind.com, Mountain View, CA — May 2008 - Aug. 2008
Intern, Software Engineer

- Data mining and MySQL database design
- Helped improve natural language processing tools for search engine

Department of Chemical and Biological Engineering, Northwestern University
Summer 2006
Undergraduate Research Assistant

- Social networks research, database design
- Developed PyGrace, a Python interface to Grace (plotting tool)

TECHNICAL SKILLS

Programming Languages: R, Python, MATLAB, Java, C