James G. Scott

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Academic appointments

University of Texas at Austin
Assistant Professor of Statistics, July 2009 – present
Department of Information, Risk, and Operations Management (McCombs School)
and Division of Statistics and Scientific Computation

Education

Duke University
Ph.D. in Statistics, 2006–09
Thesis: Bayesian Adjustment for Multiplicity
Advisor: James O. Berger

University of Cambridge (Trinity College)
M.A.St in Mathematics (Part III), 2004–05
Undertaken while holding a Marshall Scholarship

University of Texas at Austin
B.S. in Mathematics and Plan II Honors, 2000–2004

External funding

[PI] "CAREER: Bringing richly structured Bayesian models into the discrete-data realm via new data-augmentation theory and algorithms." National Science Foundation (DMS), July 2013 – June 2018 ($400,000 total).

[Co-PI] "Augmentation and Use of BioSense 2.0 for Early Detection and Surveillance of Emerging Infectious Diseases and Biological Threats," with PI Lauren Meyers. Contract with Texas Department of State Health Services, Sept 2012 – Aug 2013 ($143,785 total, 1 month FTE).

[Co-PI] "Decision-Support Tool for Pandemic Flu Vaccination Strategies and Priorities," with PIs Lauren Meyers and David Morton and co-PI Gregory Johnson. Contract with Texas Department of State Health Services, Sept 2012 – Aug 2013 ($198,103 total, 0.5 month FTE).

Papers under peer review

N. Polson and James G. Scott. Vertical-likelihood Monte Carlo. arXiv:1409.3601 [stat.CO] (2014).

M. Zhou, O. Padilla, and James G. Scott. Priors for Random Count Matrices Derived from a Family of Negative Binomial Processes. arXiv:1404.3331 [stat.ME] (2014).

James G. Scott, T. Shively and S. Walker. Nonparametric Bayesian testing for monotonicity. arXiv:1109.2279v1 [stat.ME] (2014).

N. Polson and James G. Scott. Mixtures, envelopes, and hierarchical duality. arXiv:1406.0177 [stat.ME] (2014).

A. Aiken, James G. Scott, and J. Potter. Demographic Factors Underlying Voting Behavior on Family Planning Legislation.

Peer-reviewed journal articles

James G. Scott, R. Kelly, M. Smith, P. Zhou, and R. Kass. False discovery rate regression: an application to neural synchrony detection in primary visual cortex. arXiv:1307.3495v2 [stat.ME]. Accepted for publication in the *Journal of the American Statistical Association* (2014, in press).

A. Aiken, C. Aiken, M. Alberry, J. Brocklesby, and James G. Scott. Management of Fetal Malposition in the Second Stage of Labor: A Propensity Score Analysis. Accepted for publication in the *American Journal of Obstetrics and Gynecology* (2014, in press).

Nicholas G. Polson, James G. Scott, and J. Windle. The Bayesian bridge. *Journal of the Royal Statistical Society, Series B: Statistical Methodology* 76:4 (713–33) (2014).

C.E. Aiken, A.R. Aiken, J.C. Brockelsby, and James G. Scott. Factors influencing the likelihood of instrumental delivery success. *Obstetrics and Gynecology*, 123(4):796–803, 2014.

Nicholas G. Polson, James G. Scott, and Jesse Windle. Bayesian inference for logistic models using Polya-Gamma latent variables. *Journal of the American Statistical Association*, 108(504):1339–49, 2013.

Mikhail V. Matz, Rachel M. Wright, and James G. Scott. No control genes required: Bayesian analysis of qrt-pcr data. *PLOS One*, 8(8), 2013.

Nicholas G. Polson and James G. Scott. Data augmentation for non-Gaussian regression models using variance-mean mixtures. *Biometrika*, 100(2):459–71, 2013.

Nicholas G. Polson and James G. Scott. Local shrinkage rules, Lévy processes, and regularized regression. *Journal of the Royal Statistical Society (Series B)*, 74(2):287–311, 2012.

P.R. Hahn, Carlos M. Carvalho, and James G. Scott. A sparse factor-analytic probit model for Congressional voting patterns. *Journal of the Royal Statistical Society, Series C*, 61(4):619–35, 2012.

Nicholas G. Polson and James G. Scott. Good, great, or lucky? Screening for firms with sustained superior performance using heavy-tailed priors. *The Annals of Applied Statistics*, 6(1):161–85, 2012.

James G. Scott. Benchmarking historical corporate performance. *Computational Statistics & Data Analysis*, 56(6):1795–1807, 2012.

Nicholas G. Polson and James G. Scott. On the half-Cauchy prior for a global scale parameter. *Bayesian Analysis*, 7(4):887–902, 2012.

James G. Scott. Bayesian estimation of intensity surfaces on the sphere via needlet

shrinkage and selection. *Bayesian Analysis*, 6(2):307–28, 2011.

James G. Scott and James O. Berger. Bayes and empirical-Bayes multiplicity adjustment in the variable-selection problem. *The Annals of Statistics*, 38(5):2587–2619, 2010.

Carlos M. Carvalho, Nicholas G. Polson, and James G. Scott. The horseshoe estimator for sparse signals. *Biometrika*, 97(2):465–80, 2010.

Carlos M. Carvalho and James G. Scott. Objective Bayesian model selection in Gaussian graphical models. *Biometrika*, 96(3):497–512, 2009.

James G. Scott. Nonparametric Bayesian multiple testing for longitudinal performance stratification. *The Annals of Applied Statistics*, 3(4):1655–74, 2009.

James G. Scott and Carlos M. Carvalho. Feature-inclusion stochastic search for Gaussian graphical models. *Journal of Computational and Graphical Statistics*, 17(790–808), 2008.

Ted von Hippel, William H. Jefferys, James Scott, Nathan Stein, D. E. Winget, Steven DeGennaro, Albert Dam, and Elizabeth Jeffery. Inverting color-magnitude diagrams to access precise star cluster parameters: a Bayesian approach. *The Astrophysical Journal*, (645):1436–47, 2006.

James G. Scott and James O. Berger. An exploration of aspects of Bayesian multiple testing. *Journal of Statistical Planning and Inference*, 136(7):2144–2162, 2006.

Peer-reviewed conference papers

James G. Scott and Jason Baldridge. A recursive estimate for the predictive likelihood in a topic model. In *Proceedings of the 16th International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2013.

J.W. Pillow and James G. Scott. Fully bayesian inference for neural models with negative-binomial spiking. In *Advances in Neural Information Processing Systems (NIPS)*, volume 25, 2012.

Carlos M. Carvalho, Nicholas G. Polson, and James G. Scott. Handling sparsity via the horseshoe. *Journal of Machine Learning Research: Workshops and Case Proceedings*, 5:73–80, 2009.

Book chapters (non-peer-reviewed)

Nicholas G. Polson and James G. Scott. Shrink globally, act locally: sparse Bayesian regularization and prediction (with discussion). In J. M. Bernardo, M. J. Bayarri, J. O. Berger, A. P. Dawid, D. Heckerman, A. F. M. Smith, and M. West, editors, *Proceedings of the 9th Valencia World Meeting on Bayesian Statistics*, pages 501–38. Oxford University Press, 2011.

Matthew J. Heaton and James G. Scott. Bayesian computation and the linear model. In Ming-Hui Chen, Dipak Dey, Peter Mueller, Dongchu Sun, and Keying Ye, editors, *Frontiers of Statistical Decision Making and Bayesian Analysis*. Springer, 2010.

Z. Liu, J. Windle, and James G. Scott. The partition problem: case studies in Bayesian screening for time-varying model structure (with). arXiv:1111.0617v1 [stat.AP]. *Bayesian Theory and Applications: Essays in Honor of Adrian Smith*. Oxford University Press

(2012).

J.M. Quintana, C.M. Carvalho, James G. Scott and T. Costigliola. Bayesian forecasting, futures markets, and risk modelling. *Handbook of Applied Bayesian Analysis*. Edited by Anthony O'Hagan and Mike West. Oxford University Press (2010).

Other academic publications (non-peer-reviewed)

James G. Scott. Invited discussion of "Inference in two-piece location-scale models with Jeffreys priors." *Bayesian Analysis* 9(1): 25–8 (2014). (Role: discussant)

T. von Hippel, W. Jefferys, D. Winget, and James G. Scott. 14th European Workshop on White Dwarfs, ASP Conference Series, Vol. 334, p.77–80. Edited by D. Koester and S. Moehler. San Francisco: Astronomical Society of the Pacific (2005)

Invited talks

International Society for Bayesian Analysis World Meeting; July 2014

University of Washington Department of Statistics; April 2014

International Conference on Computational and Financial Econometrics; December 2013

NYU Stern School of Business; December 2013

Harvard University Department of Statistics; October 2013

Purdue University Department of Statistics; October 2013

Carnegie-Mellon University Department of Statistics; September 2013

Seoul National University Department of Statistics; August 2013

9th Conference on Nonparametric Bayes; Amsterdam, Netherlands; June 2013

University of Chicago (Booth) Statistics and Econometrics Seminar; February 2013

Texas A&M Department of Statistics, January 2013

Joint Statistical Meetings; San Diego, CA; July 2012

ISBA 2012 World Meeting; Kyoto, Japan; July 2012

Duke University Department of Statistical Science; January 2012

Workshop on Sensing and High-dimensional Data Analysis; Durham, NC; July 2011

Objective Bayes '11; Shanghai, China; June 2011

Hierachical Models and MCMC: A Conference in Honor of Adrian Smith; Crete, Greece; June 2011

Booth School of Business, University of Chicago; March 2011

Frontiers of Statistical Decision Making and Bayesian Analysis (Conference in honor of Jim Berger); University of Texas at San Antonio; March 2011

Conference of Texas Statisticians, Baylor University; April 2010

Texas A&M Department of Statistics; January 2010

University of Cambridge Statistical Laboratory; Cambridge, UK; March 2009

Sloan School of Management, Massachusetts Institute of Technology, February 2009

Rice University Department of Statistics; February 2009

University of Michigan Department of Statistics; February 2009

University of California, Berkeley Department of Statistics; January 2009

McCombs School of Business, University of Texas at Austin; January 2009

Booth School of Business, University of Chicago; January 2009

Wharton School of Business, University of Pennsylvania; January 2009

Virginia Tech Department of Statistics; December 2008

Textbooks

Statistical Modeling: A Gentle Introduction. A free 189-page introductory textbook on statistical modeling, available on my website.

Teaching

SSC 383D: a capstone course on applied statistical modeling for Ph.D students. Spring '13, Spring '14.

SSC 325H: a course on probability and statistical modeling for honors undergraduates in all disciplines. Spring '12, Spring '13

STA 371: a course for undergraduate business majors on statistical modeling, regression, time series, and decision theory. Spring '10; Spring '11, Spring '12, Spring '14.

NSC 110: a seminar on research methods for freshmen honors students in natural sciences. I taught this course on an off-load, volunteer basis. Fall '10; Fall '11; Fall '12.; Fall '13.

Fellowships and awards: national and international

NSF CAREER Award (2013).

Savage Award (2010): one award is given each year by the International Society of Bayesian Analysis for a doctoral dissertation that makes important original contributions to the foundations, theoretical developments, and/or general methodology of Bayesian analysis.

National Science Foundation Graduate Research Fellowship, 2006–2009

Marshall Scholarship, 2004–2006

Fellowships and awards: university

UT System Regents' Outstanding Teaching Award (2014).

Trammell/CBA Foundation Teaching Award for Assistant Professors (2013).

Teaching Excellence Award in the College of Natural Sciences (2012).

University of Texas Junior Fellow in British Studies (2012-present)

University service: ongoing

Assistant Director of Undergraduate Studies, Division of Statistics and Scientific Computing, 2012–present.

University Selection Committee for Rhodes and Marshall Scholarships, 2009–present

Steering Committee for the Dean's Scholars Honors Program in the Natural Sciences, 2009–present

University service: completed

Board of Directors, Texas Exes Scholarship Foundation, 2009–2013. The board oversees all scholarship programs run by the university's alumni association, including investments, fund-raising, and selection of scholarship recipients. We disbursed over $2.1 million in scholarships to UT students in 2012.

Selection Committee for the UT Forty Acres Scholarship, 2010–12

Mathematics Undergraduate Program Review Committee, 2011–2012. I served as the McCombs representative to a committee whose goal is to review the undergraduate mathematics curriculum, particularly the calculus sequence, for all non-mathematics majors at UT–Austin.

Undergraduate Curriculum Committee for the Division of Statistics and Scientific Computing, 2011–2012. Oversaw development of an undergraduate Certificate in Applied Data Analysis.

Ph.D Curriculum Planning Committee, Statistics and Scientific Computation, 2010–11

Professional service

Associate Editor for *The Annals of Applied Statistics* (2011–)

Referee for: *Journal of the Royal Statistical Society; Journal of the American Statistical Association; Biometrika; Journal of Econometrics; Annals of Applied Statistics; Biometrics; Biostatistics; Electronic Journal of Statistics; Bayesian Analysis; Journal of Business and Economic Statistics; Journal of the Indian Statistical Association; The Scandinavian Journal of Statistics; Computational Statistics and Data Analysis; Communications in Statistics; Transportation Research; The Astrophysical Journal.*

Reviewing committee for: AIStats ('13 area chair, '12, '10), NIPS ('13, '12, '10), 2010 Seminar on Bayesian Inference in Econometrics and Statistics (SBIES)

Session organizer for: 2013 JSM; 2010 SBIES

Industry

Deloitte Consulting (San Francisco, CA)
April 2007 – October 2010: statistical consulting on issues relating to longitudinal stratification and testing of historical corporate performance

Bayesian Efficient Strategic Training (Hoboken, NJ)
July 2007 – August 2007: statistical consulting on issues relating to nonlinear regression and graphical models in portfolio-allocation problems