

Peter David Hoff

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Education

UNIVERSITY OF WISCONSIN-MADISON

Ph.D. in Statistics, with an Emphasis in Biostatistics, August 2000

Dissertation Title: “Constrained Nonparametric Estimation via Mixtures”

Winner, 2000 Leonard J. Savage Award for Outstanding Doctoral Dissertation in Bayesian Theory and Methods, International Society for Bayesian Analysis.

UNIVERSITY OF WISCONSIN-MADISON

M.S. in Statistics, with an Emphasis in Biostatistics, December 1994

INDIANA UNIVERSITY-BLOOMINGTON

B.S. in Mathematics with Honors, May 1993

Positions

Associate Professor, Department of Statistics and Department of Biostatistics, University of Washington, September 2006-Present.

Assistant Professor, Department of Statistics (August 2000-September 2006) and Department of Biostatistics (April 2003-September 2006), University of Washington.

Director of Consulting, Center for Statistics and the Social Sciences, University of Washington, December 2001-August 2007.

Grants

Primary Investigator, “Longitudinal Network Modeling of International Relations Data”, NSF, October 2006 to September 2009.

Primary Investigator, “New Researchers Conference”, NIH, NSF and ONR, June 2006 to June 2007.

Primary Investigator, “Network Modeling of International Peace and Trade Data”, NSF, October 2004 to September 2006.

Primary Investigator, “Statistical Modeling of Dependent Network Data”, ONR, September 2002 to December 2005.

Co-investigator, “Statistical Analysis of Genetic Events in Tumorigenesis”, NIH, June 2003 to September 2004.

Co-investigator, “Model-Based Clustering Methods for Medical Image Segmentation and Gene Expression Data”, NIH, June 2002 to May 2005.

Book

Hoff, P.D. (2009) *A First Course in Bayesian Statistical Methods*. Springer.

Peer-reviewed articles and conference papers

Hoff, P.D. “Multiplicative Latent Factor Models for Description and Prediction of Social Networks,” to appear in *Computational and Mathematical Organization Theory*

Hoff, P.D. (2009) “A Hierarchical Eigenmodel for Pooled Covariance Estimation,” *Journal of the Royal Statistical Society, Series B*, Vol. 71, 971-922.

Hoff, P.D. (2009) “Simulation of the Matrix Bingham-von Mises-Fisher Distribution, with Applications to Multivariate and Relational Data,” *Journal of Computational and Graphical Statistics*, Vol. 18, 438-456.

Krivitsky, P., Handcock, M., Raftery A. and Hoff, P. (2009) “Representing Degree Distributions, Clustering, and Homophily in Social Networks with Latent Cluster Random Effects Models,” *Social Networks*, Vol. 31, 204-213.

Oron, A. and Hoff, P.D., (2009) “The K-in-a-row Up-and-Down Design, Revisited,” *Statistics in Medicine*, Vol. 28, 1805-1820.

Logan, J.A., Hoff, P.D., and Newton, M.A. (2008) “Two-Sided Estimation of Mate Preferences for Similarities in Age, Education, and Religion,” *Journal of the American Statistical Association*, Vol. 103, No. 482, 559-569.

Hoff, P.D. (2008) “Modeling homophily and stochastic equivalence in symmetric relational data,” in *Advances in Neural Information Processing Systems 20*, pp. 657-664. eds. J.C. Platt, D. Koller, Y. Singer and S. Roweis. MIT Press.

Pearson, C.R., Micek, M.A., Simoni, J.M., Hoff, P.D., Matediana, E., Martin, D.P., Gloyd, S.S. (2007) “Randomized control trial of peer-delivered, modified directly observed therapy for HAART in Mozambique” *JAIDS*, Vol. 46 No. 2, 238-244.

Hoff, P.D. (2007) “Extending the rank likelihood for semiparametric copula estimation,” *Annals of Applied Statistics*, Vol. 1 No. 1, 265-283.

Pearson, C.R., Kurth, A.E., Cassels, S., Martin, D.P., Simoni, J.M., Hoff, P.D., Matediana, E., Gloyd, S.S. (2007) “Modeling HIV Transmission Risk among Mozambicans prior to Initiating Highly Active Antiretroviral Therapy,” *Aids Care*, Vol. 19 No. 5, 594-604.

Hoff, P.D. (2007) “Model averaging and dimension selection for the singular value decomposition,” *Journal of the American Statistical Association*, Vol. 102 No. 478, 674-685.

- Ward, M.D. and Hoff, P.D. (2007) "Persistent Patterns of International Commerce," *Journal of Peace Research*, Vol. 44 No.2, 157-175.
- Pearson, C.R., Simoni, J.M., Hoff, P., Kurth, A.E. and Martin, D.P. (2007) "Assessing Antiretroviral Adherence via Electronic Drug Monitoring and Self-Report: An Examination of Key Methodological Issues," *AIDS and Behavior*, Vol. 11 No. 2, 161-173.
- Shortreed, S., Handcock, M.S. and Hoff, P.D. (2006) "Positional estimation within the latent space model for networks," *Methodology*, Vol. 2 No. 1, 24-33.
- Hoff, P.D. (2006) "Model-based Subspace Clustering," *Bayesian Analysis*, Vol. 1, No. 2, 321-1036.
- Hoff, P.D. (2005) "Subset Clustering of Binary Sequences, with an Application to Genomic Abnormality Data," *Biometrics*, Vol. 61, No. 4, 1027-1036.
- Hoff, P.D. (2005) "Bilinear Mixed-Effects Models for Dyadic Data," *Journal of the American Statistical Association*, Vol. 100, No. 469, 286-295.
- Westveld, A. H. and Hoff, P.D. (2005) "Statistical Methodology for Longitudinal Social Network Data," presented at the annual meeting of the American Political Science Association, Washington, DC, September 1, 2005. Available at convention2.allacademic.com/index.php?cmd=apsa05
- Hoff, P. D. and Ward, M. D. (2005) "Analyzing Dependencies in International Relations: Commerce, Capitalism, Conflict, Cooperation, and Democracy," presented at the annual meeting of the International Studies Association, Honolulu, Hawaii, March 5, 2005. Available at <http://www.isanet.org/archive.html>
- Haigis, K.M., Hoff, P.D., White, A., Shoemaker, A.R., Halberg, R.B. and Dove, W.F. (2004) "Tumor Regionality in the Mouse Intestine Reflects the Mechanism of Loss of Apc Function" *Proceedings of the National Academy of Sciences*, Vol. 101, No. 26, 9769-9773.
- Hoff, P.D., and Ward, M.D. (2004) "Modeling Dependencies in International Relations Networks," *Political Analysis*, Vol. 12, No. 2, 160-175.
- Ward, M.D. and Hoff, P.D. (2004) "Examining Dependencies in International Commerce," presented at the Fifth Pan-European International Relations Conference of the Standing Group on International Relations, Netherlands Congress Centre, The Hague, September 10, 2004. Available at <http://www.sgir.org/archive/>
- Hoff, P. D. and Ward, M. D. (2004) "Random, Latent, and Correlated: Networks in International Relations," presented at the annual meeting of the International Studies Association, Montreal, March 17 2004. Available at <http://www.isanet.org/archive.html>
- Hoff, P.D. (2003) "Bayesian Methods for Partial Stochastic Orderings," *Biometrika*, Vol. 90, No. 2, 303-317.
- Hoff, P.D. (2003), "Nonparametric Estimation of Convex Models via Mixtures," *Annals of Statistics*, Vol. 31, No.1, 174-200.

Hoff, P.D., Raftery, A.E., and Handcock, M.S. (2002), “Latent Space Approaches to Social Network Analysis,” *Journal of the American Statistical Association*, Vol. 97, No.460, 1090-1098.

Hoff, P.D., Halberg, R.B., Shedlovsky, A., Dove, W.F., and Newton, M.A. (2002) “Identifying Carriers of a Genetic Modifier Using Nonparametric Bayes Methods,” *Case Studies in Bayesian Statistics 5*, Springer-Verlag, 327-342.

Hoff, P.D. (2000), “Constrained Nonparametric Maximum Likelihood via Mixtures,” *Journal of Computational and Graphical Statistics*, Vol. 9, No.4, 633-641.

Halberg, R., Katzung, D., Hoff, P., Moser, A., Cole, C., Lubet, R., Donehower, L., Jacoby, R. Dove, W. (2000), “Tumorigenesis in the Multiple Intestinal Neoplasia Mouse: Redundancy of Negative Regulators and Specificity of Modifiers,” *Proceedings of the National Academy of Sciences*, Vol. 97, No. 7, 3461-3466.

Shepel, L.A., Lan, H., Haag, J.D., Brasic, G.M., Gheen, M.E., Simon, J.S., Hoff, P., Newton, M.A., and Gould, M.N. (1998), “Genetic Identification of Multiple Loci that Control Breast Cancer Susceptibility in the Rat,” *Genetics*, Vol. 149, 289-299.

Non-reviewed Publications

Ward, M.D. and Hoff, P.D. (2008) “Analyzing Dependencies in Geo-Economics and Geo-Politics” *Contributions to Conflict Management*, Volume 6, pp. 133-160. Eds. Jacques Fontanel and Manas Chatterji.

Hoff, P.D. (2008) “Rank Likelihood Estimation for Continuous and Discrete Data.” *ISBA Bulletin*, Vol. 15 No. 1, 8-10.

Hoff, P.D. (2007) “Discussion of ‘Model-Based Clustering for Social Networks,’ by Handcock, Raftery and Tantrum”, *Journal of the Royal Statistical Society, Series A*, Vol. 170 No. 2, 339.

Hoff, P.D. (2004) “Discussion of ‘Clustering Objects on Subsets of Attributes,’ by J. Friedman and J. Meulman,” *Journal of the Royal Statistical Society, Series B*, Vol 66, No. 4, 845.

Hoff, P.D. (2003), “Random Effects Models for Network Data,” in *Dynamic Social Network Modeling and Analysis: Workshop Summary and Papers*, 303-312, Ronald Breiger, Kathleen Carley, and Philippa Pattison, eds., Washington, D.C., The National Academies Press.

Ward, M.D., Hoff, P.D., and Lofdahl, C.L. (2003), “Identifying International Networks: Latent Spaces and Imputation,” in *Dynamic Social Network Modeling and Analysis: Workshop Summary and Papers*, 303-312, Ronald Breiger, Kathleen Carley, and Philippa Pattison, eds., Washington, D.C., The National Academies Press.

Papers under Review

Hoff, P.D. “Hierarchical Multilinear Models for Multiway Data”

Oron, A. and Hoff, P. “Convergence of Nonparametric Long-Memory Phase I Designs”

Westveld, A.H. and Hoff, P.D. “A Statistical View of Learning in the Centipede Game”

Westveld, A.H. and Hoff, P.D. “A Bayesian Mixed Effects Model for Longitudinal Social Network Data”

Bronner, M.P., Skacel, M., Crispin, D.A., Rabinovitch, P.S., Hoff, P.D., Emond, M.J., Lai, L.A., OSullivan, J.N., Chen, R., Tubbs, R.R. and Brentnall T.A. “Array Comparative Genomic Hybridization in Ulcerative Colitis Neoplasia: Single Non-dysplastic Biopsies Distinguish Progressors from Non-progressors”

Unpublished Technical Reports

Oron, A. and Hoff, P.D. (2007) “Kruskal-Wallis and Friedman type tests for nested effects in hierarchical designs” Center for Statistics and the Social Sciences Working Paper no. 68, University of Washington.

Hoff, P.D. (2003) “Nonparametric Modeling of Hierarchically Exchangeable Data,” Department of Statistics Technical Report no. 421, University of Washington.

Professional Honors

Winner, 2000 Leonard J. Savage Award for Outstanding Doctoral Dissertation in Bayesian Theory and Methods, International Society for Bayesian Analysis.

Winner, 1999 Student Paper Competition, American Statistical Association Section on Statistical Computing.

Service to the Profession

Associate editor of the Annals of Applied Statistics, Fall 2006-

Associate editor of JRSS Series B, Fall 2009-

Editorial board member of SIAM Classics, Fall 2008-

Organizer for the Ninth and Tenth Conferences of New Researchers in Statistics and Probability, ICML 2006 workshop, JSM 2005 invited session, JSM 2009 invited session, WNAR 2004 IMS invited session.

Savage award committee member (several years)

Lindley Prize committee member

ASA SBSS Student paper competition referee

Reviewer for: Annals of Applied Statistics, Annals of Statistics, Applied Mathematics Letters, Biometrics, Biometrika, Biostatistics, Computational and Mathematical Organization Theory, Computational Statistics, Computational Statistics and Data Analysis, Foundations and Trends in Machine Learning, Genetics, ICML, Journal of the American Statistical Association, Journal of Computational and Graphical Statistics, Journals of the Royal Statistical

Society, NIH, NIPS, NSERC, NSF, Psychometrika, Scandanavian Journal of Statistics, Social Networks, Sociological Methods and Research, Statistics and Probability Letters, Statistics and Computing, Statistical Methodology, Transactions on Pattern Analysis and Machine Intelligence, Test.

Departmental and University Service

Tenure committee chair, 2009
CSSS Seminar organizer, 2009
Graduate program coordinator, Summer 2006 - Summer 2007
First year theory exam chair, Spring 2005
PhD applied exam committee chair, Fall 2003
Masters applied exam committee chair, Fall 2002, Spring 2006, Spring 2007
Undergraduate curriculum committee chair, 2004-2005
Probability exam committee member, Spring 2004
Department anniversary committee co-chair, 2003-2004
Seminar committee chair , 2001-2002
CSSS consulting committee chair
Several other departmental committees in non-chair role

University of Washington Faculty Senate Representative

Dissertation committee member for more than 25 students in Statistics, Mathematics, Biology, Speech and Hearing and Health Services.

Participant in the 13th, 14th and 15th Annual Mathday for high-school students, sponsored by the University of Washington Department of Mathematics.

Lecturer for the Summer Institute for Mathematics at the University of Washington for high-school students (SIMUW), 2003, 2004, 2005.

As director of CSSS Consulting, I've consulted with or supervised the statistical consulting for roughly 100 clients per year (including students, academic faculty and research faculty) across more than 20 academic departments and schools at the University of Washington.

Teaching

Stat 421, Applied Statistics and Experimental Design
Stat 502, Applied Statistics and Experimental Design
Stat-Math 523, Advanced Theory of Probability
CSSS-Stat 564, Bayesian Statistics for the Social Sciences
CSSS-Stat 560, Hierarchical Modeling for the Social Sciences
CSSS-Stat 567, Statistical Analysis of Social Networks

PhD Students

Anton Westveld, "Time Series Analysis of Relational Data", graduated January 2007.
Assaf Oron, "Up-and-Down and the Percentile-Finding Problem", graduated October 2007.
Xiaoyue Niu, "Semiparametric dependence models," expected to graduate Summer 2010.

Publicly Available Software Packages

eigenmodel Factor models for symmetric relational data. Available at cran.r-project.org
erlcp: Semiparametric Bayesian copula estimation. Available at cran.r-project.org
latentnet: Models for social networks. Available at cran.r-project.org
mbsc: Model-based subspace clustering. Available at www.stat.washington.edu/hoff/Code/MBSC
gbme: Bilinear models for relational data. Available at www.stat.washington.edu/hoff/Code/GBME

Invited Talks and Seminars

6/09 (Invited) Bayesian Nonparametrics Workshop, Moncalieri
5/09 (Seminar) University of Chicago, Chicago, IL
2/09 (Invited) Networks Workshop, Cambridge, MA
1/09 (Invited) Winter Workshop, Gainesville, FL
12/09 (Seminar) Colloque de Statistique, Montreal, Quebec
9/08 (Seminar) University of Washington, Seattle, WA
8/08 (Invited) Joint Statistical Meetings, Denver, CO
5/08 (Seminar) University of Washington, Seattle, WA
4/08 (Seminar) University of North Carolina, Chapel Hill, NC
3/08 (Seminar) Stanford University, Stanford, CA
11/07 (Seminar) University of California, Berkeley, CA
10/07 (Seminar) University of Chicago, Chicago, IL
8/07 (Invited) Newton Institute, Cambridge, UK
3/07 (Seminar) Indiana University, Bloomington, IN
1/07 (Seminar) Johns Hopkins University, Baltimore, MD
1/07 (Seminar) UW Biostatistics, Seattle, WA
10/06 (Invited) VMASC, Norfolk, VA
10/06 (Seminar) University of Chicago, Chicago, IL
9/06 (Seminar) Simon Fraser University, Burnaby, BC
9/06 (Invited) Joint Statistical Meetings, Seattle, WA
7/06 (Invited) 2006 Meeting of the IBC, Montreal, Quebec
7/06 (Invited) SAMSI Workshop on Multiplicity, Research Triangle Park, NC
5/06 (Seminar) UW CSSS, Seattle, WA
4/06 (Seminar) Columbia University, New York, NY
3/06 (Seminar) UW ACMS, Seattle, WA
2/06 (Seminar) UW Statistics, Seattle, WA
1/06 (Seminar) University of Minnesota, Minneapolis, MN
12/05 (Seminar) Carnegie-Mellon University, Pittsburgh, PA
9/05 (Invited) National Academy of Sciences Workshop, Washington, D.C.
8/05 (Invited) Joint Statistical Meetings, Minneapolis, MN
6/05 (Invited) Objective Bayes Summit, Branson, MO
11/04 (Seminar) Institute for Statistics and Decision Sciences, Duke University
5/04 (Seminar) UW Department of Biostatistics
2/04 (Seminar) University of Wisconsin, Madison, WI
1/04 (Seminar) Johns Hopkins School of Public Health, Baltimore, MD
11/03 (Invited) Institute for Mathematics and its Application, Minneapolis, MN

11/03 (Seminar) Columbia University, New York, NY
8/03 (Invited) Joint Statistical Meetings , San Francisco, CA
6/03 (Invited) Objective Bayes Summit, Aussois, France
5/03 (Seminar) RAND Corporation, Santa Monica , CA
3/03 (Invited) Interface 2003, Salt Lake City, UT
11/02 (Invited) National Academy of Sciences Workshop, Washington, D.C.
7/02 (Invited) 2002 Political Methodology Meeting, Seattle, WA
6/02 (Invited) WNAR Meeting of the IBS, 2002, Los Angeles, CA
3/02 (Seminar) Institute of Statistics and Decision Sciences, Duke University
2/02 (Seminar) Center for Statistics and the Social Sciences, University of Washington
11/01 (Seminar) Department of Statistics, University of Washington
11/01 (Seminar) Applied and Computational Math Sciences, University of Washington
8/01 (Invited) Bayesian Nonparametrics Summit, Ann Arbor, MI
7/01 (Invited) Recent Developments in Mixture Modelling, Hamburg, Germany
2/01 (Seminar) Center for Statistics and the Social Sciences, University of Washington
2/00 (Seminar) Department of Statistics, Carnegie Mellon University
2/00 (Seminar) Department of Biostatistics, University of North Carolina-Chapel Hill
2/00 (Seminar) Departments of Statistics and Biostatistics, University of Michigan
1/00 (Seminar) Department of Statistics, University of Washington
1/00 (Seminar) Center for Statistics and the Social Sciences, University of Washington
8/99 (Invited) International Sociological Association, Madison, WI
8/99 (Invited) Joint Statistical Meetings, Baltimore, MD.