TIM C. HESTERBERG, Ph.D.

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Google
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Employment

- 2008-present: Google, Seattle. *Senior Ads Quality Statistician.*
  Campaign Insights: causal modeling to estimate the effectiveness of display ads from observational data. **Brand Insights:** estimate the effectiveness of display ads using surveys and search, using experiments. **Other:** consulting, R guru.
- 1996-2008: Insightful Corp. (formerly MathSoft), Seattle. *Senior Research Scientist.*
  Research and software for bootstrap and other resampling methods, least angle regression, missing data, sequential designs for clinical trials, simulation-based econometric software, functional data analysis, stable distributions, time series, and image analysis methodology. **Grant writing**: supported by NSF, NIH, Navy grants. **Consulting**: clinical trials, telecommunications, energy, risk management. **Training**: public and privates courses on statistical modeling, advanced programming, and resampling. **Other:** development, documentation, technical support, marketing and sales support.
- 1990-1996: Franklin and Marshall College, Lancaster, PA. *Assistant Professor.*
  Research, teaching, and statistical consultant for eight local clients, eighteen faculty, and numerous students.
- 1994: Australian National University, Canberra, Australia, *Visiting Fellow in Statistics.*
- 1988-1990: St. Olaf College, Northfield MN. *Postdoctoral Fellow.*
- 1985-1988: Pacific Gas & Electric Co., CA. *Operations Research Analyst.*
  Statistical consulting and mathematical modeling in fuel inventory policies, short term electric load forecasting, hydroelectric forecasting, network flow optimization, modeling stochastic demands, and other areas. Supervised Systems Engineering Group consulting for two client departments.

Statistical Expert Trainer

- *Bootstrap Methods and Permutation Tests*: 28 courses and workshops in a variety of settings—public and private courses through Insightful, courses for the American Statistical Association at the annual meetings or local chapters, introductory overview lecture, workshops for teachers. 17 domestic, 11 international.
- *Advanced Programming in S-PLUS*: 17 courses: public and private courses through Insightful.

Education

- 1988, Ph.D., Stanford University, Statistics, adviser Brad Efron.
- 1981, Universität Bonn, Germany, Mathematics
- 1980, B.A., St. Olaf College, Mathematics

Honors

- *magna cum laude* with departmental distinction, ΦBK, St. Olaf College.
- DAAD Fellowship, Universität Bonn, Germany (German analogue to Fulbright).
- National Science Foundation Graduate Research Fellowship, Stanford University
- Performance Recognition Award, Pacific Gas & Electric Co.

Computer Skills

- R, S-PLUS, C, Fortran, Emacs, Lisp, SAS, Windows, Linux, Unix.

Publications

- 72 books, book chapters, journal articles, technical reports, and conference proceedings. See http://www.timhesterberg.net/articles.

Areas of Expertise

My first area of expertise is the bootstrap and related resampling techniques. Resampling uses intensive computer simulations in place of the simplifying (and incorrect) assumptions used in classical statistics. My early research focused on how to obtain more accurate answers, quickly. Later research focuses on how to use these methods in education. I give training courses that focus on how to apply resampling methods to a wide variety of applications, and talks both on technical topics and how to use resampling for teaching statistics.

The second area is Monte Carlo simulation methodology, for the bootstrap and other statistical problems such as reliability, risk management, financial modeling of time series, and discrete choice analysis.

The third area is multiple imputation for missing data. Missing data are ubiquitous, particularly when dealing with human subjects. Multiple imputation replaces missing data with multiple sets of random values, taking into account other available information. Then normal statistical procedures can be run for each data set with imputed values. Finally, the results are combined in appropriate ways. This procedure makes better use of scarce and expensive data than do procedures that throw out information from patients with missing data, and avoids the biases that result from other ways of handling missing data.

The fourth area involves sequential designs for clinical trials. In classical designs the length of a study and number of patients are fixed in advance, and decisions are reserved until all data are obtained. In practice, it is often appropriate to stop a trial early, if a drug or treatment appears to be either ineffective or very effective; for example, the drug AZT for fighting AIDS was released early, after early results from the clinical trial showed that it saved lives. Sequential designs explicitly incorporate early stopping, reducing the average length and cost of clinical trials, particularly for drugs and treatments that are much better (or worse) than standard treatments.

The newest area is least angle regression (LARS), for regression and classification (data mining) applications with many candidate predictors. LARS is more stable than stepwise regression, more interpretable than ridge regression, and gives better predictions than both. It unifies and provides a fast implementation for data mining techniques such as the Lasso and least-squares boosting.

Professional Activities

- Executive Board, National Institute of Statistical Sciences, 2013-2015.
- Executive Board, Interface Foundation of North America, 2002–2006, 2010-2015. Secretary 2004–2007, 2010-2015.
- Secretary/Treasurer, Statistical Computing Section of the ASA (American Statistical Association), 2014–2015.
- ASA Education Workgroup on Undergraduate Curriculum Guidelines, 2013–2014.
- Council of Sections Governing Board Vice Chair, ASA, 2010–2012.
- Treasurer, ASA Puget Sound Chapter, 2008–2012.
- ASA Council of Sections Governing Board, 2010.
- ASA Scientific and Public Affairs Committee, 2007-2009.
- ASA Subcommittee on Website Evaluation, 2007.
- Co-chair, Local Arrangements Committee for the Joint Statistical Meetings, 2006.
- Chair-Elect, Chair, Past-Chair, Statistical Computing Section of the ASA, 2004-2006.
- Council of Chapters Representative, ASA, 2002–2006, 2010-2011
- Publication Officer, Statistical Computing Section of the ASA, 2003–2004.
- Chair, ASA Council of Chapters (COC) Traveling Course Committee, 2002–2003.
- Associate Editor, Journal of Computational and Graphical Statistics, 2000–2006.
- Program Chair, Statistical Computing Section of the ASA, 2002; Program Chair Elect 2001.
- Secretary, Nonparametric Statistics Section of the ASA, 2002.
- Treasurer, Nonparametric Statistics Section of the ASA, 2001.
- Traveling Course Committee of the ASA, 2000–2001.
- President of Puget Sound Chapter of the ASA, 1997–1999.
- Organized sessions in 1994, 1995, 1997, 1998, 2001, 2003, 2006, 2007, 2008 for the Conference on the Interface between Computing Science and Statistics and/or Joint Statistical Meetings.
- Chaired group to create ASA Statistical Education Section home page.
- Organization of chapter and regional meetings for statisticians.
- Referee for numerous journals.
- Numerous professional and educational talks.

- Taught *Mathematics Practicum*, where student teams solve real problems for local industry, government, and non-profit organizations.

Fun

Biking, running, Sierra Club, bridge, board games, water bottle rockets, taking high school students to set up computer labs in Guatemala, Ecuador, and Costa Rica. See `http://www.timhesterberg.net`