# Brian J. Lopes, PhD

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## EDUCATION

*University of North Carolina at Chapel Hill*, Chapel Hill, NC

- Ph.D. in Statistics, August 2011
- Dissertation Topic: A Ridge Restricted Maximum Likelihood Approach to Spatial Models - An approach to estimating the variance component (spatial or other) when the design matrix is multicollinear.
- M.S. in Statistics, May 2007

*University of Rochester*, Rochester, NY

- B.A. with Distinction in Statistics, June 1998
- B.A. in Economics, June 1998
- Actuarial Sciences Certificate, Minor in Latin American Studies

Sample Graduate Courses: Linear Models, Generalized Linear Models, Survival Analysis, Categorical Data, Time Series, Environmental Statistics, Sequential Analysis, Statistical Theory, Measure Theory, Probability Theory

## PROFESSIONAL HIGHLIGHTS

- Vibrant and enthusiastic personality, with a passion for sharing his knowledge with others, and excited to expand on said background from others.
- Combination of advanced training in statistical modeling and strong interpersonal skills with experience in business and accounting.
- Solid, rich background in various computer languages, and operating systems, including software development and testing as well as system administration.

## PROFESSIONAL EXPERIENCE

**Freelance Statistician** **Boston, MA**
*Statistical Consultant* February 2013 - *Current*

- Tutoring undergraduate Statistics and Computer Science
- Python and R development specializing in cloud computing deployment
- Statistical consulting for algorithm development, data science and general computing

**Environmental Protection Agency (Consultant)** **Boston, MA**
*Statistical Consultant* August 2011 & December 2012

- Updated standard spreadsheet used for a consistent way of estimating air material standards provided by manufacturers
- Implemented statistical tests for equivalence over statistical tests for difference when comparing measurements
- Tested and simulated results in order to release to public

**ChoiceStream, Inc.** **Boston, MA**
*Statistician/Data Scientist* November 2011 - October 2012

- Software development in Python leveraging Django and NumPy packages
- Designed and outlined integration of social networking relationships within legacy recommendation engine
- Implemented various tracking software to monitor questionable advertising media and overall system performance
- Developed proprietary monthly Audience Cost Index calculation for tracking media trends. Using a tree structure

**IBM** **Cambridge, MA**
*Senior Analytical Consultant* August 2008-March 2010

- Modeled marketing mix performance for US Software Group Division and Sweden Marketing Division
- Derived methodology for tracking the number of influential marketing touches done in a sale
- Evaluated saturation level for IBM events in Germany and UK regions
- Conducted survey analysis on customer satisfaction
- Developed strategy for portfolio optimization
- Assisted in database collection and transition

**SAS Institute, Inc.** **Cary, NC**
*R&D Technical Student* May 2003-August 2003 & May 2004-August 2005 & August 2006-August 2008

- Documented statistical procedures available in SAS/STAT and SAS/QC
- Developed test programs for the experimental Bayesian procedures in SAS/STAT
- Tested high level graphics software on various operating systems including Windows, Unix, MVS, and OpenVMS
- Maintained company web site that provides technical information on the statistical software products
- Lead group in effort to update software features on company website

**University of North Carolina** **Chapel Hill, NC**
*Research Assistant* August 2005-August 2006

- Consulted with North Carolina Urban Water Consortium for drought planning
- Conducted research with Richard L. Smith and Lawrence E. Band to derive new simulation approach for daily precipitation data
- Developed R package, `sircl`, to run simulations of various scenarios

**University of North Carolina and Duke University** **Chapel Hill, NC**
*Research Assistant* August 2003-May 2004

- Conducted research with Richard L. Smith and Prasad S. Kasibhatla on Carbon Monoxide (CO) inverse modeling
- Derived new statistical approach for multicollinearity involved with source apportionment
- Developed spatial statistics R package, `RREML`, that incorporates C and R internals to estimate spatial distributions

**Baltimore, Lucas & Co.** **Newton, MA**
*Staff Accountant* July 1998-August 2000

- Junior level accountant, in charge of bank reconciliation, corporate tax returns, payroll, estate planning and filing.

## TEACHING EXPERIENCE

**University of North Carolina at Chapel Hill** **Chapel Hill, NC**
*Teaching Fellow/Teaching Assistant for Introductory Statistics* August 2000-May 2003

- Received overwhelmingly positive reviews that led to Department Teaching Award
- Instructor for over 5 courses with an average size of 40 students
- Designed and implemented course syllabus and lectures
- Created and graded student assignments and exams

**University of Rochester** **Rochester, NY**
*Undergraduate Teaching Assistant* September 1997-December 1997

- Taught Recitation Class of approximately 40 students
- Assisted Professor in formulating of questions for exams and assignments, and valuated weekly assignments and exams

## TECHNICAL SKILLS

- R package development, including use of C and Fortran libraries
- UNC Dept. of Statistics and Operations Research Linux System Administrator for 4 years
- Package maintainer for Emacs package pydoc
- *Operating systems*: AWS, Linux, OS X, Unix, Windows
- *Scientific programs*: C, LaTeX, Mathematica, Python, R, SAS, S-Plus, SQL
- *General computing*: Bash, GIT, Emacs, MS Office Suite, Subversion
- *Languages*: English and Spanish (attended University for semster in Heredia, Costa Rica)

## PAPERS

Robert Erhardt, Lawrence Band, Richard Smith and Brian Lopes. **Statistical Downscaling of Precipitation on a Spatially Dependent Network Using a Regional Climate Model** *Stochastic Environmental Research Risk Assessment* (link)

Brian J. Lopes and Richard L. Smith. **A Ridge Restricted Maximum Likelihood Approach to Spatial Models**. *In Progress*

Brian J. Lopes. **RREML: An R package for Ridge Restricted Maximum Likelihood Estimation of Variances with a Known Structure**. *In Progress*

## PRESENTATIONS AND POSTERS

**The ISI International Conference on Environmental Statistics and Health** July 2003
**Santiago de Compostela, Spain**
*Inverse problems associated with source apportionment*

**Winter Workshop on Environmental and Environmental Health Statistics** January 2007
**Gainesville, FL**
*Stochastic precipitation models and simulations*

## STUDENT ACTIVITIES

- 2-year senator in Graduate and Professional Student Federation, member of Appropriations and Finance Committees
- Oversaw computational resources for UNC Department of Statistics and Operations Research for 3 years
- Semester abroad in Heredia, Costa Rica