

Eric R. Ruggieri

Division of Applied Mathematics
Brown University
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Education:

Ph. D. Applied Mathematics, Brown University, Expected May 2010

Dissertation Topic: Application of the change point algorithm and variable selection techniques to a 5 Myr long record of the Earth's glacial coverage. Least squares and Bayesian models are developed to test some of the existing hypotheses of ice sheet dynamics.

Sc. M. Applied Mathematics, Brown University, May 2006

B.A. Mathematics/Computer Science, Providence College, May 2005

Graduated *Summa Cum Laude*, Cumulative GPA 3.98, Rank: 6 of 891

Teaching Experience:

Providence College

Special Lecturer of Mathematics September 2008 – Present

- Taught *Calculus and Analytical Geometry II*
- Developed syllabi, course policies, lessons, homework assignments, quizzes, examinations
- Utilized course website to disseminate supplemental information, assignments, and answer keys
- Held office hours and met one-on-one with students

Brown University

Special Lecturer of Applied Mathematics September – December 2008

- Taught only section of *Information Theory*
- Created lessons, examinations
- Utilized course website to distribute supplemental readings, homework assignments, solutions

Guest Lecturer

- *Statistical Inference*, November 2009
Lectured on applications of statistical models to the Geological Sciences
- *Information Theory* October 2007, October-November 2009
Presented series of lectures on Kraft Inequality and Channel Coding Theorem
- *Inference in Genomics and Molecular Biology* February 2008, September 2008, March 2009
Lectured on the Change Point algorithm and its applications

Teaching Assistant

- *Essential Statistics*, January – May 2007
- *Statistical Inference*, September – December 2006
- *Topics in Chaotic Dynamics*, January – May 2006

Honors and Awards:

- Nominated for **Presidential Award for Excellence in Teaching** 2009 – Brown University

Research Experience:

Brown University, Research Assistant September 2007 – Present

- Topics: Inferences in Discrete High Dimensional Spaces, Geological Time Series Analysis, Statistical Variable Selection, Computational Biology – specifically Disease Association Studies
- Developed a least squares and Bayesian change point algorithm to define break points in paleoclimatic time series
- Developed variable selection algorithm to test competing hypotheses for ice sheet dynamics
- Developed pair-HMM Phasing algorithm to be used in Disease Association Studies

College of William and Mary, REU (Research Experience for Undergraduates), June – August 2004

- Created mathematical model of Intra-Guild Predation in conjunction with Professor Sebastian Schreiber

Publications:

- Continual Change in the Earth's Glaciers: An Application of the Bayesian Change Point and Variable Selection Algorithm to $\delta^{18}\text{O}$ Time Series of the Plio-Pleistocene (*in preparation*)

- The Mid-Pleistocene Transition: From Forcing to Pacing of Ice Sheets (*in preparation*)
- E. Ruggieri and C.E. Lawrence, On Efficient Calculations for Bayesian Variable Selection, (*to be submitted*)
- E. Ruggieri, T. Herbert, K. Lawrence, and C.E. Lawrence, (2009). The Change Point Method for Detecting Regime Shifts in Paleoclimatic Time Series: Application to $\delta^{18}\text{O}$ Time Series of the Plio-Pleistocene. *Paleoceanography* 24, PA1204, doi:10.1029/2007PA001568
- E. Ruggieri and S.J. Schreiber, (2005). The Dynamics of the Schoener-Holt Model of Intra-Guild Predation. *Mathematical Biosciences & Engineering*, 2, 279-288.

Published Software:

Change Point – Programmed and Developed in Matlab with Graphical User Interface

- Calculates optimal placement of any number of change points, or regime boundaries, using least squares linear regression
- Generates sinusoidal or polynomial regression model or can have regression model input by user
- Available at www.dam.brown.edu/people/ruggieri/software.htm

Presentations:

- *The Mid-Pleistocene Transition: From Forcing to Pacing of Ice Sheets*, presenting at AMS Session on Probability and Statistics, Joint Mathematics Meetings, San Francisco, CA, January 2010
- *The Mnemonics of Mathematics*, presented at the 6th annual New England Peer Tutoring Association Meeting, Bryant University, Smithfield, RI, April 2005
- *Effective Use of the Algorithms in Action Website*, presented at 8th Annual Consortium for Computing Sciences in Colleges Northeastern Conference (CCSCNE), CCRI, Providence, RI, April 2003

Grants and Fellowships:

- Dissertation Fellowship, Brown University, September 2009-May 2010
- Brown University Fellowship, September 2005-May 2006

Professional Development:

Sheridan Center for Teaching and Learning Certificate Program

- Certificate III – Developing a Teaching Portfolio (May 2009)
http://www.brown.edu/Administration/Sheridan_Center/certificateprograms/pds.html
- Certificate II – Classroom Tools Seminar (May 2008)
http://www.brown.edu/Administration/Sheridan_Center/certificateprograms/ct.html
- Certificate I – Sheridan Teaching Seminar (May 2006)
http://www.brown.edu/Administration/Sheridan_Center/certificateprograms/sts.html

Additional Experience:

Peer Tutor – Office of Academic Services, Providence College, September 2002 – May 2005

- Master Level CRLA Certification
- Provided support in Mathematics, Physics, Computer Science

Peer Tutor – Department of Mathematics and Computer Science, Providence College, September 2002-May 2005

Office of Academic Services Advisory Board – Providence College, March 2004 – May 2005

- Represented student body on panel with administrators, faculty and Academic Services staff
- Designed and implemented policies to better serve the Providence College student body with regards to student support services

Search Committee for Director of Academic Services – Providence College, January – April 2005

- Reviewed submitted applications, selected candidates for interviews, and conducted interviews for the Director's position

Admissions Ambassador, Providence College, September 2004 – May 2005

- Spoke at Group Information Sessions for prospective students and parents
- 'Day Visits' – allowed students to attend classes with us for a day

Assistant to State Advisor, Rhode Island FCCLA (Family, Career, and Community Leaders of America)
September 2002 – May 2004

- Assisted with creation of new organization within Rhode Island
- Spoke of experiences to new advisors

- Participated in planning of first annual state leadership conference
- Worked with students on community service projects
- Presented workshops on Effective Leadership and 'Career Connections'

Professional Memberships and Honor Societies (Induction Year):

- American Mathematical Society (AMS)
- Sigma Xi – Scientific Honor Society (2007)
- Phi Sigma Tau – Philosophical Honor Society (2004)
- National Society of Collegiate Scholars (2004)
- Pi Mu Epsilon – Mathematical Honor Society (2003)

References:

Charles Lawrence, Professor

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Donald McClure, Professor Emeritus

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Sorin Istrail, Professor

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Steven Clemens, Associate Professor

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