David Gerard

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Education

Ph.D. Statistics, University of Washington, June 2015.

M.S. Statistics, The Ohio State University, June 2012.

B.S. Mathematics, The Ohio State University, June 2010.

B.S. Molecular Genetics, The Ohio State University, June 2010.

Articles

Gerard, D., & Hoff, P. (2016). A higher-order LQ decomposition for separable covariance models. *Linear Algebra and its Applications*, 505, 57-84. [Link to LAA][Link to arXiv]

Gerard, D., & Hoff, P. (2015). Adaptive higher-order spectral estimators. *arXiv preprint arXiv:1505.02114.* [Link to arXiv]

Gerard, D., & Hoff, P. (2015). Equivariant minimax dominators of the MLE in the array normal model. *Journal of Multivariate Analysis*, 137, 32-49. [Link to JMVA] [Link to arXiv]

Pollack, J. D., **Gerard, D.**, & Pearl, D. K. (2013). Uniquely Localized Intra-Molecular Amino Acid Concentrations at the Glycolytic Enzyme Catalytic/Active Centers of Archaea, Bacteria and Eukaryota are Associated with Their Proposed Temporal Appearances on Earth. *Origins of Life and Evolution of Biospheres*, 43(2), 161-187. [Link to Springer]

Gerard, D., Gibbs, H. L., & Kubatko, L. (2011). Estimating hybridization in the presence of coalescence using phylogenetic intraspecific sampling. *BMC evolutionary biology*, 11(1), 291. [Link to BMC]

Research Experience

Postdoctoral Scholar under Professor Matthew Stephens: 09/2015 - Present

Developing adaptive shrinkage methods to account for hidden confounding in large scale gene expression studies.

Research Assistant Under Professor Peter Hoff: 09/2013 - 06/2015

Studied optimal estimation of covariance matrices in Gaussian arrays using the notions of equivariance.

Developed novel tensor decompositions, creating higher-order versions of well-known matrix decompositions.

Developed singular value shrinkage mean estimators for tensor-variate data.

Research Assistant Under Professor Joe Verducci: 09/2011 - 06/2012

Studied monotone association between gene expression and drug resistance within an unspecified number of subtypes of cancer.

Undergraduate Research Fellow Under Professors Laura Kubatko and H. Lisle Gibbs: 04/2009 - 06/2010

Studied the hybridization of two subspecies of Missouri Rattlesnakes and two populations of Black Ratsnakes.

Duties included sequencing work in the lab, computer programming using Perl, and data analysis with various programs.

Teaching Experience

Lecturer of introductory statistics 06/2013 - 09/2013

Duties included: creating lesson plans, homework assignments, and exams.

Graduate Teaching Assistant 09/2012 - 06/2013

Taught four one-hour recitation sections of introductory statistics every week.

Lecturer of introductory statistics 09/2011 - 12/2011

Duties included: leading discussions, grading, and individual tutoring.

Phylogenetic Workshop Teaching Assistant 06/2011 - 08/2011

Led a group of undergraduate researchers studying HIV. We studied the association between evolutionary distance (measured by branch distance along estimated trees) and clinical variables collected by an HIV treatment center in Belgium.

Phylogenetic Workshop Teaching Assistant 06/2010 - 08/2010

Led lab sessions on Unix and various phylogenetic program packages.

Led a group of undergraduates researching the evolutionary origins of flightless birds.

Individually tutored an undergraduate student on phylogenetic research and statistical analysis with R. We tried to incorporate protein structure into our gene tree estimates while studying the evolutionary relationships of HPV.

Undergraduate Teaching Assistant: 09/2008 - 12/2008

Taught four one-hour recitation sections of intermediate algebra every week.

Awards

Z.W. Birnbaum Award for the best general exam of the 2013-2014 academic year.

Distinguished University Fellowship (September 2010 - June 2012).

Graduated Summa Cum Laude (June 2010).

Award for excellent research presentation at the BMPS Poster Forum (23 April 2010).

Medalist Scholarship (September 2006 - June 2010):

For academic excellence and essay writing skills.

President's Salute Nominee (April 2010):

For academic excellence among peers from the college of Arts and Sciences.

Coding

R Packages: `tensr`, `hose`, `vicar`.

Advanced training: R, LATEX.

Intermediate training: Python, Matlab/Octave, Mathematica.

Basic training: C, SAS.

Last updated: October 24, 2016