John A. Ramey II

Ph.D. Candidate, Department of Statistics, Baylor University
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Personal Statement

My research interests are primarily in statistics with an emphasis on bioinformatics applications in the areas of statistical pattern recognition, machine learning, modern multivariate analysis, computational statistics, and Bayesian methods.

Education

Baylor University — Waco, TX
Ph.D. Statistics — *August 2012 (Anticipated)*
- Adviser: Dean M. Young, Ph.D.

Baylor University — Waco, TX
M.Sc. Statistics — *Dec. 2009*

Baylor University — Waco, TX
B.Sc. Mathematics (Minor: Computer Science) — *Aug. 2008*

Awards, Grants & Honors

Outstanding Graduate Student - Department of Statistical Science, Baylor University 2011
JSM Stat Bowl - Champion 2010
Outstanding First Year Graduate Student - Department of Statistical Science 2009
Baylor University Dean's Scholarship 2008-2013

Publications

Ramey, J. A. and Young, P. D. "A Comparison of Regularization Methods Applied to the Linear Discriminant Function with High-Dimensional Microarray Data," *Journal of Statistical Computation and Simulation.*

Sego, L. H., **Ramey, J. A.**, Shulman, S. A., Anderson, K. K., Wilson, J. E., Pulsipher, B. A., and Sieber, W. K. "A Bayesian Acceptance Sampling Model for Combining Judgmental and Randomly Selected Samples," *Technometrics.* (minor revision)

Submitted Publications

McDermott, J., Wang, J., Mitchell, H., Webb-Robertson, B., Hafen, R., **Ramey, J.**, and Rodland, K. "Challenges in Biomarker Discovery: Combining Expert Insights with Statistical Analysis of Complex Omics Data," *Expert Opinion on Medical Diagnostics.*

Greer, B., Young, D., Harvill, J., and **Ramey, J.** "Pseudo-likelihood Intervals for the Ratio of Two Poisson Rates with Data Subject to Under-Reporting," *Computational Statistics and Data Analysis.*

Publications in Preparation

Ramey, J. A., Sego, L. H., and Young, D. M. "Cluster Stability Evaluation of Gene Expression Data via Cluster Omission." To Be Submitted to *Bioinformatics*.

Ramey, J. A. and Young, D. M., "Diagonal Discriminant Analysis with Simultaneous Diagonalization of Covariance Matrices." To Be Submitted to *Bioinformatics*.

Ramey, J. A., Sego, L. H., and Young, D. M., "A Probabilistic Interpretation of Comembership and Similarity Indices in Clustering Evaluation with Applications to Proteomics." To Be Submitted to *Biometrics*.

Ramey, J. A., Gosink, L., and Young, D. M., "On the Choice of Error Rate Estimators for Model Selection with Regularized Discriminant Analysis: Beyond Cross-Validation." To Be Submitted to *Computational Statistics and Data Analysis*.

Ramey, J. A., "A Bayesian Perspective of the Information Density Approach to Active Learning." To Be Submitted to *Neural Information Processing Systems (NIPS), 2012*.

Conference Papers

Ramey, J. A. and Young, D. M. (2010). *A More Computationally Efficient Model Selection Method for Regularized Discriminant Analysis*, Joint Statistical Meetings Proceedings, Vancouver, BC, Canada.

Invited Talks

Ramey, J. A. (February 2012). *Diagonal Discriminant Analysis with Simultaneous Diagonalization of Covariance Matrices.* Fred Hutchison Cancer Research Center, Seattle, Washington, USA.

Ramey, J. A. (February 2011). *Diagonal Discriminant Analysis after Simultaneous Diagonalization of Covariance Matrices with High-Dimensional Data.* Pacific Northwest National Laboratory, Richland, Washington, USA.

Poster Presentations

Ramey, J. A. and Young, D. M. (August 2010). *Efficient Model Selection for Regularized Discriminant Analysis.* Joint Statistical Meetings, Vancouver, British Columbia, Canada.

Ramey, J. A. (April 2010). *Bayesian Regularized Logistic Regression in High-Dimensional Classification.* Instituto Panamericano de Estudios Avanzados en Probabilidad y Estadística: Semana en Métodos de Reducción de Dimensión. Centro de Investigación en Matemáticas, A.C. Guanajuato, Mexico.

Journal Reviewer

Journal of Statistical Computation and Simulation

Research Experience

Pacific Northwest National Laboratory Richland, WA
Research Associate, National Security Internship Program *June 2011 - Present*

- Apply machine learning and multivariate statistical methods to genomic and proteomic data.
- Construct clustering evaluation and validation methods for microarray and proteomic data.
- Employ supervised, semi-supervised, unsupervised, and active learning methods along with semi-supervised clustering with large data sets to incorporate subject-matter expertise for improved performance and understanding of data.

Statistical and Machine Learning Research Group Waco, TX
Department of Statistical Science, Baylor University *2009-present*

Research Experience for Undergraduates at The Ohio State University Columbus, OH
Vertical Integration of Research and Education in Computational Mathematics *Summer 2004*

- Focused on Number Theory with an emphasis on Random Matrix Theory.

Teaching Experience

Elementary Statistics Baylor University
Teacher of Record *Aug. 2009 - May 2011*

- Taught this freshman level course in the Statistics Department.
- Developed homework, quizzes and exams for the class.
- Attended weekly meetings to enhance and improve teaching skills and techniques.

Statistics Department Tutoring Lab Baylor University
Graduate Teaching Assistant *Aug. 2008 - May 2011*

- Conducted one-on-one and group tutoring to students in undergraduate statistics courses.

Statistics for Psychology Majors Baylor University
Graduate Teaching Assistant *Aug. 2008 - Jul. 2009*

- Provided weekly supplemental instruction to a small group of undergraduate students.
- Lectured to a large number of students in an auditorium during professor absences.
- Led weekly course seminars.

Software Projects (Available at http://github.com/ramey)

`activelearning`: An R Package for Querying Unlabeled Observations with Active Learning.

`classify`: A Supervised Classification Benchmarking Framework in R.

`diagdiscrim`: An R Package for Diagonal Discriminant Analysis Models.

`errorest`: An R Package for Error Rate Estimation for Statistical and Machine Learning.

`regdiscrim`: An R Package for Covariance Matrix Regularization in Discriminant Analysis.

Professional Membership

Student Member – Association for Computing Machinery
2011-present

Student Member – Institute of Electrical and Electronics Engineers
2011-present

Founder – R Users Group Waco, TX
Department of Statistical Science, Baylor University *2010-present*

Student Member – American Statistical Association
2008-present

Other Professional Experience

Candidate Resources, Inc. Grand Prairie, TX
Senior Web Programmer *Jan. 2007 - Nov. 2007*

Skills

Programming and Markup Languages

- **Skilled:** R
- **Proficient:** BUGS, LaTeX, Linux, Python, SQL
- **Experienced:** ASP, C#, C++, Java, Mathematica, MATLAB, .NET, PHP

Miscellaneous

United States Soccer Federation
Referee *1995 - present*

References

Dr. Dean Young (Adviser)
Department of Statistics, Baylor University
Dean_Young@baylor.edu

Dr. John Seaman
Department of Statistics, Baylor University
John_Seaman@baylor.edu

Dr. Landon Sego
Applied Statistics and Computational Modeling, Pacific Northwest National Laboratory
landon.sego@pnnl.gov

Dr. James Stamey
Department of Statistics, Baylor University
James_Stamey@baylor.edu