Andrew M. Raim

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Statistician with experience in computing and software development. Research has focused on statistical computing, finite mixtures, flexible models for over- and underdispersion, and applied modeling problems.

Education

- Ph.D. Statistics, UMBC, Spring 2014, Dissertation: *Computational Methods for Finite Mixtures using Approximate Information and Regression Linked to the Mixture Mean.* Advisor: Nagaraj K. Neerchal.
- M.S. Statistics, UMBC, Fall 2011.
- M.S. Computer Science, UMBC, Fall 2007.
- B.S. Computer Science, University of Maryland, Baltimore County (UMBC), Spring 2002.

Work Experience

- June 2014 – Present. Research Mathematical Statistician, Center for Statistical Research and Methodology, U.S. Census Bureau.
- Sept 2008 – May 2014. Graduate Assistant, UMBC Dept of Mathematics and Statistics.
- Sept 2002 – Aug 2008. Software Engineer, Advertising.com.
- Feb 1999 – Nov 2001. Helpdesk Consultant, UMBC Office of Information Technology.

Graduate Assistantships

- Graduate assistant to Dr. Matthias K. Gobbert at High Performance Computing Facility, Fall 2009 – Spring 2014. Acitivities included developing center web site, participation in *Interdisciplinary Program in High Performance Computing* REU in summers 2010–2013, coauthoring technical reports demonstrating cluster performance and statistical computing, and providing support to user community.
- Instructor for STAT 350 *Statistics with Applications in the Biological Sciences* (Winter 2013, Hybrid Course). Teaching Assistant for STAT 350 *Statistics with Applications in the Biological Sciences* (Spring 2009) and STAT 351 *Applied Statistics for Business and Economics* (Fall 2008).

Selected Papers

[1] Andrew M. Raim, James A. Livsey, and Kyle M. Irimata. Rejection sampling with vertical weighted strips. (Submitted), 2024+. Preprint: https://arxiv.org/abs/2401.09696.

[2] Andrew M. Raim. Direct sampling with a step function. *Statistics and Computing*, 33(1), 2023.

[3] Andrew M. Raim, Thomas Mathew, Kimberly F. Sellers, Renee Ellis, and Mikelyn Meyers. Design and sample size determination for experiments on nonresponse followup using a sequential regression model. *Journal of Official Statistics*, 39(2):173–202, 2023.

[4] Darcy Steeg Morris, Andrew M. Raim, and Kimberly F. Sellers. A Conway-Maxwell-multinomial distribution for flexible modeling of clustered categorical data. *Journal of Multivariate Analysis*, 179:104651, 2020.

[5] Andrew M. Raim, Nagaraj K. Neerchal, and Jorge G. Morel. An extension of generalized linear models to finite mixture outcome distributions. *Journal of Computational and Graphical Statistics*, 27(3):587–601, 2018.

[6] Andrew M. Raim, Nagaraj K. Neerchal, and Jorge G. Morel. An approximation to the information matrix of exponential family finite mixtures. *Annals of the Institute of Statistical Mathematics*, 69(2):333–364, 2017.

See http://andrewraim.github.io for full list of papers, technical reports, presentations, and software.

Organizations & Service

- Member of American Statistical Association (ASA).
- Refereed papers for American Statistician, Biometrical Journal, BMC Medical Research Methodology, Communications in Statistics: Theory and Methods, Communications in Statistics: Simulation and Computation,

Computational Statistics and Data Analysis, Hacettepe Journal of Mathematics and Statistics, Heliyon, Journal of Statistical Computation and Simulation, Statistical Analysis and Data Mining, Statistical Methodology, Statistics and Computing, Statistics and Operation Research Transactions, and Mathematical Population Studies.

- Member of PhD committee for Elias Al-Najjar (UMBC 2015), Marilena Flouri (UMBC 2016), and Sai Popuri (UMBC 2017). Reader for Qing Ji (UMBC 2019), Reetam Majumder (UMBC 2021), and Nadeesri Wijekoon (UMBC 2021).

Computing Skills

- R for statistical and numerical computing. Includes associated tools such as Rstudio, Rcpp, and Rmarkdown. Experience authoring packages and preparing for CRAN. ★★★★
- Linux environment. ★★★★
- Source control with Git; also used Subversion and CVS. ★★★★
- Document preparation in LaTeX and Markdown, including papers, posters, slides, and web pages. ★★★★
- Software development in C and C++ w/ STL; also used Java. ★★★★
- Shell scripting with Bash and Python; also used Perl. ★★★
- Bayesian computing with Stan. ★★★
- Data wrangling and exploration with tidyverse, ggplot, SQL. ★★★
- Parallel computing on HPC clusters. Includes MPI with C/C++; SNOW, Rmpi, and pbdR packages for R; PBS and SLURM schedulers. ★★
- Technical computing with Julia and Python. ★★
- Data processing and analysis with SAS. ★

More ★'s indicate more frequently and recently used.