Andrew M. Raim

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Ph.D. in Statistics and professional experience in statistics and computing. Current interests include (finite) mixtures, overdispersion models, and statistical computing.

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. Direct sampling with a step function. *Statistics and Computing*, 33(1), 2023.

[2] 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.

[3] 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.

[4] 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 Journal of Statistical Computation and Simulation, Statistical Methodology, Statistical Analysis and Data Mining, Computational Statistics and Data Analysis, American Statistician, Communications in Statistics: Theory and Methods, Statistics and Operation Research Transactions, Hacettepe Journal of Mathematics and Statistics, Biometrical Journal, Heliyon, 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.