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, as part-time student.
- B.S. Computer Science, University of Maryland, Baltimore County (UMBC), Spring 2002, cum laude.

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.

Selected Papers

[1] Andrew M. Raim. Direct sampling in Bayesian regression models with additive disclosure avoidance noise. (Submitted), 2021+. Preprint: https://www.census.gov/library/working-papers/2021/adrm/RRS2021-01.html.

[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.

Awards

- Dr. Bimal and Mrs. Suchandra Sinha Endowment for Excellence in Statistics, UMBC, 2013.
- Student presentation awards at Probability and Statistics Day, an annual conference hosted by UMBC Math & Stat Dept: three prizes for posters (2010, 2011, 2013), and one for talks (2012).

Graduate Assistantships

RA to Dr. Matthias K. Gobbert, High Performance Computing Facility, UMBC, Fall 2009 – Spring 2014.

- Assisted with the release of the 86 node HPC cluster `tara` and the heterogeneous 240 node cluster `maya`.
- Authored technical reports demonstrating cluster performance and statistical computing.
- Developed the center's web site `hpcf.umbc.edu`.
- Presented one-hour workshops on R and MPI for the UMBC community.
- Provided user support through mailing list and in-person meetings.
- Worked at the REU (Research Experience for Undergraduates) site, *Interdisciplinary Program in High Performance Computing*, in summers 2010–2013, as teaching assistant and research mentor. Helped to develop material on statistical computing and high performance computing with R. Participated in 2015 as an an external project client, and in 2017 REU as a project mentor.

Teaching

- Instructor for STAT 350, *Statistics with Applications in the Biological Sciences*, Winter 2013. Three week long hybrid course with lecture notes posted online and in-person discussion classes.
- Teaching Assistant for STAT 350, *Statistics with Applications in the Biological Sciences*, Spring 2009.
- Teaching Assistant for STAT 351, *Applied Statistics for Business and Economics*, Fall 2008.

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.
- PhD committee member for UMBC Statistics students: Elias Al-Najjar (July 2015), Marilena Flouri (April 2016), Sai Popuri (Sept 2017), and Qing Ji (Nov 2019, as reader).
- Officer for UMBC Mathematics & Statistics Graduate Student Association. Served as President (2013), Webmaster (2012), and Treasurer (Fall 2008 – Spring 2009).

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. ★★★
- 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. ★
- Database use with SQL. ★

Higher ★'s indicate more frequently used in recent work.