Joshua Agterberg

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Education

2017-Present	Johns Hopkins University PhD in Applied Mathematics and Statistics Master of Science in Engineering in Applied Mathematics and Statistics Advised by Professor Carey Priebe GPA: 4.0/4.0
2013 – 2017	University of Wisconsin-Madison Bachelor of Business Administration, Major in Actuarial Science and Mathematics Advised by Professor Marjorie Rosenberg GPA: 3.73/4.0, Actuarial Science Major GPA: 4.0/4.0 Graduated with Distinction

Honors and Awards

Spring 2017	DW Simpson Scholarship
Fall 2016	Bicknell Scholarship
2013-2014	Arthur C. Nielsen Scholarship
2013	Directly Admitted to Wisconsin School of Business
2014-2017	Dean's list (>3.8 Semester GPA – achieved five separate times)

Research Activities

2018-Present	Generalized Random Dot Product Graphs Investigating statistical properties of the Generalized Random Dot Product Graph with Professor Carey Priebe.
2018-Present	Vertex Nomination Investigating the statistical properties of Vertex Nomination with Professors Vince Lyzinski and Carey Priebe.
2018	DARPA D3M Summer workshop Implemented Python code for graph-related problems for the D3M (Data-Driven Discovery of Models) summer workshop in Arlington, VA, under the direction of Professors Youngser Park and Carey Priebe. Responsibilities included updating primitives (individual algorithms), editing pipelines (collections of algorithms), and submitting results for formal evaluation.
2017-Present	Graph Matching Writing R code for splrMatrix object (a sparse plus low-rank matrix) for faster calculations and cheaper storage of centered adjacency matrices under direction of Professors Daniel Sussman and Carey Priebe.

2015-Present Clustering in Insurance

Examine the effectiveness of K-medoids (PAM) algorithm on 2010 NHIS survey dataset under direction of Professor Margie Rosenberg.

Implementing weighted Goodall's dissimilarity index in R and Rcpp to measure difference between observations when data are categorical.

2017-Present `catDist` R Package

Personal project implementing several different categorical dissimilarity measures for use with K-Medoids and spectral clustering methods.

Professional Experience

2018-Present **Research Assistant**, Johns Hopkins University, Baltimore, MD

Research assistant to Professor Carey Priebe in the Applied Mathematics and Statistics Department. Also working with Professors Daniel Sussman of Boston University, Vince Lyzinski of the University of Massachusetts-Amherst, and Youngser Park at Johns Hopkins.

2017 **Analytics Intern**, CNA Financial, Chicago, IL

Examined the predictive value of FDA data on losses for products and professional liability for medical devices.

Cleaned and edited FDA data to merge with internal data and Dun and Bradstreet data. Modeled losses in R using a GLM with Tweedie family and log-link to account for zero-inflation.

Created univariate with-without plots to examine effect of specific FDA variables on losses

2016 **Actuarial Intern**, CNA Financial, Chicago, IL

Developed a Markov Chain model for predicting the probability of payment for insurance claims given the current legal state.

Generated piecewise linear splines to implement time dependence of Markov Model.

2013 **Actuarial Intern**, CUNA Mutual Group, Madison, WI

Created spreadsheets from scratch to replicate GAAP and Statutory reserves results from PolySystems for equity-indexed annuity policies as a control for auditors.

Analyzed mortality experience study data in Excel by comparing actual to expected ratios with the proposed new table and helped management determine to use new table across all annuity products.

Teaching

Johns Hopkins University (Applied Mathematics and Statistics)

Spring 2019	Teaching Assistant for 553.762 Nonlinear Optimization II for Professor Daniel Robinson
Fall 2018	Teaching Assistant for 553.730 Statistical Theory for Professor Carey Priebe
Summer 2018	Instructor for Financial Mathematics Master's Program Statistics Review

University of Wisconsin-Madison (Wisconsin School of Business, Risk and Insurance)

Spring 2017	Grader for ActSci 655 Health Analytics for Professor Margie Rosenberg
Fall 2016	Grader for ActSci 651 Life Contingencies II for Professor Paul Johnson
Spring 2016	Grader for ActSci 650 Life Contingencies I for Professor Margie Rosenberg

University of Wisconsin-Madison (School of Music)

Spring 2015-Spring 2017, Private Piano Instructor

Skills and Qualifications

Proficient in R, Java, Python, Linux, Git, C++ (Rcpp), Matlab, LaTeX, Microsoft Excel, and VBA

Actuarial exams passed: Exam P (July 2014); Exam FM (February 2015), Exam MFE (July 2016); Fulfilled Econ, Finance, and Statistics VEE