Joshua Agterberg
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Education

2017-Present Johns Hopkins University
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)

Projects

2018-Present Vertex Nomination

Investigating the statistical properties of Vertex Nomination with Dr. Vince Lyzinski.

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 Dr. Youngser Park. 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 Daniel Sussman.

2015-Present Clustering in Insurance

Examine the effectiveness of K-medoids (PAM) algorithm on 2010 NHIS survey dataset under direction of 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 Professor Daniel Sussman of Boston University, Professor Vince Lyzinski of the University of Massachusetts-Amherst, and Professor 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

2016-2017 **Grader**, Wisconsin School of Business

Grader for three courses: ActSci 650 (Spring 2016), ActSci 651 (Fall 2016), and ActSci 655 (Spring 2017)

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.

2013-2017 **Piano Teacher**, UW-Madison School of Music

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

Quantitative Courses Taken

Johns Hopkins
- 553.730 Statistical Theory I
- 553.720 Probability Theory I
- 553.761 Nonlinear Optimization I
- 553.762 Nonlinear Optimization II
- 553.766 Combinatorial Optimization
- 553.739 Statistical Pattern Recognition
- 553.721 Probability Theory II

University of Wisconsin-Madison
- Math 431 Introduction to Probability
- Math 514 Numerical Analysis
- Math 521 Real Analysis
- Math 522 Real Analysis II
- Math 525 Linear Programming
- Math 531 Probability Theory
- Math 629 Introduction to Measure Theory
- Math 632 Introduction to Stochastic Processes
- Math 635 Introduction to Stochastic Calculus
- Stat 310 Mathematical Statistics
- ActSci 650 Life Contingencies I
- ActSci 651 Life Contingencies II
- ActSci 652 Loss Models
- ActSci 654 Regression and Time Series For Actuaries
- CS 367 Introduction to Data Structures
- Finance 320 Investment Theory

Extracurricular Activities and Interests

2017-Present *Dominion*

Personal project implementing popular board game *Dominion* in Java.

Spring 2016 *Directed Reading Program – Machine Learning*

Read about Machine Learning techniques and implemented common algorithms in MATLAB.

Met weekly with a graduate student to discuss the material and gave a talk to a small group the end of the semester about the concepts.

2013-2017 *Jazz Piano*

Perform with University of Wisconsin ensembles each year

2013-2017 *Improv Comedy*

Perform with University of Wisconsin Iceberg Improv (formerly Titanic Players)

2015-2016 *Wisconsin Union Directorate – Performing Arts Committee*

Worked as Assistant Jazz Director for the Performing Arts Committee.

Booked the 2016-2017 Union Theater Jazz Season and handled logistics for the 2015-2016 season.

Interests Playing Jazz, skiing, and board games