

# Joshua Agterberg

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## EDUCATION

Johns Hopkins University, May 2019

Masters of Science in Engineering: **Applied Mathematics and Statistics, Overall GPA: 4.0/4.0**

University of Wisconsin-Madison, May 2017

Bachelors of Business Administration: **Actuarial Science and Mathematics**

**Actuarial Science Major GPA: 4.0/4.0, Overall GPA: 3.73/4.0**

## SKILLS AND PROFESSIONAL QUALIFICATIONS

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

Familiar with Version Control, Generalized Linear Models (Classification and Regression), Machine Learning Algorithms (Random Forests, SVMs, K-Means, K-Medoids), and Continuous Optimization (Modified/Quasi-Newton, Trust Region and Linesearch Methods)

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

## ANALYTICS EXPERIENCE

**Research Assistant - Clustering in Insurance**, September 2016 - Present

- Examine the effectiveness of K-medoids (PAM) algorithm on 2010 NHIS survey dataset of over 2000 records
- Implementing weighted Goodall's dissimilarity index in R and Rcpp to measure difference between observations when data are categorical
- Reporting weekly to research group led by Professor Margie Rosenberg

**Analytics Intern**, CNA Financial, Chicago, IL, June 2017 - August 2017

- 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

**Actuarial Intern - Reserving Analytics**, CNA Financial, Chicago, IL, June 2016 - August 2016

- Modeled effect of legal status of claims on probability of closing with pay using Markov Chains
- Generated piecewise linear splines to implement time dependence of Markov Model
- Tested time-dependent model against time-independent model using Monte Carlo simulations

**Actuarial Intern - Annuity Valuation**, CUNA Mutual Group, Madison, WI, June 2015 - August 2015

- 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

## OTHER EXPERIENCE

**Grader**, Wisconsin School of Business ASRMI Department, Madison, WI, January 2016 - May 2017

- Spent three to four hours weekly grading homework for Health Analytics and Life Contingencies I and II classes
- Checked student's answers and provided feedback on how to solve assignments and discussed common errors with professor
- Wrote tutorial for `data.table()` R package for use in health analytics classes

**Piano Teacher**, UW School of Music, Madison, WI, January 2014 - May 2017

- Taught beginning and intermediate piano to eleven students per week
- Managed makeups for each family by keeping track of excused and unexcused absences

## ACTIVITIES

**Directed Reading Program - Machine Learning**, January 2016 - June 2016

- Implemented common machine learning algorithms (neural networks, k-means) in MATLAB using MNIST dataset
- Met weekly to discuss effectiveness of algorithms and the assigned reading

**Titanic Players**, September 2013 - June 2016

- Performed with improv group once a month with audiences ranging in size from 50 to 200 people
- Improvised scenes by creating fictional conflicts and solving them on the spot

**Jazz Piano**

- Left Field Quartet, January 2015 - August 2017
- UW Jazz Ensembles, September 2013 - May 2017