MATTHEW C. GALLOWAY

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EDUCATION

UNIVERSITY OF MINNESOTA, Minneapolis, MN
School of Statistics
Master of Science - Statistics *December 2018*
- *Advisor: Adam J. Rothman, Ph.D*

UNIVERSITY OF ST. THOMAS, St. Paul, MN
Bachelor of Science - Statistics and Actuarial Science
Bachelor of Arts - Mathematics *May 2015*
- *Passed actuarial exams P/1, FM/2, MFE/3 (fulfilled all VEE)*

EXPERIENCE

WORRELL DESIGN INC., Minneapolis, MN *January 2019 - Present*
Statistical Consultant
- Consulted with a team of experts on human factors to construct a comparative analysis experimental design satisfactory to FDA guidelines including calculating appropriate sample sizes and non-inferiority margins

UNIVERSITY OF MINNESOTA (School of Statistics), Minneapolis, MN *August 2015 - December 2018*
Graduate Instructor
- Instructed 135 students in STAT 3011: Introduction to Statistical Analysis

Graduate Research Assistant
- Developed statistical software in R/C++ to facilitate the exploration of developing efficient precision matrix estimation methods. Algorithms used include ADMM and block-wise coordinate descent.
- Published three of the resulting R packages on R CRAN (SCPME, ADMMsigma, CVglasso). All include extensive use of C++, RcppArmadillo, ggplot, and Roxygen2

IRSA Statistical Consultant
Institute for Research on Statistics and its Applications (IRSA)
- Voice Onset Time: modeled VOT between native and non-native Spanish speakers using linear mixed effects models with the lme4 R package to gauge the effectiveness of Spanish immersion programs
- Corn Yield Analysis: performed factor analysis to investigate the effects of inoculation, cover crop, corn species, and nitrogen levels on sweet corn yield using ANOVA
- Denitrifying Bioreactors: modeled nitrate removal in the presence of hydraulic residence time, temperature, and nitrous oxide variables using linear mixed effects models with the lme4 R package

UNIVERSITY OF ST. THOMAS, St. Paul, MN *January 2013 - August 2015*
Research Assistant
- Derived probabilistic models using Bayesian methods to predict financial insecurity in various sectors of the housing market with data from the Great Recession
- Markov Chain Monte Carlo (MCMC) was used to identify a 20% problematic subpopulation within subprime-mortgage cohorts. Algorithms used include Metropolis-Hastings and RJAGS
- Presented the research at the MCMSki Conference in Chamonix, France in January 2014.

THRIVENT FINANCIAL, Minneapolis, MN *June 2014 - August 2014*
Actuarial Intern
- Performed sensitivity analysis for a developing life insurance product to gauge performance under an uncertain interest rate environment using MS Excel and VBA
- Automated and stream-lined a portion of Thrivent's existing master files and spreadsheets in MS Excel for clarity and increased productivity

Skills: R, ggplot, dplyr, C++, Python, UNIX, LaTex, html, MS Excel, VBA

PROJECTS

Outbrain Ad Click Prediction Challenge (python)

- Collaborated with a 3-member team of data scientists to build a recommender system in Python
- Data set comprised of 2 billion data points, 700 million unique users, and 560 sites. Used SVM, Adaboost, Random Forest, and XGBoost as competing algorithms

OpenfMRI Voxel Activity Prediction

- Simultaneously modeled 135,000 voxels (3-dimensonal pixels) from fMRI images using non-parametric polynomial kernel estimators to track hemodynamic responses from brain stimuli

logitr R Package

- Developed an R package in R/C++ for linear and logistic regression with optional ridge, bridge regularization penalties and IRLS or MM algorithms

Indirect Regression

- Evaluated in R using numerous simulations the performance of a class of indirect regression coefficient estimators designed to perform well in high-dimensional regression settings

SOFTWARE/PUBLICATIONS

- Galloway, M. (2018). **CVglasso: Cross validation package for the popular *glasso* package**. R package, https://cran.r-project.org/web/packages/CVglasso/index.html.
- Galloway, M. (2018). **ADMMsigma: Estimates a penalized precision matrix via the ADMM algorithm**. R package, https://cran.r-project.org/web/packages/ADMMsigma/index.html.
- Galloway, M. (2018). **SCPME: Shrinking Characteristics of Precision Matrix Estimators**. R package, https://cran.r-project.org/web/packages/SCPME/index.html.
- Galloway, M., Johnson, A., and Shemyakin, A. (2017). **Time-to-Default Analysis of Mortgage Portfolios**. *Model Assisted Statistics and Applications* 12.4 (2017): 359-367.

AWARDS AND HONORS

Lynn Lin Fellowship	May 2017
Allianz Life Endowment Scholarship	April 2014
Minnesota Risk and Insurance Management Society (RIMS) Scholarship	April 2013

Skills: R, ggplot, dplyr, C++, Python, UNIX, LaTex, html, MS Excel, VBA