

Peyman Jalali

EDUCATION

Ph.D. in Statistics, Gainesville, FL (3.8 GPA) 2014-2019
M.S. in Statistics, University of Shahid Beheshti, Iran (3.8 GPA) 2011-2013
B.S. in Statistics, University of Kurdistan, Iran (3.7 GPA) 2007-2011

WORK EXPERIENCE

Wells Fargo Charlotte, NC
Quantitative Associate at Decision Science and Artificial Intelligence 7/2019-present

- Researched and implemented various measures to assess machine learning fairness and bias, using Independence, Separation, and Sufficiency tests. Identified several models with fairness biases against certain demographics and recommended appropriate remediation recommendations to avoid significant regulatory scrutiny and potential reputational risks for Wells Fargo
- Responsible for validating modeling framework, methodology, procedures and code library to support various marketing and fraud models at Wells Fargo; key deliverables include, resolution of all regulatory issues, standardizing code and validation procedures and building reproducible python workflows to accelerate team's performance

ACADEMIC EXPERIENCE

Bayesian Joint Graphical Models 2017-2019
The problem of joint estimation of multiple graphical models from high dimensional data is ubiquitous in diverse fields including molecular biology, neuroscience and the social sciences. The main task is to formulate a methodology that allows us to borrow strength from the joint data to estimate edges that are common between any combination of the groups. To that end, we develop a Bayesian approach that decomposes the model parameters across the multiple graphical models into shared components across subsets of models and edges. This goal is achieved by constructing a novel multivariate prior distribution, coupled with a pseudo-likelihood that enables fast computations through a robust and efficient Gibbs sampling scheme. We establish strong posterior consistency for model selection and illustrate the efficacy of the proposed approach on both synthetic and real data.

Scalable High-dimensional Precision Matrix Estimation 2019-2020
Sparse estimation of the precision matrix under high-dimensional scaling constitutes a canonical problem in statistics and machine learning literature. For solving this problem, Bayesian methods are of particular interest as they provide direct uncertainty quantification of the model parameters through the posterior distribution which allows us to perform hypotheses testing and/or construct confidence intervals for the parameters of interest. However, estimating a medium size (1000×1000) precision matrix, using the fastest existing Bayesian method, takes over 285 days and over 50 GigaBytes of memory. To address this weakness, we develop a Bayesian methodology which does the same job in 45 minutes and using less than 0.4 GigaBytes of memory. In addition to establishing model selection and estimation consistency under high-dimensional scaling, we demonstrate through extensive numerical studies that our model is computationally more accurate than existing Bayesian and frequentist methods.

PUBLICATION

Jalali, P., Kshitij, K. Michailidis, G. (2019). A Bayesian Approach to Joint Estimation of Multiple Graphical Models, *arXiv: 1902.03651*; under review by the *Journal of Biometrics*.

Jalali, P., Kshitij, K. Michailidis, G. (2020). B-CONCORD – A Scalable Bayesian High-Dimensional Precision Matrix Estimation Procedure, *arXiv: 2005.09017*; under review by the *Journal of Bayesian Analysis*.

PRESENTATIONS	“A Bayesian Approach for Joint Estimation of Multiple Networks” , UFII	<i>2018</i>
	“An Introduction to Graphical Lasso” , UFII	<i>2017</i>
	“Functional Linear Regression” , Shahid Beheshti Univesity	<i>2013</i>
	“Heterogeneous Poisson Random Variable” , University of Kurdistan	<i>2011</i>
AREAS OF INTEREST	Statistical Machine Learning, AI Fairness, Network Estimation, Graphical Models, Bayesian Statistics, MCMC, Dimension Reduction, Retail Analytics	
SKILLS	<ul style="list-style-type: none"> • Machine Learning & Artificial Intelligence Modeling Natural Language Processing, Deep Learning, GLM, Classification, Clustering, Unsupervised Learning, Time Series, Monte Carlo Simulation, Generalized Additive Models, Quadratic Programming 	
	<ul style="list-style-type: none"> • Programming <ul style="list-style-type: none"> ◦ Expert: R, Rcpp, \LaTeX, ◦ intermediate: Python, Matlab, C++, SQL 	
TEACHING EXPERIENCE	University of Florida	
	• Instructor for STA3024 Introduction to Statistics II	<i>2018</i>
	• Teaching Assistant for STA2023 Introduction to Statistics I	<i>2015-2016</i>
	• Instructor for STA3032 Engineering Statistics	<i>2014</i>
HONORS AND AWARDS	Univesity of Kurdistan	
	• Teaching Assistant for Mathematical Statistics I & II	<i>2010</i>
	• Bronze medal in the 16th Iranian National Statistical Olympiad	<i>2011</i>
	• Ranked 6th in the Iranian national entrance exam to master program in statistics (among 3200 participants)	<i>2011</i>
	• Valedictorian , University of Kurdistan	<i>2011</i>
	• Recipient of grant from Iran's National Elites Foundation	<i>2011-2013</i>
	• Summa Cumme Laude , Shahid Beheshti University	<i>2013</i>
	• Awarded direct entrance to the PhD program with full scholarship by the Ministry of Science and Technology of Iran	<i>2014</i>