

Linquan Ma

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EDUCATION

Department of Statistics, University of Wisconsin-Madison

Aug. 2017 - May 2019

M.S. in Data Science, GPA: 4.0/4.0

Special Class of the Gifted Young, University of Science and Technology of China (USTC)

Aug. 2014 – Jun. 2018

B.S. in Statistics, major GPA: 3.90/4.3

SKILLS SUMMARY

Programming: Expertise in R, Matlab and LaTeX. Familiar with Python, shell, Mathematica and C.

Core Courses: Statistical Inference I&II (A), Linear Models (A), Design and Analysis of Experiments (A), Time Series Analysis (A), Non-parametric Statistics (A), Classification and Regression Trees (A), Regression Analysis (91/100), Applied Statistical Softwares (92/100), Probability Theory (90/100), Mathematical Statistics (91/100), Stochastic Processes (87/100), Real Analysis (85/100), Complex Analysis (91/100), Functional Analysis (85/100).

PUBLICATION

- **L.Ma**, Y.Yin, L.Liu, Z.Geng. On the Individual Surrogate Paradox (2017), Submitted to Biostatistics. (Under revision).
Arxiv: <http://arxiv.org/abs/1712.08732>
- **L.Ma**, L.Liu, Z.Geng. Envelope Models with Ignorable Missing Data (2018). (To be submitted) .

RESEARCH EXPERIENCES

Department of Statistics, University of Minnesota

Jun. 2017 - present

- Advisor: Lan Liu, Assistant Professor.
- Research Item: Individual Surrogate Paradox.
 - Proposed a new criterion to examine surrogate paradox.
 - Compared the new criterion with the original one under different conditions and made several counterexamples.
 - Evaluated the sharp bounds of causal effect by simplex algorithm.
 - Performed real data analysis on clinical trial data.
- Research Item: Envelope Models with Ignorable Missing Data (ongoing).
 - Discussed various ways to apply envelope models when responses as well as predictors are missing at random.
 - Incorporated EM algorithm with the structure of envelope models.
 - Found closed form solution of the objective function using envelope decomposition.
 - Applied a 1-D algorithm to solve the span of the envelope.
 - Used R to realize our EM envelope method and achieved a much lower MSE in simulation.

Department of Statistics, UW-Madison

May. 2018 - present

- Advisor: Zhengjun Zhang, Professor.
- Research Item: Maximal Independent Component Analysis with Additive Noise (ongoing).
 - Tried to solve independent components when there is max operator in the linear system.
 - Applied fast Fourier transform algorithm to analysis the signals in frequency domain.

Department of Statistics, UW-Madison, Under supervision of Prof. Zhengjun Zhang.

Dec. 2017

- Research Item: Statistical Inference on Gene Expression.
 - Applied Generalized Measures of Correlation (GMC) method for model selection.
 - Detect the global maxima of the objective function through “optim” function as well as Monte Carlo method.
 - Tune the parameters in lasso, ridge, and elastic net through cross validation.

- Research Item: Machine learning with large scale dataset contains missing value.
 - Handled large scale national birth rate data (several GB) through the server.
 - Predicted whether a new born infant is underweight using 200 covariates.
 - Imputed missing value using MICE and GUIDE.
 - Assessed various machine learning algorithms: regression trees, random forest, SVM, LDA, GUIDE, XgBoost and ensemble learning.
 - Compared various models by cross validation to find the best one with the smallest prediction MSE.

AWARDS

- Student Academic Excellence Award, UW-Madison Jul. 2018, Dec. 2017
- Outstanding Student Scholarship of USTC 2014, 2015, 2016, 2017