

Linquan Ma

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EDUCATION

Department of Statistics, University of Wisconsin-Madison

Aug. 2017- Present

M.S. in Data Science

GPA: 4.0/4.0

Core Courses: *Statistical Inference I, II (A, A), Linear Models (A), Design and Analysis of Experiments (A), Time Series Analysis (A), Non-parametric Statistics (A), Classification and Regression Trees (A)*

Current Courses: *Mathematical Statistics I (Ph.D. level), Statistical Computing, Data Science Computing Project*

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

Core Courses: *Regression Analysis (A), Applied Statistical Softwares (A), Probability Theory (A), Mathematical Statistics (A), Stochastic Processes (A-), Real Analysis (A-), Complex Analysis (A), Functional Analysis (A-), Mathematical Analysis I, II (A, A), Linear Algebra I, II (A-, A-)*

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).

RESERCH EXPERIENCES

Department of Statistics, University of Minnesota

Jun. 2017- Dec. 2017

- **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.
 - Derived the upper bound and corresponding lower bound of causal effect by simplex algorithm.
 - Performed real data analysis on clinical trial data to see whether individual surrogate paradox can be excluded.

Department of Statistics, University of Minnesota

Oct. 2017- Present

- **Advisor:** *Lan Liu, Assistant Professor.*
- **Research Item:** *Envelope Models with Ignorable Missing Data.*
 - Incorporated EM algorithm with the structure of envelope models to deal with MAR data.
 - Found closed form solution of the objective function using envelope decomposition.
 - Applied a 1-D algorithm to solve the span of the envelope.
 - Showed that EM envelope have the smallest MSE among all the methods in our paper and confirmed it in simulations.

Department of Statistics, UW-Madison

May 2018- Present

- **Advisor:** Zhengjun Zhang, Professor.
- **Research Item:** *Maximal Independent Component Analysis with Additive Noise (ongoing).*
 - Aimed 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

Dec. 2017

- **Advisor:** Zhengjun Zhang, Professor.
- **Course Project:** *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.

Department of Statistics, UW-Madison

Aug. 2017- Dec. 2017

- **Advisor:** Wei-Yin Loh, Professor.
- **Course Project:** *Machine learning with large scale dataset contains missing value.*
 - Handled large scale national birth rate data (several GB)through the server to predict whether a new born infant is under weight 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

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

SKILLS SUMMARY

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