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

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**, Under supervision of Prof. Zhengjun Zhang. Dec. 2017
- 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**, Under supervision of Prof. Wei-Yin Loh. Aug. 2017 – Dec. 2017

- 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 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 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.