

Ziyue Zhu | Curriculum Vitae

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Education

University of Minnesota

Ph.D., Statistics, advisors: Prof Adam J. Rothman and Prof Galin Jones

Minneapolis, MN, USA

Aug 2016 - present

University of Minnesota

Ph.D. minor, Moving Image Studies

Minneapolis, MN, USA

Sept 2017 - present

Tsinghua University

B.Sc., Pure and Applied Mathematics

Beijing, China

Aug 2012 - July 2016

Research

Clustering Binary Vectors

Current Research Project

Minneapolis, MN, USA

Dec 2020 - Present

- Developing methodology to cluster correlated binary vectors.
- Applying the algorithm to cluster films based upon their tags.

Statistical Learning for Film Noir Classification

Identifying Films Noirs Using Audience's Tags

Minneapolis, MN, USA

Jan 2020 - Nov 2020

- Analyzed audience's tags for films in the recommendation system of MovieLens.
- Implemented one-class classification to identify films noirs based upon their tags.
- Revealed films noirs' connections with other types of films.

Bayesian Estimators for Covariance Matrices and Precision Matrices

Estimating matrices in a Bayesian framework

Minneapolis, MN, USA

Sept 2018 - Dec 2019

- Estimated the covariance matrices and precision matrices via fitting Bayesian ridge penalized models.
- Gave credible intervals for the elements in the matrices.

Undergraduate Thesis: New Method to Cluster Genomes

Advisor: Prof Stephen Shing-Toung Yau

Beijing, China

Feb 2016 - July 2016

- Improved the previous nucleotide-based Fourier method by using cumulative power sequence.
- Applied this new method to analyze phylogenetic relationships

Work Experience

Statistical Consultant

Consulted for the College of Liberal Arts, University of Minnesota

Minneapolis, MN, USA

June 2021 - Aug 2021

- Helped faculty and graduate students from the College of Liberal Arts with statistical questions.

Data Analyst Intern

Intern at the Wafer Department

Bloomington, MN, USA

May 2019 - Aug 2019

- Built classification models to predict the wafer quality using sensor data to select wafers for sampling.
- Applied supervised learning methods to find the significant sensors.

Graduate Research Assistant
Research with Prof Adam J. Rothman

Minneapolis, MN, USA
June 2018 - Aug 2018

- o Worked on his NSF-supported project, "New methods for multivariate analysis in high dimensions."

Statistical Consultant
Consulted for the Minnesota Department of Agriculture

Minneapolis, MN, USA
June 2018 - Aug 2018

- o Collaborated with two graduate students.
- o Completed the programming to automate the solution to finding incorrect entries of the product prices of the pesticides' data collected by MDA.

Course Projects

Project: Penalized Logistic Regression
Logistic Regression with Ridge Penalty and Lasso Penalty

Minneapolis, MN, USA
May 2018

- o Derived the Newton algorithm for the ridge penalty and the majorize minimization (MM) algorithm for the lasso penalty.
- o Write an R package to implement the algorithms.

Project: Travelers Modeling Problem
Built a pricing model for Minnesconsin Auto Insurance Company

Minneapolis, MN, USA
Nov 2016 - Dec 2016

- o Collaborated with three graduate students and was on the winning team.
- o Created a rating plan based on the historical insurance data using Gini as a metric for fit.

Publications

Zhu, Z. Are critics' polls biased? A case study on *Cahiers du Cinéma's* annual top 10 lists. *In progress.*

Zhu, Z., Jones, G. L., and Rothman, A. J. Estimating Covariance Matrices and Precision Matrices via Fitting Bayesian Ridge Penalized Models. *In progress.*

Zhu,, Z., Identifying films with noir characteristics using audience's tags on MovieLens. *Submitted.*

Dong, R*, **Zhu, Z.***, Yin C., He R.L., and Yau S.S. (2018). A new method to cluster genomes based on cumulative Fourier power spectrum. *Gene* **673**, 239-250. **[*co-first authors]**

Honors and Awards

Awarded by the School of Statistics, University of Minnesota

- o *Summer Research Fellowship* July 2017 - Aug 2017

Awarded by Tsinghua University

- o *Scholarship for Academic Progress* Sept 2015
- o *"Friends of Tsinghua" German Language Scholarship* Nov 2013
- o *Third Prize of Students' Social Practice for the Inspection of Huangmei Opera* Oct 2013

Teaching

Graduate Instructor, School of Statistics, University of Minnesota

Fall 2020

- o *STAT 3011 Introduction to Statistical Analysis*

Teaching Assistant, School of Statistics, University of Minnesota

Sept 2016 - present

- *STAT 5511 Time Series Analysis* Spring 2021, Spring 2020
- *STAT 3701 Introduction to Statistical Computing* Summer 2020
- *STAT 5421 Categorical Data* Fall 2019, Fall 2018
- *STAT 4052 Introduction to Statistical Learning* Spring 2019
- *STAT 3021 Introduction to Probability and Statistics* Summer 2020, Spring 2018, Fall 2017, Fall 2016
- *STAT 3022 Data Analysis* Summer 2017
- *STAT 3011 Introduction to Statistical Analysis* Spring 2017

Teaching Assistant, English Summer Camp, Tsinghua University

July 2013

Activities

- Graduate Student Liaison Committee, School of Statistics, University of Minnesota Sept 2020 - Present
- Student Seminar Organizer, School of Statistics, University of Minnesota Sept 2019 - Mar 2020
- Student Volunteer at the State Fair for School of Statistics, University of Minnesota Aug 2019
- Students' Film Association of Tsinghua University Feb - June 2016
- Mathematics Students' Association of Science, Tsinghua University June 2013 - June 2014

Computer skills

R, MATLAB, Python, C++, Mathematica, SQL, LaTeX, Microsoft Office: Word, Excel, Powerpoint

Languages

English, Chinese, German

Last updated: April 14, 2022