Yingying Zhang

Ph.D. in Applied Statistics

Assistant Professor, Department of Statistics, Western Michigan University

1903 W Michigan Ave, 5502 Everett Tower, Kalamazoo, MI, 49008-5278

Email: yingying.zhang@wmich.edu   Tel: 269-387-4541

Research Interest

Machine learning, computational statistics, cluster analysis, classification, finite mixture modeling

Education

THE UNIVERSITY OF ALABAMA, TUSCALOOSA, AL
· Ph.D., Applied Statistics, August 2020
· Ph.D. thesis : "*Model-based clustering of sequential and directional data*"

STONY BROOK UNIVERSITY, STONY BROOK, NY
· M.S., Applied Mathematics and Statistics, December 2015

NANCHANG UNIVERSITY, P.R. CHINA
· B.S., Information and Computing Science, July 2014

Academic Appointment

ASSISTANT PROFESSOR
· Western Michigan University   August 2022 – present
· University of South Alabama   August 2020 – May 2022

Publications

PUBLISHED
· **Zhang, Y.**, Sarkar, S., Chen, Y. *et al*, On regime changes in text data using hidden Markov model of contaminated vMF distribution. *Data Min Knowl Disc* (2024). *https://doi.org/10.1007/s10618-024-01051-w*
· **Zhang, Y.**, Melnykov, V., Melnykov, I., On model-based clustering of directional data with heavy tails *Journal of Classification* (2023). *https://link.springer.com/article/10.1007/s00357-023-09445-z*
· **Zhang, Y.,** Melnykov, V., Melnykov, I., Semi-supervised clustering of time-dependent categorical sequences with application to discovering education-based life pattern. *Statistical Modelling.* 2022;22(5):457-476, *https://doi.org/10.1177/1471082X21989170*
· **Zhang, Y**., Melnykov, V., Zhu X., Model-based clustering of time-dependent categorical sequences with application to the analysis of major life event patterns, *Statistical Analysis and Data Mining.* 2021;13(3):230-240, *https://doi.org/10.1002/sam.11502*

IN REVIEW/REVISION

· **Zhang, Y.,** Melnykov, V., Finite mixture modeling and model-based clustering for multivariate categorical sequences (2nd round review at *Pattern Recognition*)

· **Zhang, Y.**, Melnykov, V., Zhu, X., Discriminant Analysis for Matrix Data. (Under review at Sankhya A)

· **Zhang,Y.,** Zhu, X., Tong,H.,Melnykov, V., Model-based clustering of music sequences. (Under review at *Pattern Recognition*)

IN PREPARATION FOR SUBMISSION

· Melnykov, Y., **Zhang,Y.,** Zheng R., Clustering analysis on the spatial-temporal and intensity patterns of tornado data in USA.

· Chen,Y., **Zhang, Y.**, Zhu, X., Tian,A., The effect of AI actions between leading and following corporations.

· **Zhang, Y.,** Zhu, X., The overlap characteristic study of categorical sequences and their applications in Business data

IN PROGRESS

· Sarkar,S., **Zhang, Y.,** Zhu, X., On model-based clustering for multivariate categorical sequences with missing values.

OTHER PUBLICATIONS

· Chen, H., Zhu, C., Zhang, Y., A note on exponential stability for impulsive neutral stochastic partial functional differential equations. *Applied Mathematics and Computation*. Volume 227 (2014), 139-147,

Presentations

· **On regime changes in text data using hidden Markov model of contaminated vMF distribution**
2024 INFORMS Annual Meeting, Seattle, WA, October 2024

· **Finite mixture modeling and model-based clustering for multivariate categorical sequences**
The 7th Workshop on Models and Learning in Clustering and Classification, Catania, Italy, Aug 2024
The 7th International Conference on Econometrics and Statistics, Beijing, China, July 2024 (virtually)

· **On model-based clustering of directional data with heavy tails**
2023 Conference on Artificial Intelligence, Machine Learning, and Business Analytics, Philadelphia, PA, December 2023
The 6th International Conference on Econometrics and Statistics (EcoSta 2023), Tokyo, Japan, August 2023 (virtually)
The 36th New England Statistics Symposium (NESS), Boston, MA, June 2023
International Conference on Statistical Distributions and Applications (ICOSDA), Huntington, WV, October 2022

· **Semi-supervised clustering of time-dependent categorical sequences with application to discovering education-based life pattern.**
Western Illinois University Seminar talk, Macomb, IL, November 2022 (virtually)

South Dakota State University Data Symposium, Brookings, SD, February 2022 (virtually)
Southern Regional Council on Statistics (SRCOS), Jekyll Island, GA, October 2021

- **Model-based clustering of time-dependent categorical sequences with application to the analysis of major life event patterns**
  Mathematics and Statistics Colloquium at Hope college, Holland, MI, November 2023
  The 3rd International Conference on Statistical Distributions and Applications (ICOSDA), Grand Rapids, MI, October 2019
  Southern Regional Council on Statistics (SRCOS), Carollton, KY, June 2019
  Joint Statistical Meetings, Vancouver, Canada, August 2018

Teaching Experience

INSTRUCTOR
- SAS Programming (graduate level), Western Michigan University, Kalamazoo, MI, Fall 2023, Fall 2024
- Time Series Analysis (graduate level), Western Michigan University, Kalamazoo, MI, Spring 2023, Spring 2025
- Introduction to Statistical Computing (undergraduate level), Western Michigan University, Kalamazoo, MI, Fall 2022, Fall 2023, Fall 2024
- Statistical Theory II (graduate level), Western Michigan University, Kalamazoo, MI, Spring 2023, Spring 2025
- Introduction to Mathematical Statistics using R (undergraduate level), Western Michigan University, Kalamazoo, MI, Spring 2023
- Statistical Reasoning and Applications (undergraduate level), University of South Alabama, Mobile, AL. Fall 2021
- Applied Probability and Statistics (undergraduate level), University of South Alabama, Mobile, AL. Fall 2020, Spring 2021, Fall 2021
- Introduction to business statistics (undergraduate level) , The University of Alabama, Tuscaloosa, AL, July 2019

TEACHING ASSISTANT
- Mathematical Statistics I (undergraduate level), the University of Alabama, Tuscaloosa, AL (Fall 2016)
- Mathematical Statistics II (undergraduate level), the University of Alabama, Tuscaloosa, AL (Spring 2019)
- Mathematical Statistics I (graduate level), the University of Alabama, Tuscaloosa, AL (Fall 2017, Fall 2018)
- Mathematical Statistics II (graduate level), the University of Alabama, Tuscaloosa, AL (Spring 2017)
- Statistical Methods (graduate level), the University of Alabama, Tuscaloosa, AL (Spring 2019)
- Applied Regression (undergraduate level), the University of Alabama, Tuscaloosa, AL (Fall 2017)
- Data Mining (graduate level), the University of Alabama, Tuscaloosa, AL (Fall 2019)
- Advanced Data Mining (graduate level), the University of Alabama, Tuscaloosa, AL (Spring 2020)
- Statistical Data Analysis (undergraduate level), the University of Alabama, Tuscaloosa, AL (Spring 2017, Summer 2017, Spring 2018, Summer 2018, Fall 2018, Summer 2020)

Awards
- Southern Regional Council on Statistics (SRCOS), faculty travel award ($1000). 2021

- Jeff Kurkjian Teaching Award (awarded for best teaching performance among Applied Statistics PhD students), The University of Alabama, 2020
- Southern Regional Council on Statistics (SRCOS), R.L. Anderson student poster award (2nd place). 2019
- Southern Regional Council on Statistics (SRCOS), Boyd Harshbarger travel award ($500), 2019
- International Conference on Statistical Distributions and Applications (ICOSDA), Travel award ($400), 2019
- Teaching assistant award, ISM department at UA (given to best TA in the Ph.D. program), 2019

Grants and funding

- Support for Faculty Scholars Award (SFSA), Western Michigan University: $2,000
- Faculty Research Travel Fund, Western Michigan University: $800
- The Arts and Sciences Summer Professional Development award, University of South Alabama (2021): $3,125

Doctoral Committees

- Chong Gu, Ph.D. in Statistics, Western Michigan University
- Sandra Tay, Ph.D. in Statistics, Western Michigan University
- Manal Alloqmani, Ph.D. in Statistics, Western Michigan University

Technical skills

- Programming Languages: R, C, SAS, Matlab
- Industry Software Skills: MS Office, LaTex, Minitab, SPSS

Professional Service

- Reviewer for Journal of Statistical Theory and Applications, Journal of Classification, Journal of Computational Statistics and Data Analysis, The American Statistician, FACETS
- Session Chair, 2024 INFORMS Annual Meeting, Seattle, WA, October 2024
- Session Chair, the 7th Workshop on Models and Learning in Clustering and Classification, Catania, Italy, Aug 2024
- Session Chair, the 6th International Conference on Econometrics and Statistics (EcoSta 2023), Tokyo, Japan, August 2023 (virtually)
- Judge for Southern Regional Council on Statistics (SRCOS) NSF/Harshbarger Student Posters, Jekyll Island, GA, October 2021

University Service

- Undergraduate Data Science Program Advisor, Western Michigan University (2023 - present)
- The Mathematics and Statistics Department Colloquium Organization Committee, University of South Alabama, (2021-2022)
- The Mathematics and Statistics Department Library Committee, University of South Alabama, (2021-2022)

- The Mathematics and Statistics Department Tenure-Track Faculty Recruiting Committee, University of South Alabama, (2021-2022)

Professional Memberships

- American Statistical Association (ASA)
- The Institute for Operations Research and the Management Sciences (INFORMS)
- The Classification Society

(April, 2025)