

Fangyi Wang

Education

Ph.D. in Statistics, The Ohio State University	<i>08.2021 - present</i>
Advisors: Sebastian Kurtek and Yuan Zhang	
MPH in Biostatistics, Yale University	<i>08.2019 - 05.2021</i>
B.S. in Biological Sciences, Tianjin University	<i>08.2014 - 06.2018</i>

Research Interests

Functional Data Analysis, Statistical Shape Analysis, Network Data Analysis, Bayesian Modeling, Machine Learning, Conformal Prediction

Talks and Awards

Invited session, EcoSta 2024	<i>07.2024</i>
<i>Conformal Prediction for Fragmented Functional Data</i>	
Invited session, APRM 2024	<i>01.2024</i>
<i>Distribution-Free Matrix Prediction Under Arbitrary Missing Pattern</i>	
Speed session, JSM 2023	<i>08.2023</i>
<i>Empirical Bayesian Shape Model for Estimation and Classification of Fragmented Bovid Teeth</i>	
Oral Presentation Honorable Mentions, Hayes Research Forum	<i>03.2023</i>
<i>Empirical Bayesian Shape Model for Estimation and Classification of Fragmented Bovid Teeth</i>	
Poster Session First Place, Fall Interdisciplinary Research Forum	<i>11.2022</i>
<i>Empirical Bayesian Shape Model for Estimation and Classification of Fragmented Bovid Teeth</i>	

Manuscripts in Preparation

Meijia Shao, **Fangyi Wang**, Yuan Zhang (2024+)
Distribution-Free Matrix Prediction Under Arbitrary Missing Pattern ([First Version](#))

Research Experiences

Distribution-Free Matrix Prediction Under Arbitrary Missing Pattern	<i>08.2023 - present</i>
<ul style="list-style-type: none">Investigate the open problem of conformalized entry prediction in row/column-exchangeable matrices, defining and differentiating the problem while establishing achievable goals and constraints.Develop two innovative algorithms for this matrix setting utilizing the idea of algorithmic stability: one ensures marginal coverage validity and the other maintains row-conditional coverage validity, under arbitrary missing pattern.Demonstrate the effectiveness of these methods through numerical studies on both synthetic and real-world datasets.	
Conformal Prediction for Fragmented Functional Data	<i>05.2023 - present</i>
<ul style="list-style-type: none">Develop a novel conformal prediction approach to tackle the challenge of predicting missing segments in incomplete curves.Construct predictor and response variables from complete functions and design downstream analysis that preserves exchangeability under unknown nuisance transformations.Design a neighborhood smoothing based algorithm that produces various types of pointwise prediction bands.	
Bayesian Functional Mixed Effect Model	<i>01.2023 - present</i>
<ul style="list-style-type: none">Develop a Bayesian functional mixed effect model to estimate main effect from functional data with noise and phase variation.Apply norm preserving transformation in the model to maintain the shape for the main effect function.	
Empirical Bayesian Shape Model for Estimation and Classification of Fragmented Bovid Teeth	<i>05.2022 - present</i>
<ul style="list-style-type: none">Develop an empirical Bayesian framework for the estimation, registration, and classification of planar partial closed curves.Apply an elastic framework to treat reparameterization as one of shape-preserving transformations, enhancing matching accuracy and enabling more natural deformations between shapes.Conduct numerical studies and real-world data analysis, demonstrating the effectiveness of the proposed method in practical applications, particularly in taxonomic identification of fossil bovid teeth.	

Teaching Experiences

Teaching Assistant

- *Fall 2023*, STAT 4202: Introduction to Mathematical Statistics II
- *Spring 2023*, STAT 3202: Introduction to Statistical Inference for Data Analytics
- *Fall 2022*, STAT 2450: Introduction to Statistical Analysis I
- *Fall 2022*, STAT 1450: Introduction to the Practice of Statistics

Instructor

- *Summer 2024*, STAT 1430.01: Statistics for the Business Sciences

Skills

- **Statistical Programming:** MATLAB, R; some experience with Python, SAS, STATA
- **Application Software:** Latex, Microsoft Word, Excel, Powerpoint
- **Language:** Chinese (Native)