Yuexuan Wu

850-405-2143 | yw17g@my.fsu.edu | wuyx5.github.io

Education

Ph.D. in Statistics July 2022
Florida State University *Tallahassee, FL*
- Advisor: Prof. Anuj Srivastava

Master of Science in Applied Statistics May 2019
Florida State University *Tallahassee, FL*
- GPA: 3.96

Bachelor of Engineering in Packaging Engineering Jun 2017
Wuhan University *Wuhan, China*
- GPA:3.6
- Double degree: Bachelor of Commerce in Economics

Experience

Graduate Instructor Jan 2022 – Present
Florida State University *Tallahassee, FL*
- Introduction to Applied Statistics (STA 2122)

Graduate Research Assistant May 2020 – Jan 2022
Florida State University *Tallahassee, FL*
- Leading and participating in multiple projects of the Statistical Shape Analysis & Modeling Group.

Awards

Yongyuan and Anna Li Award 2022
Department of Statistics, Florida State University
- For best graduate student presentations

Best Student Presentation Award 2022
2022 Annual Florida ASA Chapter Meeting
- Longitudinal Elastic Shape Analysis of Brain Subcortical Structures

Best Student Poster Award (Top 1%) 2021
SIAM Conference on Computational Science and Engineering (CSE) 2021
- Elastic Shape Analysis of Post-Traumatic Stress Disorder on Subcortical Brain Structures

Global Top 20% in Hash Code Competition 2020
Google

2^{nd} Place in ACM Programming Contest 2018
Florida State University

1^{st} Class Scholarship (Top 1%) 2016
Wuhan University

Projects

Elastic Shape Analysis of Brain Structures for Predictive Modeling of PTSD Feb 2020 - Present
- In collaboration with Dr. Suprateek Kundu and Dr. Jennifer Stevens from Emory University.
- Developing a comprehensive shape analysis framework to quantify the brain substructures surfaces shape differences using an elastic shape metric.
- Training regression models with shape coefficients and predicting PTSD outcomes.
- Applying the method to data from the Grady Trauma Project and yielding superior predictive performance.

LESA: Longitudinal Elastic Shape Analysis of Brain Subcortical Structures Sept 2020 - Present
- In collaboration with Dr. Zhengwu Zhang, Di Xiong, and Dr. Hongtu Zhu from UNC Chapel Hill.
- Integrating ideas from elastic shape analysis, PCA, and statistical modeling of sparse longitudinal data.

- Developing an efficient framework and a unique toolbox for systematically quantifying and visualizing the development and changes of longitudinal subcortical surface shapes.
- Applying LESA to analyze three longitudinal neuroimaging data sets with estimating continuous shape trajectories, building life-span growth patterns, and comparing shape differences among different groups.

Solving Optimal Surface Deformation Using Deep Residual Networks Jan 2021 - Present

- In collaboration with Dr. Boulbaba Ben Amor from Inception Institute of Artificial Intelligence.
- Utilizing deep residual neural networks to solve the optimal shape deformation of surfaces under the square root normal field (SRNF) representation.

Analysis and Generation of Bacteria Cellular Shapes Mar 2021 - Oct 2021

- In collaboration with Tanjin Taher Toma, Dr. Jie Wang, and Dr. Scott Acton from University of Virginia.
- Analyzing the shape summaries of segmented 3D bacteria cellular surfaces; generating synthetic bacteria cellular surfaces based on the distribution of true surface shapes.

Spatial-Temporal Analysis of 3D Human Body Movements Using Video Data Nov 2021 - Present

- In collaboration with Dr. Hamid Laga from Murdoch University.
- Developing a framework for reproducing smooth 3D human movement videos based on sparse time samples of movement
- Analyzing movement differences by conducting spatial-temporal surface registration.

Publications

T. T. Toma, **Y. Wu**, J. Wang, A. Srivastava, A. Gahlmann, S. T. Acton. Realistic-Shape Bacterial Biofilm Simulator for Deep Learning-Based 3D Single-Cell Segmentation. Accepted in *IEEE International Symposium on Biomedical Imaging (ISBI)*, 2022

Z. Zhang, **Y. Wu**, D. Xiong, A. Srivastava, H. Zhu. LESA: Longitudinal Elastic Shape Analysis of Brain Subcortical Structures. Revision (invited major revision) in *Journal of the American Statistical Association*, 2022+

Y. Wu, S. Kundu, J. S. Stevens, N. Fani, A. Srivastava. Elastic Shape Analysis of Brain Structures for Predictive Modeling of PTSD. Under review, 2022+

Y. Wu, H. Laga, A. Srivastava. Spatial-Temporal Analysis of 3D Human Body Movements Using Video Data. In preparation, 2022+

Presentations

(03/2021) *Elastic Shape Analysis of Post-Traumatic Stress Disorder on Subcortical Brain Structures*, SIAM Conference on Computational Science and Engineering (Poster), online

(05/2021) *Elastic Shape Analysis of Brain Structures for Predictive Modeling of PTSD*, The Statistical Methods in Imaging Conference (Poster), online

(04/2022) *Longitudinal Elastic Shape Analysis of Brain Subcortical Structures*, 2022 Annual Florida ASA Chapter Meeting, online

Professional Memberships

The American Statistical Association

The Institute of Electrical and Electronics Engineers

Society for Industrial and Applied Mathematics