Yuexuan Wu

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

Experience

Postdoctoral Scholar Fellow Sept 2022 – Present
University of Washington *Seattle, WA*
- Postdoctoral Scholar-Fellow with the National Alzheimer's Coordinating Center (NACC), under the supervision of Dr. K.C. Gary Chan.
- UW Data Science Postdoctoral Fellow, eScience Institute.

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

Graduate Instructor Jan 2022 – May 2022
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

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 - Aug 2022

- 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

Y. Wu, S. Kundu, J. S. Stevens, N. Fani, A. Srivastava. Elastic Shape Analysis of Brain Structures for Predictive Modeling of PTSD. *Frontiers in Neuroscience*, 2022

Z. Zhang, **Y. Wu**, D. Xiong, A. Srivastava, H. Zhu. LESA: Longitudinal Elastic Shape Analysis of Brain Subcortical Structures. Published as a discussion paper in *Journal of the American Statistical Association*, 2022

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. *2022 IEEE 19th International Symposium on Biomedical Imaging (ISBI)*, 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

(06/2022) *Longitudinal Elastic Shape Analysis of Brain Subcortical Structures*, 2022 Treatment and Analysis of the Information Methods and Applications (TAIMA), online

Professional Memberships

The American Statistical Association

The Institute of Electrical and Electronics Engineers

Society for Industrial and Applied Mathematics

International Chinese Statistical Association