Yuexuan Wu

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Education

Ph.D. in Statistics Aug 2019 - July 2022
Florida State University *Tallahassee, FL*
- Advisor: Prof. Anuj Srivastava

M.S. in Applied Statistics Aug 2017 - May 2019
Florida State University *Tallahassee, FL*
- GPA: 3.96

B.E. in Packaging Engineering Sept 2013 - Jun 2017
Wuhan University *Wuhan, China*
- GPA:3.6
- Double degree: B.Com. in Economics

Experience

Graduate Research Assistant May 2020 – Jan 2022
Florida State University *Tallahassee, FL*
Graduate Instructor Jan 2022 – Present
Florida State University *Tallahassee, FL*
- Introduction to Applied Statistics (STA 2122)

Awards

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.
- Developing an efficient framework and a unique toolbox for systematically quantifying the development and changes of longitudinal subcortical surface shapes by integrating ideas from elastic shape analysis, PCA, and statistical modeling of sparse longitudinal data; 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 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

Professional Memberships

The American Statistical Association

The Institute of Electrical and Electronics Engineers

Society for Industrial and Applied Mathematics