

# Yuexuan Wu

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## EDUCATION

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### Ph.D. in Statistics

*Florida State University*

- Advisor: Prof. Anuj Srivastava

July 2022

*Tallahassee, FL*

### Master of Science in Applied Statistics

*Florida State University*

- GPA: 3.96

May 2019

*Tallahassee, FL*

### Bachelor of Engineering in Packaging Engineering

*Wuhan University*

- GPA: 3.6
- Double degree: Bachelor of Commerce in Economics

Jun 2017

*Wuhan, China*

## EXPERIENCE

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### Graduate Instructor

*Florida State University*

- Introduction to Applied Statistics (STA 2122)

Jan 2022 – Present

*Tallahassee, FL*

### Graduate Research Assistant

*Florida State University*

- Leading and participating in multiple projects of the Statistical Shape Analysis & Modeling Group.

May 2020 – Jan 2022

*Tallahassee, FL*

## AWARDS

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### Best Student Presentation Award

*2022 Annual Florida ASA Chapter Meeting*

- Longitudinal Elastic Shape Analysis of Brain Subcortical Structures

2022

### Best Student Poster Award (Top 1%)

*SIAM Conference on Computational Science and Engineering (CSE) 2021*

- Elastic Shape Analysis of Post-Traumatic Stress Disorder on Subcortical Brain Structures

2021

### Global Top 20% in Hash Code Competition

*Google*

2020

### 2<sup>nd</sup> Place in ACM Programming Contest

*Florida State University*

2018

### 1<sup>st</sup> Class Scholarship (Top 1%)

*Wuhan University*

2016

## PROJECTS

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### 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**

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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**

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(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**

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The American Statistical Association

The Institute of Electrical and Electronics Engineers

Society for Industrial and Applied Mathematics