# CHENG MENG

310 Herty Drive, Department of Statistics, Athens, Georgia 30602, USA
cheng.meng25@uga.edu https://chengzijunaixiaoli.github.io/

## EDUCATION

**University of Georgia**, Department of Statistics, Athens, Georgia, USA

- Ph.D. in Statistics *Expected graduation date: May 2020*

**Tsinghua University**, Department of Mathematics and Applied Mathematics, Beijing, China

- Bachelor of Mathematics *July 2011 - June 2015*

## RESEARCH INTEREST

Subsampling (data reduction) in large-sample datasets; Non-parametric statistics; Optimal transport theory; Generative models; Experimental design.

## AWARDS & HONORS

- **Best Presentation Award** July 2019
  American Statistical Association, Nonparametric Statistics Section
- **Student Paper Award** Jan 2019
  American Statistical Association, Nonparametric Statistics Section
- **Student Paper Award** July 2019
  Association of Overseas Chinese Agricultural, Biological and Food Engineers
- **Travel Grant**, for the 2019 Joint Statistical Meetings Feb 2019
  University of Georgia
- **Honorable Mention Student Poster**, Georgia Statistics Day Oct 2018 & Oct 2019
  University of Georgia
- **Mens 50-meter backstroke, Gold Medal**, Time: 27"42 Oct 2012
  9th National Games of College Students in China
- **National-class Master Sportsman** Oct 2012
  9th National Games of College Students in China

## PUBLICATIONS

### Published

1. **Cheng Meng**, Xinlian Zhang, Jingyi Zhang, Wenxuan Zhong, and Ping Ma. More efficient computation of smoothing splines via space-filling basis selection. *Biometrika, 2019,* In Press.
2. **Cheng Meng**, Yuan Ke, Jingyi Zhang, Mengrui Zhang, Wenxuan Zhong, and Ping Ma. Large-scale optimal transport map approximation using projection pursuit. *NeurIPS (NIPS), 2019.*
3. **Cheng Meng**, Ye Wang, Xinlian Zhang, Abhyuday Mandal, Wenxuan Zhong, and Ping Ma. Effective statistical methods for big data analytics. *Handbook of Research on Applied Cybernetics and Systems Science, pp. 280-299. IGI Global, 2017.*

**Under review**

4. **Cheng Meng**, Rui Xie, Abhyuday Mandal, Xinlian Zhang, Wenxuan Zhong, and Ping Ma. LowCon: A design-based subsampling approach in a misspecified linear model. Under review, *Journal of Computational and Graphical Statistics.*

5. **Cheng Meng**, Jingyi Zhang, Mengrui Zhang, Wenxuan Zhong, and Ping Ma. An optimal transport approach for selecting a representative subsample. Submitted, *Thirty-seventh International Conference on Machine Learning.*

6. **Cheng Meng**, Yuan Ke, Jingyi Zhang, Wenxuan Zhong, and Ping Ma. Towards $\sqrt{n}$-consistent estimation of Wasserstein distances with smoothed Monge map. Submitted, *Thirty-seventh International Conference on Machine Learning.*

7. Weihua An, Ke Deng, **Cheng Meng**, and Jun S Liu. Biographic network analysis: methods, tools, and a case study. Under review, *Network Science.*

8. Shangpeng Sun, Yu Jiang, **Cheng Meng**, Jingyi Zhang, Ping Ma, and Changying Li. Automated plant node detection using terrestrial LiDAR data under field conditions. Under review, *American Society of Agricultural & Biological Engineers Annual International Meeting.*

9. Wei Zhang, Ting Zhang, **Cheng Meng**, and Tianming Liu. To Reveal the Hierarchical Structures of Human Neural Functional Signals via Deep Matrix Fitting. Under review, *IEEE Transaction on Medical Imaging.*

10. Wei Zhang, Huang Huang, Qinglin Dong, **Cheng Meng**, Jinchi Lv, Fangfei Ge, and Tianmin Liu. Hierarchical Organization of Brain Networks Revealed by Hybrid Spatiotemporal Deep Learning. Under review, *Brain Connectivity.*

**In preparation**

11. **Cheng Meng**, Huiming Chen, Wenxuan Zhong, and Ping Ma. Network ANOVA using Gromov-Wasserstein distance with the application in gene regulatory network. In preparation.

12. **Cheng Meng**, Jingyi Zhang, Wenxuan Zhong, and Ping Ma. Towards adaptive smoothing splines using optimal transport. In preparation.

13. Wei Zhang, Musheng Lin, **Cheng Meng**, and Mukherjee Pratik. SLIDE: Swarm Learning Iterative Descent Estimator. In preparation.

14. Xing Xin, **Cheng Meng**, Wenxuan Zhong, and Ping Ma. Variable hunting: New promise for binary predictor selection using multiple responses. In preparation.

15. Rui Xie, **Cheng Meng**, Wenxuan Zhong, and Ping Ma. Leverage sampling in spatial data. In preparation.

16. Nan Zhang, Jingyi Zhang, **Cheng Meng**, and Ping Ma. Double sketching for large-scale nonparametric regression. In preparation.

17. Jingyi Zhang, Huolan Zhu, Yongkai Chen, Chenguang Yang, **Cheng Meng**, Huimin Cheng, Yi Li, Wenxuan Zhong and Fang Wang. Echocardiography based screening for coronary heart disease using an ensemble machine learning approach. Submitted to JACC: Cardiovascular imaging.

## PRESENTATION

### Invited Talk

*More efficient approximation of smoothing splines via space-filling basis selection.* July 2019
American Statistical Association, Nonparametric Statistics Section. Denver, CO, USA.

*Lightspeed approximation of smoothing splines.* July 2019
Department of Statistics, Nankai University. Tianjin, China.

*Challenges in medical data and how statistics can help.* Dec 2018
Zhongshan Hospital. Guangzhou, Guangdong, China.

*Statistical modeling in 3d point cloud data.* Oct 2018
Bio-sensing and instrumentation lab, University of Georgia. Athens, GA, USA.

*An optimal transport approach for selecting a representative subsample.* Dec 2017
Department of Statistics, Fudan University. Shanghai, China.

*An optimal transport approach for selecting a representative subsample.* Dec 2017
Tsinghua Statistical Association, 2017 Statistics Symposium. Beijing, China.

*Subsampling methods in Statistics.* Sep 2017
Department of Computer Science, University of Georgia. Athens, GA, USA.

### Poster

*Large-scale optimal transport map approximation.* Oct 2019
Georgia Statistics Day. Georgia Institute of Technology, Atlanta, GA, USA

*An optimal transport approach for selecting a representative subsample.* Oct 2018
AIGI 2018 Organization Committee. University of Georgia, Athens, GA, USA

*Selecting a representative subsample using optimal transport.* Oct 2018
Georgia Statistics Day. University of Georgia, Atlanta, GA, USA

## RESEARCH COLLABORATION

- *Echocardiogram data analysis, video preprocessing, coronary heart disease prediction*
  Beijing Hospital, Beijing, China May 2019-Present
- *Plant node detection with LiDAR data and 3d point cloud data analysis*
  Bio-Sensing and Instrumentation Lab, University of Georgia July 2018-Present
- *Imaging genetics, and brain activities analysis*
  Cortical Architecture Imaging and Discovery Lab, University of Georgia July 2017-Present
- *Large-scale computation of smoothing splines*
  Professor Nan Zhang, Fudan University June 2017-Present
- *Biographic data analysis and social network analysis*
  Professor Weihua An, Emory University June 2015-Present
- *Biographic data analysis*
  Professor Ke Deng, Tsinghua University June 2015-Present

## TEACHING ACTIVITIES

### Guest lecture

- CSCI 8630 Data Science Practicum Fall 2019
  *My duties included giving a guest lecture on the topic of "Statistical subsampling methods in big data".*

### Teaching assistant

- STAT 8090 Statistical Computing II Spring 2020
  *My duties included independent lecturing for the statistical software application section (1/3 of the semester), homework preparation and grading.*

- STAT 8900 Topics in Statistics Spring 2016
  *My duties included independent lecturing on selected topics, homework preparation and grading.*
- STAT 2000 Introductory Statistics Fall 2015 & Spring 2016
  *My duties included lecturing the computer lab and exercise session.*

## PROFESSIONAL ACTIVITIES

**Review for journal**

- Annals of Statistics (1)
- Journal of the American Statistical Association (3)
- Statistica Sinica (7)

**Organization membership**
American Statistical Association (ASA)
International Chinese Statistical Association (ICSA)

## OUTREACH ACTIVITIES

- *Big data challenges around us and how statistics can help.* Feb 2018
  Invited Speaker, Lambert High School. Suwanee, GA, USA
- *Big data challenges around us and how statistics can help.* Nov 2017
  Invited Speaker, The Gwinnett School of Mathematics, Science, and Technology. Lawrenceville, GA, USA
- Coach, UGA International Chinese Swimming Club 2016-Present
  University of Georgia, Athens, GA, USA

## SOFTWARES & COMPUTING SKILLS

- **Python package development**
  PPMM (https://github.com/ChengzijunAixiaoli/PPMM):
  Python3 implementation of the paper [Large-scale optimal transport map estimation using projection pursuit]
- **Programming**
  R, Python, MATLAB, Tensorflow, Parallel computing