

# CHENG MENG

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## EDUCATION

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

- Ph.D. Candidate 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**, 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

### Peer-reviewed

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

## Under review

1. **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 the American Statistical Association.
2. **Cheng Meng**, Jingyi Zhang, Jinyang Chen, Wenxuan Zhong, and Ping Ma. An optimal transport approach for selecting a representative subsample. Under review, International Conference on Artificial Intelligence and Statistics.
3. Weihua An, Ke Deng, **Cheng Meng**, and Jun S Liu. Biographic network analysis: methods, tools, and a case study. Under review, Network Science.
4. 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.
5. 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.

## In preparation

1. Jingyi Zhang, **Cheng Meng**, Wenxuan Zhong, and Ping Ma. A statistical method for decentralized data fusion. In preparation.
2. **Cheng Meng**, Huiming Chen, Wenxuan Zhong, and Ping Ma. Network ANOVA using Gromov-Wasserstein distance with the application in gene regulatory network. In preparation.
3. **Cheng Meng**, Yuan Ke, Jingyi Zhang, Wenxuan Zhong, and Ping Ma. Towards dimension-free sample complexity of Wasserstein distances. In preparation.
4. **Cheng Meng**, Jingyi Zhang, Wenxuan Zhong, and Ping Ma. Towards adaptive smoothing splines using optimal transport. In preparation.
5. Wei Zhang, Ting Zhang, **Cheng Meng**, and Tianming Liu. To Reveal the Hierarchical Structures of Human Neural Functional Signals via Deep Matrix Fitting. Submitted, IEEE Transaction on Medical Imaging.
6. Wei Zhang, Musheng Lin, **Cheng Meng**, and Mukherjee Pratik. SLIDE: Swarm Learning Iterative Descent Estimator. Submitted, In preparation.
7. Xing Xin, **Cheng Meng**, Wenxuan Zhong, and Ping Ma. Variable hunting: New promise for binary predictor selection using multiple responses. In preparation.
8. Rui Xie, **Cheng Meng**, Wenxuan Zhong, and Ping Ma. Leverage sampling in spatial data. In preparation.
9. Nan Zhang, Jingyi Zhang, **Cheng Meng**, and Ping Ma. Double sketching for large-scale non-parametric regression. In preparation.

## PRESENTATION

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Invited Presentation, American Statistical Association, Nonparametric Statistics Section. <i>More efficient approximation of smoothing splines via space-filling basis selection.</i> Denver, CO, USA.	July 2019
Invited Presentation, Bio-sensing and instrumentation lab. <i>Statistical modeling in 3d point cloud data.</i> University of Georgia, Athens, GA, USA.	Oct 2018
Invited Presentation, Tsinghua Statistical Association, 2017 Statistics Symposium. <i>An optimal transport approach for selecting a representative subsample.</i> Tsinghua University, Beijing, China.	Dec 2017
Poster, Georgia Statistics Day.	Oct 2019

*Large-scale optimal transport map approximation* Georgia Institute of Technology, Atlanta, GA, USA

Poster, AIGI 2018 Organization Committee.

Oct 2018

*An optimal transport approach for selecting a representative subsample.* University of Georgia, Athens, GA, USA

Poster, Georgia Statistics Day.

Oct 2018

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

## RESEARCH COLLABORATION

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- Bio-Sensing and Instrumentation Lab, University of Georgia July 2018-Present  
*Plant node detection with LiDAR data, and analysing flowering data*
- Liu Laboratory, University of Georgia July 2017-Present  
*Imaging genetics, and brain activities analysis*

## TEACHING ACTIVITIES

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### Guest lecture

- CSCI 8630 Data Science Practicum Fall 2019

### 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), home-work preparation and grading.*
- STAT 8900 Topics in Statistics Spring 2016  
*My duties included grading and solution preparation.*
- STAT 2000 Introductory Statistics Fall 2015 & Spring 2016  
*My duties included lecturing the computer lab and exercise session.*

## PROFESSIONAL ACTIVITIES

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### Review for journal

Annals of Statistics, Statistica Sinica and Journal of the American Statistical Association

### Organization membership

American Statistical Association (ASA) 2018-Present  
 International Chinese Statistical Association (ICSA) 2018-Present

## OUTREACH ACTIVITIES

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- Invited Speaker, Lambert High School Feb 2018  
 Suwanee, GA, USA
- Invited Speaker, The Gwinnett School of Mathematics, Science, and Technology Nov 2017  
 Lawrenceville, GA, USA
- Coach, UGA International Chinese Swimming Club 2016-Present  
 University of Georgia, Athens, GA, USA

## SOFTWARES & COMPUTING SKILLS

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- **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, Tensorflow, Parallel computing