CHENG MENG

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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**, Yuan Ke, Jingyi Zhang, Wenxuan Zhong, and Ping Ma. Sufficient dimension reduction for classification using principle optimal transport direction. In preparation.

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

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

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

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

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

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

18. 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.   Dec 2019
Thirty-fourth Conference on Neural Information Processing Systems. Vancouver, Canada

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 4510 Mathematical Statistics I   Spring 2020
  My duties included grading, homework preparation, and office hour.

- STAT 8900 Topics in Statistics   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