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**, 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. 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 nonparametric regression. In preparation.
10. Jingyi Zhang, Yi Li, Yongkai Chen, Huolan Zhu, **Cheng Meng**, Huimin Cheng, Wenxuan Zhong, Ping Ma and Fang Wang. Echo-cardiography based screening for coronary heart disease using integrative machine learning. In preparation.

PRESENTATION

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

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

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

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

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

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

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

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

- Beijing Hospital, Beijing, China May 2019-Present
  Echocardiogram data analysis, video preprocessing, coronary heart disease prediction
- Bio-Sensing and Instrumentation Lab, University of Georgia July 2018-Present
  Plant node detection with LiDAR data, and analysing flowering data
- Professor Liu Laboratory, University of Georgia July 2017-Present
  Imaging genetics, and brain activities analysis
- Professor Zhang Laboratory, Fudan University June 2017-Present
  Smoothing splines
- Professor An Laboratory, Emory University June 2015-Present
  Biographic data analysis, and network analysis
- Professor Deng Laboratory, Tsinghua University June 2015-Present
  Biographic data analysis

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, 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

- 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

- **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