Jing Ma, Ph.D.

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Work Address

- Fred Hutchinson Cancer Research Center
  Division of Public Health Sciences
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Professional Positions

- Assistant Member, Public Health Sciences Division, Fred Hutch Cancer Research Center, 8/2017 - present
- Postdoctoral Research Fellow, Department of Biostatistics and Epidemiology & Department of Statistics, University of Pennsylvania, 8/2015 - 7/2017

Education

- University of Michigan, Ann Arbor MI, Ph.D., Statistics, 2015

  Advisor: Prof. George Michailidis

  Dissertation Title: Estimation and Inference in High-Dimensional Gaussian Graphical Models with Structural Constraints

- Fudan University, Shanghai China, B.S., Mathematics, 2010

  with University Distinction (Highest)

Other Experiences

- Research Assistant, Department of Computational Medicine and Bioinformatics, University of Michigan, 1/2015 - 7/2015
- Research Assistant, Department of Molecular and Cellular Biology, Baylor College of Medicine, 9/2014 - 5/2015
- Research Scientist Intern, Avaya Labs, 5/2013 - 7/2013
- Research Assistant, Center for Statistical Consultation and Research, University of Michigan, 1/2013 -12/2013

Awards and Scholarships

National Awards

- National Science Foundation Conference Travel Grant, 2015
- National Merit Scholarship from Ministry of Education of China, 2008

Department/University Awards

- Rackham School of Graduate Studies Conference Travel Grant, 2012, 2013, 2014 & 2015
- Outstanding Graduate Student Instructor Award, 2012-2013
- Rackham International Students Fellowship, 2011-2012
- Outstanding First Year Ph.D. Student Award, 2011
- College Graduate Excellence Award of Shanghai, 2010

Research Interests

- Graphical and network modeling of structured data
- Statistical inference of graphical models and networks
- High-dimensional data analysis
- Integrative analysis of Omics data

BIBLIOGRAPHY

Refereed Research Articles

3. **Ma, J.** and Michailidis, G. Joint structural estimation of multiple graphical models. *Journal of Machine Learning Research* 17:1–48, 2016.

2. **Ma, J.**, Shojaie, A. and Michailidis, G. Network-based pathway enrichment analysis with incomplete network information. *Bioinformatics* 32(20):3165–3174, 2016.

1. von Rundstedt, F., Kimal, R., **Ma, J.**, Arnold, J., Gohlke, J., Putluri, V., Krishnapuram, R., Piyarathna, D., Lotan, Y., Godde, D., Roth, S., Storkel, S., Levitt, J., Michailidis, G., Lerner, S., Coarfa, C., Sreekumar, A., Putluri, N. Integrated pathway analysis of a metabolic signature in bladder cancer - a linkage to The Cancer Genome Atlas project and prediction of survival. *Journal of Urology* 195(6):1911–1919, 2016.

Book Chapters under Review

1. Li, H. and **Ma, J.** Graphical models in genetics, genomics and metagenomics. *Handbook of Graphical Models.* Editors: Mathias Drton, Steffen Lauritzen, Marloes Maathuis, and Martin Wainwright.

Papers under Review

2. * Cai, T. T., **Ma, J.** and Zhang, L. CHIME: clustering of high-dimensional Gaussian mixtures with EM algorithm and its optimality.

   [L. Zhang was a recipient of ASA Biopharmaceutical Section Student Paper Award at the 2017 ICSA Applied Statistics Symposium.]

1. * Cai, T. T., Li, H., **Ma, J.**, and Xia, Y. Differential Markov random field analysis with applications to detecting differential microbial community structures.

Work in Progress

4. **Ma, J.** and Michailidis, G. Estimation and inference in regime switching dynamic networks.

3. **Ma, J.**, Shojaie, A. and Michailidis, G. Comparative study on pathway topology-based enrichment analysis.

2. **Ma, J.**, Cai, T. T. and Li, H. A zero-inflated Poisson model for species quantification based on shotgun metagenomic data.

1. Cai, T. T., **Ma, J.** and Zhang, L. Optimal estimation of differential networks in Gaussian mixture models.

FUNDING HISTORY

- None.

SOFTWARE

- **netgsa**: R-package for network-based gene set analysis. On CRAN.
- **CHIME**: Matlab code for clustering high-dimensional Gaussian mixtures with the EM algorithm. On GitHub.
- **TestBMN**: R-package for differential analysis of binary Markov networks.

ORAL PRESENTATIONS

Invited Oral Presentations at Conferences and Symposia

- 2018 IMS Annual Meeting / 12th International Conference on Probability Theory & Mathematical Statistics, Vilnius, Lithuania. (7/2018)
- ICSA Applied Statistics Symposium, Chicago, IL. (6/2017)
- ICSA Applied Statistics Symposium, Atlanta, GA. (6/2016)
- ICSA/KISS Joint Applied Statistics Symposium, Portland, OR. (6/2014)

*alphabetical ordering authorship

Invited Seminars and Colloquia

- School of Mathematics, University of Bristol, Bristol, UK. (2/2017) [Cancelled]
- Public Health Sciences Division, Fred Hutchinson Cancer Research Center, Seattle, WA. (2/2017)
- School of Mathematics and Statistics, University of Melbourne, Melbourne, Australia. (1/2017) [Cancelled]
- Department of Statistics, University of Warwick, Coventry, UK. (1/2017)
- Department of Mathematics and Statistics, Lancaster University, Lancaster, UK. (10/2016)

Contributed Oral Presentations

- Joint Statistical Meetings, Chicago, IL. (8/2016)
- Joint Statistical Meetings, Seattle, WA. (8/2015)
- The 9th ICSA International Conference, Hong Kong, China. (12/2013)
- Joint Statistical Meetings, Montreal, Canada. (8/2013)
- Joint Statistical Meetings, San Diego, CA. (7/2012)

Poster Presentations

- ENAR Annual Meeting, Washington D.C. (3/2017)
- Michigan Student Symposium for Interdisciplinary Statistical Sciences, Ann Arbor, MI. (3/2014 & 4/2012)

TEACHING

Graduate Courses

- Instructor for Review of Linear Algebra. Summer 2013 & 2014
- Instructor for the Applied Qualifying Exam. Summer 2012, 2013 & 2014
- Graduate Student Instructor, Applied Statistics and Data Analysis. Fall 2011 & 2012
  [GSI Excellence in Teaching Award.]
- Graduate Student Instructor, Multivariate and Categorical Data Analysis. Winter 2012

Undergraduate Courses

- Graduate Student Instructor, Introduction to Probability and Statistics. Fall 2011 & Winter 2012
- Experienced Graduate Student Instructor, English Language Institute. Summer 2011
- Lab Instructor, Introduction to Statistics and Data Analysis. Fall 2010 & Winter 2011

PROFESSIONAL AVTIVITIES

Referee Service

- Bioinformatics
- Biometrics
- Electronic Journal of Statistics
- Journal of the American Statistical Association: Theory and Methods
- Journal of Multivariate Analysis
- International Conference on Information Systems 2016
- NIPS 2016
- Statistics in Biosciences

University Service

- Student committee member of the Seventh Michigan Student Symposium for Interdisciplinary Statistical Sciences (MSSISS), 9/2012 - 4/2013
- Co-Chair, Graduate Student Statistical Topics Seminar Series, Department of Statistics, University of Michigan, 9/2011 - 4/2013
- Coordinator of Reading Group on Statistical Modeling and Analysis of Networks, Department of Statistics, University of Michigan, 9/2011 - 3/2012