Jing Ma, Ph.D.

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Address

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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)

Positions and Employment

- Assistant Member, Division of Public Health Sciences, 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

Awards, Honors 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
- High-dimensional statistical inference
- Integrative analysis of Omics data

Bibliography

Refereed Research Articles

1. **Ma, J.**, Shojaie, A. and Michailidis, G. Network-based pathway enrichment analysis with incomplete network information. *Bioinformatics* 32(20):3165–3174, 2016.
2. **Ma, J.** and Michailidis, G. Joint structural estimation of multiple graphical models. *Journal of Machine Learning Research* 17:1–48, 2016.

3. 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

4. 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

5. *Cai, T. T., **Ma, J.** and Zhang, L. CHIME: clustering of high-dimensional Gaussian mixtures with EM algorithm and its optimality. *Revision submitted to Annals of Statistics*.

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

6. *Cai, T. T., Li, H., **Ma, J.**, and Xia, Y. Differential Markov random field analysis with applications to detecting differential microbial community structures. *In revision for Biometrika*.
7. Vantaku, V., Putluri, V., Bader, D., Maity, S., **Ma, J.**, Arnold, J., Rajapakhe, K., Donepudi, S., von Rundstedt, F., Devarakonda, V., Karanam, B., McGuire, S., Stossi, F., Coarfa, C., Kavuri, S., Lotan, Y., Sreekumar, A., Putluri, N. Epigenetic loss of AOX1 expression via EZH2 leads to metabolic deregulation and more aggressive bladder cancer. *In review for Nature Communications*.

Work in Progress

- **Ma, J.** and Michailidis, G. Estimation and inference in regime switching dynamic networks.
- **Ma, J.**, Shojaie, A. and Michailidis, G. Comparative study on pathway topology-based enrichment analysis.
- *Cai, T. T., Li, H. and **Ma, J.** A zero-inflated Poisson model for metagenomic microbial community profiling.
- **Ma, J.**, Karnovsky, A., Afshinnia, F., Wigginton, J., Feldman, H., Rader, D., Shama, K., Porter, A., Rahman, M., He, J., Hamm, L., Shafi, T., Pennathur, S., Michailidis, G. Application of differential network analysis for identification of lipid pathways altered in Chronic Kidney Disease progression. *In preparation for Cell Systems.*

FUNDING HISTORY

Projects as Co-Investigator: Submitted

- NIH R01 Award; Role: Co-I (PI: Wu)

  Title: "Joint Analysis of Microbiome and Other Genomic Data Types"

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. On GitHub.

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)
- 2018 Fred Hutch Microbiome Symposium, Seattle, WA. (3/2018)
- 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. (8/2012)

Poster Presentations

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

PROFESSIONAL ACTIVITIES

University/Center Service

- Organizing committee member of the 2018 Fred Hutch Microbiome Symposium, 3/2018
- 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

Session Chair

- *Understanding the Microbiome Complexity – Genetics and Networks*, ICSA Applied Statistics Symposium, Chicago, IL. (6/2017)
- *Efficient Methods for Structured Large Genomics Data – Contributed Papers*, Joint Statistical Meetings, Chicago, IL. (8/2016)
- *Methods for Variable and Model Selection – Contributed Papers*, Joint Statistical Meetings, San Diego, CA. (8/2012)

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, International Conference on Learning Representations 2018, Statistics in Biosciences

Professional Memberships

- American Statistical Association, 2010 - present
- International Chinese Statistical Association, 2014 - present
- Eastern North American Region International Biometric Society, 2016 - present

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

OTHER EXPERIENCES

- Research Assistant, Department of Computational Medicine & Bioinformatics, University of Michigan, 1/2015 - 7/2015
- Research Assistant, Department of Molecular & 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