Jing Ma, Ph.D.
July 1st, 2018

ADDRESS

- Fred Hutchinson Cancer Research Center
  Division of Public Health Sciences
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EDUCATION

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

  Advisor: Prof. George Michailidis

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

  with University Distinction (Highest)

POSITIONS AND EMPLOYMENT

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

AWARDS, HONORS AND SCHOLARSHIPS

National awards

- Travel Award, The Jayne Koskinas Ted Giovanis Foundation for Health and Policy, 2018
- Travel Award, Data Science Innovation Lab, 2018
- Travel Award, National Science Foundation, 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 models, network analysis
- High-dimensional statistical inference
- Microbiome data analysis

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.
4. *Cai, T. T., **Ma, J.** and Zhang, L. CHIME: clustering of high-dimensional Gaussian mixtures with EM algorithm and its optimality. *To appear in Annals of Statistics*. 2018

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

Invited book chapters

5. Li, H. and **Ma, J.** Graphical models in genetics, genomics and metagenomics. In *Handbook of Graphical Models.* Editors: Mathias Drton, Steffen Lauritzen, Marloes Maathuis, Martin Wainwright. Chapman & Hall / CRC, 2017.

Papers under review

6. *Cai, T. T., Li, H., **Ma, J.**, and Xia, Y. Differential Markov random field analysis with applications to detecting differential microbial community structures. *Revision submitted to Biometrika*.
7. **Ma, J.**, Shojaie, A. and Michailidis, G. A comparative study of network-based pathway enrichment analysis methods. *Revision submitted to Briefings in Bioinformatics.*
8. **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. Differential network-based enrichment analysis of lipid pathways altered in Chronic Kidney Disease progression. *Submitted to Nature Methods.*

Other refereed scholarly publications

1. **Ma, J.** Estimation and Inference in High-Dimensional Gaussian Graphical Models with Structural Constraints. *PhD Thesis, University of Michigan*. 2015

Other non-refereed scholarly publications

1. *Cai, T. T., Li, H. and **Ma, J.** A zero-inflated Poisson model for metagenomic microbial community profiling. *Technical Report*. 2017

FUNDING HISTORY

Funded projects as co-Investigator: ongoing

- NIH R01 Award; Role: Co-I (PI: S. Self). 10% FTE. 7/2018 -

  Title: "The impact of prenatal exposure to persistent organic pollutants on kinetics of immune response to vaccines and sero-protection in infants".

- NIH R21 Award; Role: Co-I (PI: A. Roxby; Sub: D. Fredricks). 4% FTE. 4/2018 - 11/2018

  Title: "DMPA use and vaginal bacterial diversity among African women".

Funded projects as co-Investigator: forthcoming

- NIH R01 Award; Role: Co-I (PI: M. C. Wu). 20% FTE.

  Title: "Joint analysis of microbiome and other genomic data types".

*alphabetical ordering authorship

- NIH U19 Award; Role: Co-I (PI: D. Promislow; Sub: S. Schwartz). 15% FTE.

  Title: "The Dog Aging Project: The genetic and environmental determinants of healthy aging in companion dogs" .

SOFTWARE

- **netgsa**: R-package for network-based gene set analysis. On GitHub.
- **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.
- **deGEM**: R-package for unsupervised learning of multiple differential networks. On GitHub.

ORAL PRESENTATIONS

Invited oral presentations at conferences and symposia

- The Role of Genomics and Metagenomics in Human Health: Recent Developments in Statistical and Computational Methods, Banff, Canada. (2/2019)
- CMStatistics Conference 2018, Pisa, Italy. (12/2018)
- Joint Statistical Meetings, Vancouver, Canada. (7/2018)
- 12th International Vilnius Conference on Probability Theory and Mathematical Statistics / 2018 IMS Annual Meeting on Probability and 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)

Invited seminars and colloquia

- Department of Statistics, Texas A&M University, College Station, TX. (11/2018)
- Translational Research Program Faculty Meeting, Public Health Sciences Division, Fred Hutchinson Cancer Research Center, Seattle, WA. (2/2018)
- Postdoc Meeting, Public Health Sciences Division, Fred Hutchinson Cancer Research Center, Seattle, WA. (2/2018)
- SLAB Lab Seminar, Department of Biostatistics, University of Washington, Seattle, WA. (2/2018)
- Biostatistics/ATME Joint Seminar, Public Health Sciences Division, Fred Hutchinson Cancer Research Center, Seattle, WA. (1/2018)
- Department of Statistics, University of Florida, Gainesville, FL. (1/2018)
- Department of Biostatistics, University of Washington, Seattle, WA. (1/2018)
- School of Mathematics, University of Bristol, Bristol, UK. (2/2017) [Declined]
- Biostatistics Program, 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) [Declined]
- 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

- Chair, Biostatistics Seminar Series, Fred Hutch Cancer Research Center, 1/2019-
- Faculty host for UW prospective student visit, 3/2018
- 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 – Invited Papers*, 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)

Journal review

- Referee for Bioinformatics, Biometrika, Biometrics, Biostatistics, Electronic Journal of Statistics, Journal of the American Statistical Association: Theory and Methods, Journal of Multivariate Analysis, Molecular & Cellular Proteomics, Scientific Reports (Nature), Statistics in Biosciences

Conference review

- Reviewer for 2018 Conference on Neural Information Processing Systems (NIPS) (6)
- Judge for 2018 ASA Section on Genomics and Genetics Student Paper Competition (3)
- Reviewer for 2016 Conference on Neural Information Processing Systems (NIPS) (5)
- Reviewer for 2016 International Conference on Information Systems (1)

Professional memberships

- Eastern North American Region International Biometric Society, 2016 - present
- International Chinese Statistical Association, 2014 - present
- American Statistical Association, 2010 - 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, Multivariate and Categorical Data Analysis. Winter 2012
- Graduate Student Instructor, Applied Statistics and Data Analysis. Fall 2011 & 2012
  [GSI Excellence in Teaching Award.]

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

ADVISING AND FORMAL MENTORING

PhD students

- Kun Yue, UW Biostatistics PhD student (joint with A. Shojaie). 9/2017 -

Mentored post-docs

- Yue Wang, PhD, UNC Biostatistics. 9/2018 -

Student collaborator

- Nanxun Ma, UW Biostatistics PhD student, working with M. C. Wu. 10/2017 -

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
- Student Consultant, Center for Statistical Consultation and Research, University of Michigan, 1/2013 -12/2013