EMMA JINGFEI ZHANG

CURRICULUM VITAE

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POSITIONS

2023-present	Associate Professor of Information Systems & Operations Management (ISOM), Goizueta Business School, Emory University
2023-present	Associate Professor of Biostatistics and Bioinformatics (secondary appointment), Rollins School of Public Health, Emory University
2020-2023	Associate Professor of Management Science, Miami Herbert Business School, University of Miami
2022-2023	Associate Professor of Public Health Sciences (secondary appointment), Miller School of Medicine, University of Miami
2014-2020	Assistant Professor of Management Science, Miami Herbert Business School, University of Miami

EDUCATION

2009-2014	Ph.D. in Statistics, University of Illinois at Urbana-Champaign Advisor: Prof. Yuguo Chen
2005-2009	B.S. in Mathematics, Nankai University, Tianjin, China

RESEARCH INTERESTS

My primary research focuses on the statistical modeling and inference for networks and graphs, tensors, and point processes. The unifying theme of my research is to identify and utilize hidden structures in these complex high-dimensional data and to explore and quantify subject-level heterogeneity through the development of efficient statistical methods and algorithms that can afford quantifiable computational and statistical trade-offs and explicit uncertainty quantifications.

The specific topics I have examined include:

- network community detection, network regressions, network latent space models,
- graphical models, sparse covariance estimation, PCA,
- tensor regressions, tensor clustering, tensor bandits,
- high-dimensional point processes, marked point processes.

These methods have been applied to:

- identify functional groups/modules in social networks, gene networks and brain networks,
- optimize online advertisement placement,
- uncover patterns in social media user interaction and stock trading,
- analyze wearable devices and mobile health data,
- identify imaging biomarkers for neurological disorders and diseases such as Alzheimer's disease,
- infer context-specific and subject-specific gene regulations from bulk and single cell RNA-seq data.

HONORS AND AWARDS

- Albert E. Levy Award Senior Faculty Nominee, *Emory University* (2023)
- Elected Member of the *International Statistical Institute (ISI)* (2023)
- Emerging Scholar Award, *Miami Herbert Business School* (2020)
- Provost Research Award, *University of Miami* (2016)
- Provost Research Award, *University of Miami* (2015)
- Laha Award, *Institute of Mathematical Statistics (IMS)* (2013)
- Norton Prize for Outstanding Thesis in Statistics, *University of Illinois* (2013)
- Statistical Computing and Statistical Graphics Student Paper Award (2012)
  American Statistical Association (ASA)
- First Price Chinese Academy of Sciences Scholarship, *Chinese Academy of Sciences* (2008)
- First Price Samsung Global Scholarship, *Samsung Electronics* (2007)
- First Price Scholarship, *Nankai University* (2006)

PUBLICATIONS

(†: as the corresponding author; ◊: with student coauthors under supervision)

26.◊ Zhou, J., Hao, B., Wen, Z., Zhang, J. and Sun, W.W. (2024), "Stochastic Low-rank Tensor Bandits for Multi-dimensional Online Decision Making", *Journal of the American Statistical Association*, DOI: 10.1080/01621459.2024.2311364.

25.†◊ Su, C., Zhang, J. and Zhao, H. (2024), "Estimating Cell-type-specific Gene Co-expression Networks from Bulk Gene Expression Data with an Application to Alzheimer's disease", *Journal of the American Statistical Association*, DOI: 10.1080/01621459.2023.2297467.

24. Xu, G., Zhang, J., Li, Y. and Guan, Y. (2024), "Bias-correction and Test for Mark-point Dependence with Replicated Marked Point Processes", *Journal of the American Statistical Association*, 119, 217-231.

23.†◊ Cai, B., Zhang, J. and Guan, Y. (2024), "Latent Network Structure Learning from High Dimensional Multivariate Point Processes", *Journal of the American Statistical Association*, 119, 95-108.

22.◊ Zhang, M., Zhang, J. and Dai, W. (2023), "Fast Community Detection in Dynamic and Heterogeneous Networks", *Journal of Computational and Graphical Statistics,* DOI: 10.1080/10618600.2023.2232852, ASA Editors' Choice Collection.

21. Zhang, J. and Zhao, H. (2023), "eQTL Studies: from Bulk Tissues to Single Cells", *Journal of Genetics and Genomics*, 50, 925-933.

20.† Zhang, J. and Li, Y. (2023), "High Dimensional Gaussian Graphical Regression Models with Covariates", *Journal of the American Statistical Association,* 118, 2088-2100.

19.†◊ Su, C., Xu, Z., Shang, X., Cai, B., Zhao, H. and Zhang, J. (2023), "Cell-type-specific Co-expression Inference from Single Cell RNA-sequencing Data", *Nature Communications*, 14(1), 4846.

18.† Zhang, J., Sun, W.W. and Li, L. (2023), "Generalized Connectivity Matrix Response Regression with Applications in Brain Connectivity Studies", *Journal of Computational and Graphical Statistics*, 32(1), 252-262.

17.†◊ Zhang, J., Cai, B., Zhu, X., Wang, H., Xu, G. and Guan, Y. (2023), "Learning Human Activity Patterns using Clustered Point Processes with Active and Inactive States", *Journal of Business and Economic Statistics*, 41(2), 388-398.

16.◊ Wang, J., Zhang, J., Liu, B., Guo, J. and Zhu, J. (2023), "Fast Network Community Detection with Profile-Pseudo Likelihood Methods", *Journal of the American Statistical Association*, 118(542), 1359-1372. (joint first author)

15.◊ Zhou, J., Sun, W.W., Zhang, J. and Li, L. (2023), "Partially Observed Dynamic Tensor Response Regression", *Journal of the American Statistical Association*, 118(541), 424-439.

14. Hu, J., Zhang, J., Qin, H., Yan, T., and Zhu, J. (2021), "Using Maximum Entry-Wise Deviation to Test the Goodness-of-Fit for Stochastic Block Models", *Journal of the American Statistical Association*, 116, 1373-1382. (joint first author)

13. Hao, B., Wang, B., Wang, P., Zhang, J., Yang, J. and Sun, W.W. (2021), "Sparse Tensor Additive Regression", *Journal of Machine Learning Research*, 22(64), 1-43.

12.† Zhang, J., Sun, W. and Li, L. (2020), "Mixed-Effect Time-Varying Network Model and Application in Brain Connectivity Analysis", *Journal of the American Statistical Association*, 532, 2022-2036.

11. Xu, G., Wang, M., Bian, J., Burch, B., Andrade, S., Huang, H., Zhang, J. and Guan, Y. (2020), "Semi-Parametric Learning of Structured Temporal Point Processes", *Journal of Machine Learning Research,* 21(192), 1−39.

10. Xu, G., Zhao, C., Jalilian, A., Waagepetersen, R., Zhang, J. and Guan, Y. (2020), "Nonparametric Estimation of the Pair Correlation Function of Replicated Inhomogeneous Point Processes", *Electronic Journal of Statistics,* 14, 3730-3765.

9. Zhang, J. and Chen, Y. (2020), "Modularity Based Community Detection in Heterogeneous Networks", *Statistica Sinica*, 30, 601-629.

8.† Zhang, J. and Cao, J. (2017), "Finding Common Modules in a Time-Varying Network with Application to the Drosophila Melanogaster Gene Regulation Network", *Journal of the American Statistical Association,* 112, 994-1008.

7. Deng, C., Guan, Y., Waagepetersen, R. and Zhang, J. (2017), "Second-order Quasi-likelihood for Spatial Point Processes", *Biometrics*, 73, 1311-1320.

6. Zhang, J. and Chen, Y. (2017), "A Hypothesis Testing Framework for Modularity Based Network Community Detection", *Statistica Sinica*, 27, 437-456.

5. Zhang, J. and Chen, Y. (2015), "Monte Carlo Algorithms for Identifying Densely Connected Subgraphs", *Journal of Computational and Graphical Statistics*, 24, 827-845.

4. Zhang, J. and Chen, Y. (2015), "Exponential Random Graph Models for Networks Resilient to Targeted Attacks", *Statistics and Its Interface,* 8, 267-276.

3. Zhang, J. and Chen, Y. (2013), "Sampling for Conditional Inference on Network Data", J*ournal of the American Statistical Association*, 108, 1295-1307.
[Statistical Computing and Statistical Graphics Student Paper Award]

2. He, X., Yang, Y. and Zhang, J. (2012), "Bivariate Downscaling with Asynchronous Measurements", *Journal of Agricultural, Biological, and Environmental Statistics*, 17, 476-489.

1. Chon, H., Kraft, S., Zhang, J., Loucks, T. and Ambrose, N. (2013), "Individual Variability in Delayed Auditory Feedback Effects on Speech Fluency and Rate in Normally Fluent Adults", *Journal of Speech Language and Hearing Research*, 56, 489-504.

SOFTWARE

- Sequential importance sampling method for sampling networks [3]
  available at https://github.com/EmmaJingfeiZhang/NetSample
- Monte Carlo algorithms for identifying the densest subgraphs [5]
  available at https://github.com/EmmaJingfeiZhang/MCDense
- Finding and testing common modules in time-varying networks [8]
  available at https://github.com/EmmaJingfeiZhang/DNetModule
- Semiparametric multi-level PCA for temporal point processes [11]
  Available at https://github.com/EmmaJingfeiZhang/MFPCA
- Mixed effect time-varying network regression [12]
  available at https://github.com/EmmaJingfeiZhang/REdnet
- Network model goodness-of-fit test [14]
  available at https://github.com/EmmaJingfeiZhang/SBMtest
- Fast network community detection [16]
  available at https://github.com/WangJiangzhou
- Network response regression [18]
  available at https://github.com/EmmaJingfeiZhang/NetReg
- CS-CORE: cell-type-specific co-expression inference from single cell RNA-sequencing data [19]
  available at https://github.com/ChangSuBiostats/CS-CORE
- High dimensional Hawkes point process [20]
  available at https://github.com/EmmaJingfeiZhang/HawkesPP
- High-dimensional graphical regression [22, 25]
  available at https://github.com/EmmaJingfeiZhang/GMMReg
- Fast heterogeneous network community detection [24]
  available at https://github.com/maoyuzhang09/DHNet
- Dynamic network response regression [26]
  available at https://github.com/maoyuzhang09/DNetReg

- High-dimensional tensor mixture model [28]
  available at https://github.com/EmmaJingfeiZhang/HECM
- CSNet: cell-type-specific gene co-expression estimation from bulk gene expression data [30]
  available at https://github.com/ChangSuBiostats/CSNet_analysis/tree/v1.0.0

RESEARCH GRANTS

1. NSF Statistics Program (DMS-2210469; 06/2022-06/2025)
Methods and Theory for Estimating Individual-specific and Cell-type-specific Gene Networks
Amount: $200,000
Role: PI

2. NSF Statistics Program (DMS-2015190; 06/2020-06/2023)
Statistical Modeling and Inference for Network Data in Modern Applications
Amount: $192,500
Role: PI

3. Collaborative Research Initiative, University of Miami (CRI-FICMS PG011850; 06/2018-06/2019)
Predicting Protein Network within Animals
Amount: $15,000
Role: co-PI, with co-PIs Chiba, A. and Cai, X.

4. Provost Research Award, University of Miami (05/2016-05/2017)
Detect Fake Online Reviews Using Semantic Network Analysis
Amount: $17,000
Role: co-PI, with co-PI Chen, Z.

5. Provost Research Award, University of Miami (05/2015-05/2016)
Community Detection in Large Scale Product Co-Purchase Network
Amount: $17,000
Role: PI

PRESENTATIONS

Invited Seminars and Workshops

43. Statistical Machine Learning for High Dimensional Data, Institute for Mathematical Sciences, National University of Singapore, 2024 (upcoming)
43. Workshop on Translational Research on Data Heterogeneity, Washington University in St. Louis, 2024
42. University of Maryland, Statistics Seminar, 2024
41. University of Southern California, Marshall School of Business, Statistics Empowering Data Science Conference, 2024
40. City University of Hong Kong, Department of Management Sciences, Hong Kong, 2023
39. Hong Kong University of Science & Technology, Statistics and Data Science Seminar, Hong Kong, 2023
38. University of Waterloo, Statistics and Actuarial Science Seminar, Canada, 2023

37. University of Cincinnati, Carl H. Lindner College of Business, OBAIS Seminar, 2023
36. University of Cincinnati, Department of Mathematical Sciences Seminar, 2023
35. University of Warwick, Workshop on Statistical Analysis of Networks, UK, 2023
34. Renmin University, Statistics Colloquium Series, China, 2023
33. Workshop on Data Science Challenges in Single-Cell Research, Banff International Research Station, Canada, 2023
32. Princeton University, Statistical Foundations of Data Science and their Applications (panel discussant), 2023
31. Southern University of Science and Technology, Statistics Seminar, China, 2023
30. Northeast Normal University, Statistics Seminar, China, 2023
29. Tsinghua University, Statistics Colloquium Series, China, 2023
28. Emory University, Biostatistics and Bioinformatics Seminar, 2023
27. Penn State University, Statistics Colloquium Series, 2022
26. University of Michigan, Workshop on Modern Statistical and Machine Learning Methods for Big Data, 2022
25. New York University, Workshop on Statistical Network Analysis and Beyond, 2022
24. Emory University, Goizueta Business School, ISOM Seminar, 2022
23. Rutgers University, Conference on Advances in Bayesian & Frequentist Statistics with a Celebration of the 80th Birthday of Professor William E. Strawderman, 2022
22. Hong Kong Polytechnic University, Statistics and Data Science Colloquium, 2022
21. University of Southern California, Marshall School of Business, Data Sciences and Operations Seminar, 2022
20. Central China Normal University, Wuhan, China, Statistics Seminar, China, 2021
19. Renmin University, Beijing, China, Statistics Colloquium, China, 2021
18. George Washington University, Statistics Seminar, 2021
17. Florida State University, Statistics Seminar, 2021
16. University of Pennsylvania, Perelman School of Medicine, Biostatistics Seminar, 2021
15. University of Waterloo, Statistics and Actuarial Science Seminar, Canada, 2020
14. Boston University, Statistics Seminar, 2019
13. Yale University, Biostatistics Seminar, 2019
12. Fudan University, Statistics Seminar, China, 2019
11. Southern University of Science and Technology, Statistics Seminar, China, 2019
10. Chinese University of Hong Kong, Statistics Seminar, Hong Kong, 2018
9. Northeast Normal University, Statistics Seminar, China, 2018
8. Nankai University, Statistics Seminar, China, 2017
7. Simon Fraser University, Statistics Seminar, Canada, 2016
6. University of Miami, Finance Brownbag Seminar, 2016
5. University of Alberta, Statistics Seminar, Canada, 2015
4. Beijing University, Statistics and Econometrics Seminar, China, 2015
3. Fudan University, Statistics Seminar, China, 2015

2. University of Miami, Biostatistics Seminar, 2014
1. Syracuse University, Mathematics and Statistics Seminar, 2013

Invited Talks at Scientific Meetings

31. Joint Statistical Meetings, Toronto, Canada, 2023
30. 64th International Statistical Institute World Statistics Congress, Ottawa, Canada, 2023
29. 9th International Forum on Statistics, Beijing, China, 2023
28. Joint Conference on Statistics and Data Science in China, Beijing, China, 2023
27. 12th ICSA International Conference, Hong Kong, 2023
26. Workshop on Statistical Network Analysis and Beyond, Anchorage, 2023
25. ICSA Applied Statistics Symposium, Ann Arbor, 2023
24. International Conference on Econometrics and Statistics, Tokyo, Japan, 2023
23. ENAR Spring Meeting, Nashville, 2023
22. Joint Statistical Meetings, Washington, D.C., 2022
21. ICSA China Conference, Xi'an, China, 2022
20. International Conference on Econometrics and Statistics, Kyoto, Japan, 2022
19. International Conference of Computational and Methodological Statistics, London, 2021
18. Joint Statistical Meetings, virtual, 2021
17. International Conference on Econometrics and Statistics, virtual, 2021
16. International Conference of Computational and Methodological Statistics, virtual, 2020
15. Joint Statistical Meetings, virtual, 2020
14. 11th ICSA International Conference, Hangzhou, China, 2019
13. Joint Statistical Meetings, Denver, 2019
12. ICSA China Conference, Tianjin, China, 2019
11. 5th International Symposium on Data Driven Health and Medicine, Shanghai, 2019
10. International Workshop on Network Data Analysis, Jilin, China, 2018
9. Joint Statistical Meetings, Vancouver, Canada, 2018
8. Institute of Mathematical Statistics Asia Pacific Rim Meeting, Singapore, 2018
7. International Conference on Econometrics and Statistics, Hong Kong, 2018
6. Joint Statistical Meetings, Baltimore, MD, 2017
5. ICSA International Conference on Data Science, Jilin, China, 2017
4. International Conference of Computational and Methodological Statistics, London, UK, 2017
3. Joint Statistical Meetings, Chicago, 2016
2. ICSA Applied Statistics Symposium, Atlanta, 2016
1. Institute of Mathematical Statistics New Researchers Conference, Boston, 2014

EDITORIAL SERVICE

2023-present	Associate Editor, *Journal of the American Statistical Association - Theory and Method*
2022-present	Guest Editor, Special Issue on Statistical Network Analysis and Beyond, *Statistica Sinica*
2022-present	Associate Editor, *Annals of Applied Statistics*
2022-present	Associate Editor, *Computational Statistics & Data Analysis* (CSDA)
2020-present	Associate Editor, *Statistica Sinica*

PROFESSIONAL ACTIVITIES AND SERVICES

Grant Review Panel

National Institutes of Health BMRD

National Science Foundation DMS

National Science Foundation ATD

Professional Association Committee

Executive committee, Business and Economics Statistics Section, American Statistical Association (ASA), 2024-present

Chair, Student Paper Award Committee, Business and Economics Statistics Section, American Statistical Association (ASA), 2024-present

Conference Committee

Organizing committee, Workshop on Statistical Network Analysis and Beyond (SNAB), Nassau, Bahamas, 2024

Scientific program committee, International Conference on Econometrics and Statistics (EcoSta), Beijing, China, 2024

Short course chair, Symposium on Data Science and Statistics (SDSS), Virginia, 2024

Scientific program committee, 12th ICSA International Conference, Hong Kong, 2023

Local organizing committee, Quantile Regression and Data Heterogeneity Workshop, Miami, 2023

Scientific program committee, ICSA China Conference, Xi'an, China, 2022

Scientific program committee, International Conference on Econometrics and Statistics (EcoSta), Kyoto, Japan, 2022

Award Committee, Statistical Learning and Data Science Poster Award, Joint Statistical Meetings, Denver, 2019

Organizing committee co-chair, International Workshop on Network Data, Jilin, China, 2018

Conference Organization

Topic contributed session at the Joint Statistical Meetings, Portland, OR, 2024

Invited session at the International Conference on Econometrics and Statistics, Beijing, China, 2024

Invited session at the Joint Statistical Meetings, Toronto, Canada, 2023

Invited session at the International Conference on Econometrics and Statistics, Kyoto, Japan, 2022

Invited sessions at the 12th ICSA International Conference, Hong Kong, 2022

Invited session at the ICSA China Conference, Xi'an, China, 2021

Invited session at the Joint Statistical Meetings, Philadelphia, PA, 2020

Invited session at the International Conference on Frontiers of Data Science, Hangzhou, China, 2019

Topic contributed session at the Joint Statistical Meetings, Vancouver, Canada, 2018

Invited session at the ICSA Applied Statistics Symposium, Atlanta, GA, 2016

Ad Hoc Journal Reviewing

Journal of the American Statistical Association, Annals of Statistics, Biometrika, Journal of Economics, Management Science, Journal of Machine Learning Research, Computational Statistics & Data Analysis, Statistica Sinica, Technometrics, Biometrics, Journal of Computational and Graphical Statistics, Electronic Journal of Statistics, Journal of Multivariate Analysis, Canadian Journal of Statistics, Network Science, Social Networks, Journal of Statistical Planning and Inference, Stat, Human Brain Mapping

Professional Association Member

American Statistical Association (ASA)

International Statistical Institute (ISI)

Institute of Mathematical Statistics (IMS)

Institute for Operations Research and the Management Sciences (INFORMS)

International Chinese Statistical Association (ICSA)

University and School Services

Committee chair, ISOM Faculty Recruiting Committee, Goizueta Business School, Emory University, 2023-present

Committee member, AI PhD Program, Emory University, 2023- present

Committee member, ISOM PhD Recruiting Committee, Goizueta Business School, Emory University, 2023- present

Committee member, GBS Research Committee, Goizueta Business School, Emory University, 2023- present

ADVISING AND MENTORING

Advisor of Ph.D. Students

Biao Cai (Management Science, University of Miami), 2021

Current position: Tenure-track Assistant Professor at University of Cincinnati

Jie Zhou (Management Science, University of Miami), 2021

Current position: Applied Scientist at Amazon

Advisor of MS Student

Zichun Xu (Biostatistics, Yale University), 2023 (joint with Prof. Hongyu Zhao)

Supervisor of Visiting Ph.D. Students

Yujia Wu (Statistics, Southwestern University of Finance and Economics, China), 2022-present

Maoyu Zhang (Statistics, Renmin University of China), 2023-present
Shuai Liu (Management Science, Xi'an Jiaotong University), 2023-present
Quan Yuan (Statistics, Northeast Normal University), 2023-present

Research Mentor of Ph.D. Students

Chang Su (Biostatistics, Yale University), 2021-2023
Current position: Tenure-track Assistant Professor at Emory University

Jonathan Martinez Gomez (Goizueta Business School, Emory University), 2023-present
Yichao Chen (Statistics, University of Michigan), 2022-present
Ziyang Pan (Biostatistics, University of Michigan), 2023-present

Ph.D. Dissertation Committee Member

Jonathan Martinez Gomez (ISOM, Emory University), expected 2024
Chang Su (Biostatistics, Yale University), 2023
Xiao Xiao (Biostatistics, University of Miami), 2021
Chong Zhao (Management Science, University of Miami), 2018
Ming Wang (Management Science, University of Miami), 2018