

YIWEN LIU

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Department of Epidemiology and Biostatistics
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EDUCATION

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| <i>Ph.D.</i> in Statistics, University of Georgia, USA | 2013 - 2018 |
| <i>M.S.</i> in Statistics, Central University of Finance and Economics, Beijing, China | 2010 - 2013 |
| <i>B.S.</i> in Statistics, Central University of Finance and Economics, Beijing, China | 2006 - 2010 |

WORK EXPERIENCE

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|---|---------------------|
| <i>Assistant Professor of Practice</i> , Department of Epidemiology and Biostatistics, University of Arizona | Jul 2020 - Present |
| <i>Visiting Assistant Professor</i> , Department of Mathematics, University of Arizona | Aug 2018 - Jun 2020 |

HONORS AND AWARDS

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| <i>Department Teaching Award</i> Department of Mathematics, University of Arizona | 2019 |
| <i>Best Poster Award, Georgia Statistics Day</i> | 2015 |
| <i>Research Development Committee Travel Funding</i> Department of Statistics, University of Georgia | 2014, 2015 |

RESEARCH INTERESTS

Big data analytics, statistical learning in high dimensional data, multiple sources data integration, low-rank approximation, large-scale optimization, metabolomics, and bioinformatics.

PUBLICATIONS & MANUSCRIPTS

* *Equal contribution*

Publications

- Zhong, W., Liu, Y., and Zeng, P. (2021). A model-free variable screening method based on leverage score. *Journal of the American Statistical Association (Theory and Methods)*, *accepted*. [\[Link\]](#)
- Zhang, M.*, Liu, Y.*, Zhou, H., Zhou, J., and Watkins, J. (2021) A novel non-linear dimension reduction approach to infer population structure for low-coverage sequencing data. *BMC Bioinformatics*, *accepted*.
- Sun, X.*, Liu, Y.*, and An, L. (2020). Ensemble dimensionality reduction and feature gene extraction for single-cell RNA-seq data. *Nature Communications* 11.1 (2020): 1-9. [\[Link\]](#)
- Liu, Y., Xing, X., and Zhong, W. (2018). Sufficient dimension reduction for tensor data, in Handbook of big data analytics, edited by Härdle, W., Lu, H. H.-S. and Shen, X. *Springer*. [\[Link\]](#)

5. Liu, Y., Ma, P., Cassidy, P.A., Carmer, R., Zhang, G., Venkatraman, P., Brown, S.A., Pang, C.P., Zhong, W., Zhang, M., and Leung, Y.F. (2017). Statistical analysis of zebrafish locomotor behaviour by generalized linear mixed models. *Scientific Reports*, 7:2937. [\[PDF\]](#)
6. Zhang, L., Xiang, L., Liu, Y., Venkatraman, P., Chong, L., Cho, J., Bonilla, S., Jin, Z.B., Pang, C.P., Ko, K.M., Ma, P., Zhang, M., and Leung, Y.F. (2016). A naturally-derived compound Schisandrin B enhanced light sensation in the pde6c zebrafish model of retinal degeneration. *PLoS One*, 11(3). [\[PDF\]](#)
7. Liu, Y., Carmer, R., Zhang, G., Venkatraman, P., Brown, S.A., Pang, C.P., Zhang, M., Ma, P., and Leung, Y.F. (2015). Statistical analysis of zebrafish locomotor response. *PLoS One*, 10(10). [\[PDF\]](#)

Manuscripts

8. Liu, Y., Sun, X., Zhong, W., and Li, B. (2021). B-scaling: a novel nonparametric data fusion method. *The Annals of Applied Statistics (Major Revision)*.
9. Lu, M., Zhang, X., Lytal, N., Liu, Y., and An, L. (2021) SISC: Stackelberg Generative Adversarial Networks imputation in single cell RNA sequencing. To be submitted.

GRANTS

Pending

- NSF, Infrastructure Innovation for Biological Research PI: Sun
Revealing Transcriptional Dynamics through an Integrative Analysis of Single-cell Exonic and Intronic Data
Role: Co-PI
- NIH, R21 PI: Sun
Mining Single-cell RNA Sequencing Data with Machine Learning to Characterize Lung Disease Development
Role: Co-I

PRESENTATIONS

Domestic

- Department of Epidemiology and Biostatistics, University of Arizona. Seminar speaker. Feb 2020
- New England Statistics Symposium, Hartford, CT. **Session chair and invited speaker.** May 2019
- Department of Mathematics, University of Arizona. Seminar speaker. Mar 2019
- International Conference on Big Data and Information Analytics, Houston, TX. **Session chair and invited speaker.** Dec 2018
- Department of Epidemiology and Biostatistics, University of Arizona. Seminar speaker. Sep 2018
- ICSA Applied Statistics Symposium, New Brunswick, NJ. Session organizer. Jun 2018
- ICSA Applied Statistics Symposium, Chicago, IL. Invited speaker. Jun 2017
- Georgia Informatics Symposium, Athens, GA. Poster session. Oct 2016
- Georgia Statistics Day, Athens, GA. Poster session. Nov 2015
- Society of Neuroscience, Chicago, IL. Poster session. Oct 2015
- ICSA Applied Statistics Symposium, Portland, OR. Invited speaker. Jun 2014

International

- Department of Statistics, Central University of Finance and Economics, Beijing, China. Invited speaker.
- Institute of Statistics, Nankai University, Tianjin, China. Invited speaker. Dec 2016

TEACHING EXPERIENCE

Instructor

- Department of Epidemiology and Biostatistics, University of Arizona* 2019 - present
- BIOS 376 Introduction to Biostatistics Spring, Fall 2020, Spring 2021
 - BIOS 376 Introduction to Biostatistics (Online) Spring 2021
 - EPID/BIOS 450 Health Data Acquisition and Assessment Fall 2019, Fall 2020

Instructor

- Department of Mathematics, University of Arizona* 2018 - 2020
- MATH 467 Introduction to Applied Regression and Generalized Linear Models Fall 2019
 - *Comments from students:*

- I enjoy the dedication to notes that Yiwen uses. It really helps to have everything broken down and always available right after class. Having her write the notes on a tablet which she can directly upload is much better than having pre made notes that she just reads and much much better than writing on the whiteboard.

- I have been lucky enough to have Yiwen for two semesters, she has always been extremely understanding, very supportive, always available to ask questions, and even happy to send you recommendations on additional content outside of class. I am very grateful for all of the help she presents forward and the way she encourages us. Thank you.

- Yiwen had well-laid out slides and lectures, so it was easy to follow along during class and in case we were behind. Also, the in-class worksheets she gave out towards the end of the semester were useful for our understanding.

- Yiwen is very encouraging, very kind, and a great instructor. There are times when she forgets that we are students and skips over a lot of information (like explaining jargon or showing steps on how to derive something) but if you ask, she will go over it in full with lots of detail. This makes her teaching style very efficient and very clear as long as students are willing to ask questions.

- MATH 464 Theory of Probability Spring 2019
- *Comments from students:*

- The instructor clearly cared about her students. That was awesome.

- She was always open to ideas, and was always happy to offer advice outside of class.

- Homework assignments were challenging but reasonable, and they were helpful in preparing for exams. Exams were reasonable lengths, and Dr. Liu provided plenty of material to help prepare for the exams.

- MATH 122B First Semester Calculus Fall 2018
- MATH 122A Functions for Calculus Fall 2018

PROFESSIONAL SERVICES

Departmental Committee(s)

- Statistics and Data Science Course Development Committee Fall 2018 - Fall 2019
Department of Mathematics, University of Arizona
- Population Health Data Science Minor Course Development Committee Fall 2018 - Present
Department of Epidemiology and Biostatistics, University of Arizona
- Doctoral Admissions Review Committee Member Spring 2021
Department of Epidemiology and Biostatistics, University of Arizona

Referee Services

- *Journal of the American Statistical Association*
- *Statistica Sinica*
- *IEEE/ACM Transactions on Computational Biology and Bioinformatics*
- *Statistical Applications in Genetics and Molecular Biology*
- *Technometrics*
- *Biometrics*
- *Proceedings of the National Academy of Sciences*

Member

- International Chinese Statistical Association, Institute of Mathematical Statistics, American Statistical Association.

Outreach Services

- Served as a judge for *Georgia Science and Engineering Fair*. Apr 2014
- Served as a speaker for *Speaker Series* at The Gwinnett High School of Mathematics, Science, and Technology. Nov 2017

RESEARCH & COLLABORATION EXPERIENCE

Leung Laboratory

Department of Biological Sciences, Purdue University

2014-2017

Schmitz Laboratory

Department of Genetics, University of Georgia

2015

Edison Laboratory

Complex Carbohydrate Research Center, University of Georgia

2016-2017