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CURRICULUM VITAE

Jingshu Wang

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CURRENT EMPLOYMENT

Assistant Professor, 2019-present
Department of Statistics, University of Chicago

EDUCATION

2016	Ph.D. , Statistics, Stanford University Advisor: Art B. Owen Thesis: Factor analysis for high-dimensional data
2011	B.Sc. , Mathematics and Applied Mathematics, Peking University, China

WORK EXPERIENCE

2016-2019	Postdoctoral Fellow in Statistics (Mentor: Nancy R. Zhang) The Wharton School, University of Pennsylvania
2013	Summer Graduate Intern Quantitative Marketing, Google

PROFESSIONAL SERVICE

2016-present	Referee for <i>Journal of the American Statistical Association, Biometrika, Annals of Applied Statistics, Annals of Statistics, Statistics and Probability Letters, Statistica Sinica, Biometrics, Journal of Computational and Graphical Statistics, Statistics and Computing, Journal of Machine Learning Research, Biostatistics, Biostatistics, Genetics, Bioinformatics, PLoS Medicine, Nature Communications, Nature Machine Learning Intelligence</i>
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2022	Guest Editor for PLOS Genetics
2023	Topic Editor for Frontiers in Genetics Statistical Genetics and Methodology: Statistical and Computational Methods for Single-Cell Sequencing Analysis

GRANTS AND AWARDS

2023	New Challenges in Statistical Genetics: Mendelian Randomization, Integrated Omics and General Methodology, NSF Career Award, DMS-2238656, 2023-2028. Total cost: \$448,820
2021	Statistical learning and inference for single-cell RNA sequencing, NSF DMS-2113646, 2021-2024. Role: PI. Total cost: \$230,000
2018	ICSA 2018 Conference Young Researcher Award
2016	SFASA Student Travel Award for 2016 Joint Statistical Meeting
2015	Stanford Statistics Department Teaching Assistant Award

PUBLICATIONS

(#: student under my supervision, *: corresponding author or methodology corresponding author)

Peer-reviewed Journal Articles

1. Bowei Kang[#], Yalan Yang, Kaining Hu, Xiangbin Ruan, Yi-Lin Liu[#], Pinky Lee, Jasper Lee, **Jingshu Wang***, Xiaochang Zhang, 2023. Infernape uncovers cell type-specific and spatially resolved alternative polyadenylation in the brain. *Genome Research* 33:1-14.
2. **Jingshu Wang***, Lin Gui[#], Weijie Su, Chiara Sabatti and Art B. Owen, 2022. Detecting multiple replicating signals using adaptive filtering procedures, *The Annals of Statistics* 50(4), 1890-1909.
3. Qingyuan Zhao, **Jingshu Wang**, Zhen Miao, Nancy R Zhang, Sean Hennessy, Dylan S Small and Daniel J Rader, 2021. A Mendelian randomization study of the role of lipoprotein subfractions in coronary artery disease. *Elife*, 10, e58361.
4. **Jingshu Wang***, Qingyuan Zhao, Jack Bowden, Gibran Hemani, George Davey Smith, Dylan S. Small and Nancy R. Zhang, 2021. Causal Inference for Heritable Phenotypic Risk Factors Using Heterogeneous Genetic Instruments, *PLoS Genetics*, 17(6), e1009575.
5. Xiangbin Ruan, Bowei Kang[#], Cai Qi, Wenhe Lin, **Jingshu Wang***, Xiaochang Zhang, 2021. Progenitor cell diversity in the developing mouse neocortex. *Proceedings of the National Academy of Sciences*, 118(10).
6. Bowei Kang[#], Eroma Abeysinghe, Divyansh Agarwal, Quanli Wang, Sudhakar Pamidighantam, Mo Huang, Nancy R Zhang, **Jingshu Wang***, 2020. Online Single-cell RNA-seq Data Denoising with Transfer Learning. *PEARC'20: Practice and Experience in Advanced Research Computing*, 469472.

7. Divyansh Agarwal, **Jingshu Wang**, and Nancy R. Zhang, 2020. Data Denoising and Post-Denoising Corrections in Single Cell RNA Sequencing. *Statistical Science*, 35(1): 112-128.
8. Qingyuan Zhao, **Jingshu Wang**, Jack Bowden, Dylan S. Small, 2020. Statistical inference in two-sample summary-data Mendelian randomization using robust adjusted profile score. *The Annals of Statistics*, 48(3), 1742-1769.
9. Zilu Zhou, Chengzhong Ye, **Jingshu Wang**, and Nancy R. Zhang, 2020. Surface protein imputation from single cell transcriptomes by deep neural networks. *Nature Communications*, 11(1): 1-10.
10. **Jingshu Wang**, Divyansh Agarwal, Mo Huang, Gang Hu, Zilu Zhou, and Nancy R. Zhang, 2019. Data denoising with transfer learning in single-cell transcriptomics. *Nature Methods*, 16, 875-878.
11. Qingyuan Zhao, Yang Chen, **Jingshu Wang**, and Dylan S. Small. Powerful genome-wide design and robust statistical inference in two-sample summary-data Mendelian randomization, 2019. *International Journal of Epidemiology*, 48(5), 1478-1492.
12. Qingyuan Zhao, **Jingshu Wang**, Jack Bowden, Dylan S. Small, 2019. Two-sample Instrumental Variable Analyses Using Heterogeneous Samples. *Statistical Science*, 34(2), 317-333.
13. **Jingshu Wang*** and Art B. Owen. Admissibility in Partial Conjunction Testing, 2019. *Journal of the American Statistical Association* 114, 158-168
14. **Jingshu Wang**, Mo Huang, Eduardo Torre, Hannah Dueck, Sydney Shaffer, John Murray, Arjun Raj, Mingyao Li and Nancy R. Zhang. Gene Expression Distribution Deconvolution in Single Cell RNA Sequencing, 2018. *Proceedings of National Academy of Sciences* 115(28), E6437-E6446
15. Mo Huang, **Jingshu Wang**, Eduardo Torre, Hannah Dueck, Sydney Shaffer, Roberto Bonasio, John Murray, Arjun Raj, Mingyao Li and Nancy R. Zhang. Gene Expression Recovery For Single Cell RNA Sequencing, 2018. *Nature Methods* 15, 539-542
16. **Jingshu Wang**, Qingyuan Zhao, Trevor Hastie and Art B. Owen. Confounder Adjustment in Multiple Hypotheses Testing, 2017. *Annals of Statistics* 45, 1863-1894
17. Art B. Owen and **Jingshu Wang**. Bi-cross-validation for Factor Analysis, 2016. *Statistical Science* 31, 119-139

Published book chapters

18. **Jingshu Wang*** and Tianyu Chen# (2022). Deep Learning Methods for Single-Cell Omics Data, in *Handbook of Statistical Bioinformatics II*, ed. Henry Horng-Shing Lu, Bernhard Schlkopf, Martin T. Wells and Hongyu Zhao.

Technical Reports

19. Zixuan Wu[#], Ethan Lewis[#], Qingyuan Zhao, **Jingshu Wang*** (2024). Causal Mediation Analysis for Time-varying Heritable Risk Factors with Mendelian Randomization. *BioRxiv*.
20. Lin Gui[#], Yuchao Jiang, **Jingshu Wang*** (2023). Aggregating Dependent Signals with Heavy-Tailed Combination Tests. *ArXiv*.
21. Jinhong Du[#], Tianyu Chen[#], Ming Gao[#], **Jingshu Wang*** (2023). Joint Trajectory Inference for Single-cell Genomics Using Deep Learning with a Mixture Prior. *BioRXiv*.
22. Samuel J. Resnick, Seema Qamar, Jenny Sheng, Lei Haley Huang, Jonathon Nixon-Abell, Schuyler Melore, Chyi Wei Chung, Xuecong Li, **Jingshu Wang**, Nancy Zhang, Neil A. Schneider, Clemens F. Kaminski, Francesco Simone Ruggeri, Gabriele S. Kaminski Schierle, Peter St George-Hyslop, Alejandro Chavez (2022). A Multiplex Platform to Identify Mechanisms and Modulators of Proteotoxicity in Neurodegeneration. *BioRXiv*.
23. Dongyue Xie[#] and **Jingshu Wang*** (2022). Robust Statistical Inference for Cell Type Deconvolution. *ArXiv*.

PRESENTATION

Invited Seminars and Conference Presentations

- (2023) IMSI Workshop on Permutation and causal inference: connections and applications, University of Chicago
- (2023) Joint Statistical Meetings, Toronto, Canada
- (2023) Department of Statistics seminar, University of Michigan, Ann Arbor
- (2023) Department of Biostatistics seminar, University of North Carolina at Chapel Hill
- (2022) Committee on Quantitative Methods in Social, Behavioral, and Health Sciences Workshop, University of Chicago
- (2022) Joint Statistical Meetings, Washington, DC
- (2022) ICSA Applied Statistics Symposium, Gainesville
- (2022) BIRS Workshop: Deep Learning for Genetics, Genomics and Metagenomics: Latest developments and New Directions, Kelowna, Canada
- (2022) Young Bioinformatics PI Seminar Series, virtual
- (2022) Statistical Bioinformatics Seminar, University of Sydney
- (2021) Econometrics and Statistics Colloquium, UChicago Booth School of Business
- (2021) IMSI Workshop on Eliciting Structure in Genomics Data, University of Chicago
- (2021) Statistics colloquium, Michigan State University
- (2021) ICSA Applied Statistics Symposium, virtual
- (2021) Department of statistics seminar, The University of Iowa

- (2021) Department of Statistics seminar, Hong Kong University
- (2021) Department of Biostatistics seminar, Yale University
- (2020) Symposium 2020 ICSA, virtual
- (2020) International Seminar on Selective Inference, virtual
- (2020) ENAR 2020 Spring Meeting, virtual
- (2019) Department of Statistics seminar, Northwestern University
- (2019) Department of Statistics seminar, University of Pittsburgh
- (2019) Biostatistics seminar series, Northwestern University
- (2019) Department of Biostatistics seminar, Indiana University
- (2019) Joint Statistical Meetings, Denver
- (2019) ISMB/ECCB 2019 Basel, Swiss (Tutorial)
- (2019) IMS China Meeting, China
- (2019) ICSA China Conference, China
- (2019) Department of Biostatistics seminar, University of Washington
- (2019) Department of Statistics seminar, University of Wisconsin, Madison
- (2019) Department of Statistics seminar, University of Chicago
- (2019) Department of Statistics seminar, Duke University
- (2019) Department of Statistics seminar, Carnegie Mellon University
- (2019) Department of Statistics seminar, Columbia University
- (2019) Department of Statistics seminar, Florida State University
- (2019) Department of Statistics seminar, University of Florida
- (2019) Department of Statistics seminar, Purdue University
- (2019) Department of Statistics seminar, University of Illinois Urbana-Champaign
- (2018) ICSA China Conference on Data Science, China
- (2018) 2nd International Conferences on Econometrics and Statistics (EcoSta), China
- (2017) Department of Statistics, Tel Aviv University, Israel
- (2016) 10th ICSA International Conference, China

Contributed Conference Presentations and Posters

- (2019) CTRG2019, Chicago (Poster)
- (2018) ASHG, San Diego (Poster)
- (2017) ASHG, Orlando (Poster talk)
- (2017) 10th International Conference on Multiple Comparison Procedures, Riverside (Talk)
- (2016) Joint Statistical Meeting, Chicago (Talk)
- (2015) 9th International Conference on Multiple Comparison Procedures, India (Talk)

- (2015) Stanford BioX symposium (Poster)
(2014) 2014 Joint Statistical Meeting, Boston (Talk)
(2014) ICSA-KISS Applied Statistics Symposium, Portland (Talk)

MENTORING

Doctoral Students

Dongyue Xie	2023
Lin Gui	2020-
Soumyabrata Kundu	2020-
Ziming Gan	2021-

Master Students

Lin Gui	2020
Bowei Kang	2020
Jinhong Du	2021
Ming Gao	2021
Xinxin Chen	2021
Seung-Wan Jin	2022
Yi-Lin Liu	2022
Yingcheng Luo	2022
Jack Potrykus	2022
Ethan Lewis	2022
Zixuan Wu	2023
Tianyu Chen	2023
Yao Rong	2023
Taewan Kim	2023

Undergraduate Students

Shuhong Liu	2020
Ethan Lewis	2021
Yuxuan Ke	2021
Qiyuan Liu	2022
Baichen Tan	2023-

TEACHING EXPERIENCE

Instructor

University of Chicago

- STAT 24630 Causal Inference Methods and Case Studies
- STAT 41530 Topics in Causal Inference
- STAT 34700 Generalized Linear Models
- STAT 22000 Statistical Methods and Applications

Stanford University

- Stats110 Statistical Methods in Engineering and Physical Science (Summer, 2016)

ACADEMIC SERVICE

Department of Statistics

- 2020- PhD Admissions Committee
- 2022- Statistics Colloquium seminar co-chair

Data Science Institute

- 2022 Mentor for Rising Stars in Data Science Workshop
- 2023 Postdoctoral Scholars Program Admission Committee