

Canyi Chen

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Experience

Department of Biostatistics, University of Michigan
Postdoc Researcher

Ann Arbor
2023 –

Education

Renmin University of China
PhD in Statistics

Beijing
2018 – 2023

Dissertation: “Distributed Statistical Algorithms for Nonsmooth Problems: Theories and Applications”

Beijing Normal University
BSc in Mathematics and Applied Mathematics

Beijing
2014 – 2018

Research Interests

○ Distributed statistical computing; High-dimensional data analysis; Non-Linear dependence measure

Publications

Journal Articles

* indicates equal contributions

† indicates corresponding author(s) (if not the senior author)

boldface indicates me

- [1] W. Hao, **C. Chen**, and P. X.-K. Song[†]. “A Class of Directed Acyclic Graphs with Mixed Data Types in Mediation Analysis”. In: *Canadian Journal of Statistics* (2025). DOI: 10.1002/cjs.70016.
- [2] C. He*, **C. Chen***, and L. Zhu[†]. “A Goodness-of-fit Assessment for General Learning Procedure in High Dimensions”. In: *Journal of the American Statistical Association* (2025). to appear.
- [3] N. Qiao*, **C. Chen***[†], and Z. Zhu*. “Robust and Efficient Sparse Learning over Networks: A Decentralized Surrogate Composite Quantile Regression Approach”. In: *Statistics and Computing* 35.1 (Jan. 2025), p. 24.
- [4] B. Chen and **C. Chen**[†]. “Convolved Support Matrix Machine in High Dimensions”. In: *Statistica Sinica* (2024). DOI: 10.5705/ss.202024.0194.
- [5] **C. Chen**[†]. “Scalable and Globally Convergent Algorithm for Sufficient Dimension Reduction”. In: *Statistics and Its Interface* 17.3 (July 2024), pp. 479–491.

- [6] **C. Chen**^{*}, B. Chen^{*}, L. Kong, and L. Zhu[†]. “Robust Multi-Task Learning in High Dimensions under Memory Constraint”. In: *Statistical Analysis and Data Mining* 17 (3 2024), e11700. DOI: 10.1002/sam.11700.
- [7] **C. Chen** and Z. Zhu[†]. “Byzantine-Robust and Efficient Distributed Sparsity Learning: A Surrogate Composite Quantile Regression Approach”. In: *Statistics and Computing* 34.5 (Oct. 2024), p. 158.
- [8] Y. He, **C. Chen**, and W. Xu[†]. “Debiased Distributed Quantile Regression in High Dimensions”. In: *Statistics and Its Interface* 17.3 (2024), pp. 337–347.
- [9] N. Qiao and **C. Chen**[†]. “Fast and Robust Low-Rank Learning over Networks: A Decentralized Matrix Quantile Regression Approach”. In: *Journal of Computational and Graphical Statistics* 33.4 (Oct. 2024), pp. 1214–1223.
- [10] B. Chen and **C. Chen**. “Fast Optimization Methods for High-Dimensional Row-Sparse Multivariate Quantile Linear Regression”. In: *Journal of Statistical Computation and Simulation* 94.1 (July 2023), pp. 69–102.
- [11] **C. Chen**^{*}, Y. Gu^{*}, H. Zou^{*}, and L. Zhu^{*†}. “Distributed Sparse Composite Quantile Regression in Ultrahigh Dimensions”. In: *Statistica Sinica* 33 (2023). DOI: 10.5705/ss.202022.0095.
- [12] C. Chen, W. Xu, and L. Zhu. “Distributed Estimation in Heterogeneous Reduced Rank Regression: With Application to Order Determination in Sufficient Dimension Reduction”. In: *Journal of Multivariate Analysis* 190 (July 2022), p. 104991. DOI: 10.1016/j.jmva.2022.104991.
- [13] **C. Chen** and L. Zhu[†]. “Distributed Decoding from Heterogeneous 1-Bit Compressive Measurements”. In: *Journal of Computational and Graphical Statistics* 32.3 (Aug. 2022), pp. 884–894. DOI: 10.1080/10618600.2022.2118751.
- [14] Y. Zhang, C. Chen, and L. Zhu. “Sliced Independence Test”. In: *Statistica Sinica* 32 (2022). DOI: 10.5705/ss.202021.0203.
- [15] P. Song, **C. Chen**, Y. Lou, H. Jiang, W. Li, and L. Zhu. “Assessing Effectiveness of Integrated Strategies for Preventing and Controlling the Outbreak of COVID-19 and Predicting Impact of Opening Exit Channels to Leave Hubei Province”. In: *Chinese Journal of Applied Probability and Statistics* 36.3 (June 2020), pp. 321–330. DOI: 10.3969/j.issn.1001-4268.2020.03.007.

Preprints.....

- [16] **C. Chen**, R. Kundu, W. Hao, and P. X.-K. Song. “Copula Structural Equation Models for Mediation Pathway Analysis”. submitted. 2025.
- [17] **C. Chen**^{*}, N. Qiao^{*}, and L. Zhu^{*†}. “Efficient Distributed Learning over Decentralized Networks with Convolved Support Vector Machine”. minor revision at JASA. Mar. 2025. arXiv: 2503.07563 [stat].
- [18] **C. Chen**, L. Zhou, and P. X.-K. Song. “An Efficient Two-Way Cross Test for Mediation Effects with High Sensitivity to Weak Signals”. R&R at BKA. 2025.
- [19] **C. Chen**^{*}, L. Zhou^{*}, and P. X.-K. Song^{*†}. “Taking the Power of Distributed Systems: A Sequential Combination Method to Testing Joint Significance”. 2025.

- [20] **C. Chen**, L. Zhou, and P. X.-K. Song. “Testing for Joint Significance Using the Renewable Estimating Function Theory”. 2025.
- [21] R. Kundu*, **C. Chen***, and P. X.-K. Song†. “Statistical Inference for Causally Ordered Multiple Mediation Analysis”. 2025.
- [22] W. Zhang*, **C. Chen***, and L. Zhu†. “Divide-and-Conquer for Massive Data: Implementations and Oracle Properties”. submitted. 2025.
- [23] B. Chen and **C. Chen**†. “A Unified and Efficient Algorithm for Penalized Convolved Support Vector Machines”. submitted. 2024.
- [24] **C. Chen**, Y. He, H. J. Wang, G. Xu, and P. X.-K. Song†. “Quantile Mediation Analytics”. submitted. Dec. 2024. arXiv: 2412.15401 [stat].
- [25] **C. Chen***, Z. Zhu*, and L. Zhu*†. “Robust and Efficient Decoding from Heterogeneous 1-Bit Compressive Measurements over Networks”. minor revision at Statistica Sinica. 2024.
- [26] M. Al-Hinai, **C. Chen**, E. C. Jansen, K. E. Peterson, P. X.-K. Song, and A. Baylin. “Vitamin D is Associated with Sleep Disturbance and Cognitive Function in Older Adults”. 2024.
- [27] N. Qiao, W. Li, J. Zhang, and **C. Chen**†. “Scalable and Distributed Individualized Treatment Rules for Massive Datasets”. major revision at Biometrics. 2024.
- [28] **C. Chen** and L. Zhu†. “Distributed Estimation and Gap-Free Analysis of Canonical Correlations”. submitted. Dec. 2023. arXiv: 2412.17792 [stat].

Open-Source Software

- SIT: ASSOCIATION MEASUREMENT THROUGH SLICED INDEPENDENCE TEST. [Link]
- abima: ADAPTIVE BOOTSTRAP INFERENCE FOR MEDIATION ANALYSIS WITH ENHANCED STATISTICAL POWER. [Link]
- MarginalMaxTest: TEST THE MARGINAL CORRELATION BETWEEN A SCALAR RESPONSE VARIABLE WITH A VECTOR OF EXPLANATORY VARIABLES USING THE MAX-TYPE TEST WITH BOOTSTRAP. [Link]
- ZoteroQuickLookNG-z7: BRING QUICK LOOK TO ZOTERO 7 IN MACOS. [Link]

Grant Proposals

Renmin University of China

Canonical Correlation Analysis of Functional Data 2020

National Students' Innovation and Entrepreneurship Training Program

Asymptotics of the Derrida–Retaux Branch System 2016

Fellowships, Honors, and Awards

Excellent Doctoral Dissertation Award of Renmin University of China 2024

UMPDA Conference Award 2024

National Scholarship of China 2023

Outstanding Graduate of Renmin University of China 2023

Wu Yuzhang Scholarship Finalist 2023

<i>Jingdong Special Scholarship Finalist</i>	2022
<i>The best presented poster</i>	2020
Distributed Decoding from Heterogeneous 1-Bit Compressive Measurements , <i>Statistics and Data Science Young Scholars Forum</i> , Beijing. [pdf]	
<i>National Second Prize in National Undergraduate Mathematical Modeling Contest</i>	2016

Volunteer Experience

Teaching Assistant

<i>Computer Skills in Data Science – PhD Level</i>	Fall 2019
<i>Asymptotic Statistics – PhD Level</i>	Fall 2020
<i>Natural Language Processing – PhD Level</i>	Spring 2021

Anonymous Referee

- *Statistica Sinica* (22, 23)
- *IEEE Transactions on Neural Networks and Learning Systems* (23, 24, 25)
- *Statistics and Computing* (24, 25)
- *Annals of Applied Statistics* (24, 25)
- *SCIENCE CHINA Mathematics* (24)
- *Acta Mathematica Scientia* (24)
- *The American Statistician* (24)
- *Applied Mathematics and Computation* (24)
- *ScienceAsia* (25)
- *Journal of the American Statistical Association* (25)
- *Mathematics* (25)

Seminars & Presentations

- Graduate Student Seminar, Department of Statistics, George Washington University, Washington, D.C., October 18, 2024 (invited speaker)
- ICSA Applied Statistics Symposium, Nashville, Tennessee, June 16 - 19, 2024 (invited speaker)
- The 7th International Conference on Statistical Optimization and Learning, Beijing Jiaotong University, Beijing, China, December 2022 (invited speaker)
- Data Science Frontiers Forum, Southwestern University of Finance and Economics, Chengdu, China, July 2021 (invited speaker)

Skills

- Programming languages: Python, R, C++, Bash, \LaTeX , MATLAB, SQL
- Languages: Chinese, English, Eastern Min