

Canyi Chen

* 8 May 1997 • ✉ canyi@umich.edu • 🌐 canyi-chen.github.io
in canyi-chen-b031a228b • id 0000-0002-0673-5812 • R Chen_Canyi
✉ _EUijuQAAAAJ

Experience

Department of Biostatistics, University of Michigan
Postdoc Researcher

Ann Arbor
2023 –

Education

Renmin University of China Beijing
PhD in Statistics 2018 – 2023
Dissertation: "Distributed Statistical Algorithms for Nonsmooth Problems: Theories and Applications"

Beijing Normal University Beijing
BSc in Mathematics and Applied Mathematics 2014 – 2018

Research Interests

- Distributed statistical computing; Mediation analysis; Synthetic data.

Publications

Journal Articles

* indicates equal contributions

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

boldface indicates me

- [1] C. Chen*, N. Qiao*, and L. Zhu*†. "Efficient Distributed Learning over Decentralized Networks with Convolved Support Vector Machine". In: *Journal of the American Statistical Association* (2025). DOI: 10.1080/01621459.2025.2550671.
- [2] 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.
- [3] 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). DOI: 10.1080/01621459.2025.2529602.
- [4] 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.

- [5] B. Chen and **C. Chen**[†]. "Convolved Support Matrix Machine in High Dimensions". In: *Statistica Sinica* (2024). DOI: 10.5705/ss.202024.0194.
- [6] **C. Chen**[†]. "Scalable and Globally Convergent Algorithm for Sufficient Dimension Reduction". In: *Statistics and Its Interface* 17.3 (July 2024), pp. 479–491.
- [7] **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.
- [8] **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.
- [9] 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.
- [10] 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.
- [11] 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.
- [12] **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.
- [13] 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.
- [14] **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.
- [15] Y. Zhang, C. Chen, and L. Zhu. "Sliced Independence Test". In: *Statistica Sinica* 32 (2022). DOI: 10.5705/ss.202021.0203.
- [16] 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

- [17] **C. Chen**, R. Kundu, W. Hao, and P. X.-K. Song. "Copula Structural Equation Models for Mediation Pathway Analysis". submitted. 2025.
- [18] **C. Chen** and P. X.-K. Song[†]. "DaGIF: A Data-Graft Integration Framework for Empowered Statistical Learning and Inference". 2025.
- [19] **C. Chen** and P. X.-K. Song[†]. "False Discovery Rate Control for Mediation Analysis under General Dependence Structures". 2025.

- [20] **C. Chen***, D. Zhao*, and Z. Zhu*†. "False Discovery Rate Control with Arbitrarily Dependent Covariates in High Dimensions". 2025.
- [21] **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 Biometrika. 2025.
- [22] **C. Chen***, L. Zhou*, and P. X.-K. Song*†. "Taking the Power of Distributed Systems: A Sequential Combination Method to Testing Joint Significance". 2025.
- [23] **C. Chen**, L. Zhou, and P. X.-K. Song. "Testing for Joint Significance Using the Renewable Estimating Function Theory". 2025.
- [24] R. Kundu*, **C. Chen***, and P. X.-K. Song†. "Statistical Inference for Causally Ordered Multiple Mediation Analysis". 2025.
- [25] W. Zhang*, **C. Chen***, and L. Zhu†. "Divide-and-Conquer for Massive Data: Implementations and Oracle Properties". submitted. 2025.
- [26] Z. Zhu*, **C. Chen***, and L. Zhu†. "Efficient Divide-and-Conquer Method for Semiparametric Inference via Componentwise Aggregation". submitted. 2025.
- [27] B. Chen* and **C. Chen***†. "A Unified and Efficient Algorithm for Penalized Convolved Support Vector Machines". major revision at Statistics and Computing. 2024.
- [28] **C. Chen**, Y. He, H. J. Wang, G. Xu, and P. X.-K. Song†. "Quantile Mediation Analytics". R&R at Statistica Sinica. Dec. 2024. arXiv: 2412.15401 [stat].
- [29] **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.
- [30] 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.
- [31] N. Qiao, W. Li, J. Zhang, and **C. Chen**†. "Scalable and Distributed Individualized Treatment Rules for Massive Datasets". minor revision at Biometrics. 2024.
- [32] **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

<i>Excellent Doctoral Dissertation Award of Renmin University of China</i>	2024
<i>UMPDA Conference Award</i>	2024
<i>National Scholarship of China</i>	2023
<i>Outstanding Graduate of Renmin University of China</i>	2023
<i>Wu Yuzhang Scholarship Finalist</i>	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>	<i>Fall 2019</i>
<i>Asymptotic Statistics – PhD Level</i>	<i>Fall 2020</i>
<i>Natural Language Processing – PhD Level</i>	<i>Spring 2021</i>

Voluntary Teacher	
<i>Pengshui, Chongqing, China</i>	<i>2016</i>
<i>Yongding, Fujian, China</i>	<i>2017</i>

Anonymous Referee	
<input type="radio"/> <i>Statistica Sinica</i> (22, 23)	
<input type="radio"/> <i>IEEE Transactions on Neural Networks and Learning Systems</i> (23, 24, 25)	
<input type="radio"/> <i>IEEE Transactions on Information Theory</i> (25)	
<input type="radio"/> <i>Statistics and Computing</i> (24, 25)	
<input type="radio"/> <i>Annals of Applied Statistics</i> (24, 25)	
<input type="radio"/> <i>SCIENCE CHINA Mathematics</i> (24)	
<input type="radio"/> <i>Acta Mathematica Scientia</i> (24)	
<input type="radio"/> <i>The American Statistician</i> (24)	
<input type="radio"/> <i>Applied Mathematics and Computation</i> (24)	
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<input type="radio"/> <i>Journal of the American Statistical Association</i> (25)	
<input type="radio"/> <i>Mathematics</i> (25)	
<input type="radio"/> <i>Artificial Intelligence Review</i> (25)	
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Seminars & Presentations

- 14th High Dimensional Data Analysis Workshop, hosted at the Central Michigan University Biological Station on Beaver Island, Aug. 19-22, 2025. (invited speaker)
- 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, L^AT_EX, MATLAB, SQL
- Languages: Chinese, English, Eastern Min

References

- Dr. Liping Zhu (PhD Advisor).....**
- Professor of Statistics
 - Institute of Statistics and Big Data, Renmin University of China
 - *Email*: zhu.liping@ruc.edu.cn
- Dr. Peter Song (Postdoc Advisor).....**
- Professor of Biostatistics
 - Department of Biostatistics, University of Michigan, Ann Arbor
 - *Email*: pxsong@umich.edu
- Dr. Hui Zou.....**
- Professor of Statistics
 - School of Statistics, University of Minnesota
 - *Email*: zouxx019@umn.edu