

CURRICULUM VITAE

Huimin Cheng

310 Herty Drive, Department of Statistics, Athens, GA 30602

Email: huimincheng@uga.edu Phone: (706)-248-9500

Website: <https://sites.google.com/view/huimincheng>

Education

- Ph.D. in Statistics, University of Georgia, GA 08/2018-present
- M.S. in Statistics, Central University of Finance and Economics, Beijing, China 09/2015-07/2017
- B.S. in Statistics, Hubei University of Economics, Wuhan, China 09/2011-07/2015

Awards and Honors

- Southeastern Conference (SEC) Emerging Scholars Award (\$35,000), SEC. 2022
SEC is a union consisting of 14 American universities in the southeast, including the University of Georgia (UGA), University of Florida, and Texas A&M University. Only three recipients in UGA.
- Summer Research Grant (\$15,000), University of Georgia. 2022
- Best Beginning student, Department of Statistics, University of Georgia. 2021
- Outstanding Mentor, Oconee County School. 2021
- Entrepreneurial Team Lead of UGA NSF I-Corps program, University of Georgia. 2019
- Bargmann Travel Fund for The 2019 Joint Statistical Meetings, University of Georgia. 2019
- National Scholarship, Central University of Finance and Economics. 2017
- Excellent Graduate of Beijing, Central University of Finance and Economics. 2017
- Distinguished Graduation Thesis Award, Central University of Finance and Economics. 2017

Major Research Areas

- Statistical Network Analysis; Riemannian Geometry; Bioinformatics; Causal Inference; Nonparametric Regression; Econometrics.

Publications (Citations: 165)

*I have published **one** book and **17** peer-reviewed articles. I have **10** papers under review. A full list is below. The following journal ranking refers to SCImago and Austms rank.*

- Book

[1] Wang, H. S. and **Cheng, H. M.** (2020). Business Data Analytics and Its Applications With R. *Renmin University of China Press*. (Sales: **7,200** copies).

- Refereed Journal Articles (As First and Second Author)

[2] Yu, J., **Cheng, H. M.**, Zhang, J. N., Zhong, W. X., Ye, J., Song, W. Z., and Ma, P. (2022). CONGO²: Colored-node Graph Square Model for Anomaly Detection and Localization in Smart Grids. *IEEE Internet of Things Journal* (IF¹ **9.936**, **top 3** in the area of Signal

¹IF: Impact factor

Processing).

- [3] **Cheng, H. M.**, Yu, J., Wang, Z., Ma, P., Guo, C. L., Wang, B., Zhong, W. X., and Xu, B. Q. (2021). Details of Single-molecule Force Spectroscopy Data Decoded by Network-based Automatic Clustering Algorithm. *Journal of Physical Chemistry B* (Ranked **A+** in the area of Physical Chemistry), 125(34), 9660-9667. (**Our work is featured on the cover**).
- [4] **Cheng, H. M.**, Wang, Y., Ma, P., and Murdie, A. (2021). Communities and Brokers: How the Transnational Advocacy Network Simultaneously Provides Social Power and Exacerbates Global Inequalities. *International Studies Quarterly* (Ranked **A+** in the area of Political Science, acceptance rate **10%**), 65(3), 724-738.
- [5] Wu, Z. Q., **Cheng, H. M.***, Shan, F., Ying, X. J., Miao, R. l., Zhang, Z. Y., Li, Z. Y., and Ji, J. F. (2019). In-hospital Mortality Risk Model of Gastric Cancer Surgery: Analysis of a Nationwide Institutional-level Database With 94,277 Chinese Patients. *Frontiers in Oncology* (IF **5.738**), 9, 846. (*Joint-first Author).
- [6] **Cheng, H. M.**, Li, S. Y., Ning, Y. Z., Chen, X., Pan, R., and Zhang, Z. Y. (2019). Analysis on Utilization of Beijing Local Roads Using Taxi Gps Data. *Physica A: Statistical Mechanics and its Applications* (**Top 11** in the area of Statistical and Nonlinear Physics), 545, 123570.
- [7] Liu, X, **Cheng, H. M.**, and Zhang, Z. Y. (2019). Evaluation of Community Detection Methods. *IEEE Transactions on Knowledge and Data Engineering* (IF **6.977**, **top 8** in the area of Computational Theory and Mathematics), 32(9), 1736-1746.
- [8] Francis, M., **Cheng, H. M.**, Ma, P., and Grider, A. (2019). Genomic Characterization of the Zinc Transcriptional Regulatory Element Reveals Potential Functional Roles of ZNF658. *Biological Trace Element Research* (**Top 14** in the area of Inorganic Chemistry), 192(2), 83-90.
- [9] **Cheng, H. M.**, Ning, Y. Z., Yin, Z., Yan, C., Liu, X., and Zhang, Z. Y. (2018). Community Detection in Complex Networks Using Link Prediction. *Modern Physics Letters B*, 32(1), 1850004.
- [10] **Cheng, H. M.**, Ning, Y. Z., Ma, X., Liu, X., and Zhang, Z. Y. (2017). Effectiveness of Rapid Rail Transit System in Beijing. *PLOS One*, 12(7), e0180075.
- [11] You, T., **Cheng, H. M.**, Ning, Y. Z., Shia, B. C., and Zhang, Z. Y. (2016). Community Detection in Complex Networks Using Density-based Clustering Algorithm and Manifold Learning. *Physica A: Statistical Mechanics and its Applications* (**Top 11** in the area of Statistical and Nonlinear Physics), 464, 221-230.

• Refereed Journal Articles (Others)

- [12] Zhang, Z. Y., Yan, C., **Cheng, H. M.**, and Liu, X. (2022). Joint Non-negative Matrix Factorization for Community Structures Detection in Signed Networks. *Journal of Complex Networks*, 10(3), cnac016.
- [13] Wang, Y., Meagher, R. B., Ambati, S., **Cheng, H. M.**, Ma, P., and Phillips, B. G. (2021). Patients With Obstructive Sleep Apnea Have Altered Levels of Four Cytokines Associated With Cardiovascular and Kidney Disease, but Near Normal Levels With Airways Therapy. *Nature and Science of Sleep* (IF **5.346**) 13, 457-466.

- [14] Zhang, J. Y., Zhu, H. L., Chen, Y. K., Yang, C. G., **Cheng, H. M.**, Li, Y., Zhong, W. X., and Wang, F. (2021). Ensemble Machine Learning Approach for Screening of Coronary Heart Disease Based on Echocardiography and Risk Factors. *BMC Medical Informatics and Decision Making*, 21(1), 1-13.
- [15] Chang, Z. H., Zhang, Z. Y., **Cheng, H. M.**, Yan, C., and Yin, X. J. (2021). Optimizing Modularity With Nonnegative Matrix Factorization. *International Journal of Modern Physics C*, 32(11), 2150142.
- [16] Ning, Y. Z., Liu, X., **Cheng, H. M.**, and Zhang, Z. Y. (2020). Effects of Social Network Structures and Behavioral Responses on the Spread of Infectious Diseases. *Physica A: Statistical Mechanics and its Applications* (**Top 11** in the area of Statistical and Nonlinear Physics), 539, 122907.
- [17] Huang, L. C., Yeung, W., Wang, Y., **Cheng, H. M.**, Venkat, A., Li, S., Ma, P., Rasheed, K., and Kannan, N. (2020). Quantitative Structure-mutation-activity Relationship Tests (Qsmart) Model for Protein Kinase Inhibitor Response Prediction. *BMC Bioinformatics*, 21(1), 1-22.
- [18] Zhang, Z. Y., Gai, Y., Wang, Y. F., **Cheng, H. M.**, and Liu, X. (2018). On Equivalence of Likelihood Maximization of Stochastic Block Model and Constrained Nonnegative Matrix Factorization. *Physica A: Statistical Mechanics and its Applications* (**Top 11** in the area of Statistical and Nonlinear Physics), 503, 687-697.

• Under Review

- [19] **Cheng, H. M.**, Chen, Y. K., Ma, P., and Zhong, W. X. (2022). Conformal Validation in Graphon Estimation. Submitted to *Neural Information Processing Systems*.
- [20] **Cheng, H. M.**, Yu, J., Lu, H. R., Ma, P., and Zhong, W. X. (2022). Comparison of Unlabelled Networks under a Graphon Framework. Submitted to *Neural Information Processing Systems*.
- [21] **Cheng, H. M.**, Ma, T., and Zhong, W. X. (2022). Med-reader: a Query-based Multisource Learner Using Complex Network. Submitted to *Nature Biotechnology*.
- [22] **Cheng, H. M.**, Yu, J., Ma, P., and Zhong, W. X. (2022). Network ANOVA and Riemannian Manifold for Statistical Physics. Submitted to *Journal of American Statistical Association*.
- [23] **Cheng, H. M.**, Wu, S. S., Yu, J., Lu, H. R., Zhong, W. X. (2022). Graphon Convolutional Network: a Highly Efficient Learner for Random Graph. Submitted to *Biometrika*.
- [24] Wu, S. S., **Cheng, H. M.**, Cai, J. Z., Ma, P., and Zhong, W. X. (2022). Subsampling for Large Graphs Using Ricci Curvature. Submitted to *Neural Information Processing Systems*.
- [25] Cai, J. Z., **Cheng, H. M.**, Zhong, W. X., Shen, Y., and Ma, P. (2022). Pseudo-time Reconstruction to Infer Transmission Direction for COVID-19. Submitted to *Nature Medicine*.
- [26] Lu, H. R., **Cheng, H. M.**, Wang, Y., Wang, X. D., Xie, Y. G., Yan, H., Zhong, W. X., and Ma, P. (2022). Smoothing Spline with Phase Transition. Submitted to *Annals of Applied Statistics*.

- [27] Meng, C., Ke, Y., Zhang, J. Y., **Cheng, H. M.**, Cheng, Y. K., Zhong, W. X., and Ma, P. (2021). Variable Selection for High-dimensional Optimal Transport Problems Using Random Permutation. Submitted to *Journal of the Royal Statistical Society: Series B*.
- [28] He, Y., Martinez, L., Ge, Y., Feng, Y., Tan, J. B., Westbrook, A., Li, C. W., Cheng, W., Ling, F., **Cheng, H. M.**, Wu, S. S., Zhong, W. X., Handel, A., Huang, H., Sun, J. M., and Shen, Y (2021). Social Mixing and Network Characteristics of COVID-19 Patients Before and After Widespread Interventions: A Population-based Study. Submitted to *Nature Human Behaviour*.

- In Preparation

- [29] **Cheng, H. M.**, Lu, H. R., Ma, P., and Zhong, W. X. (2022). A Highly Efficient RCT Emulator for Causal Inference. In preparation.
- [30] **Cheng, H. M.**, Ma, P., and Zhong, W. X. (2022). Variable Screening for Unlabeled Networks and Euclidean Predictors in Riemannian Geometry. In preparation.
- [31] Lu, H. R., **Cheng, H. M.**, Ma, P., and Zhong, W. X. (2022). Graphon Estimation Using Smoothing Spline. In preparation.
- [32] Wu, S. S., **Cheng, H. M.**, Zhong, W. X., Shen, Y., and Ma, P. (2022). Personalized Infection Risk Score Prediction Based on a COVID-19 Population-based Contact Tracing Network. In preparation.
- [33] Wang, Z., **Cheng, H. M.**, Zhong, W. X., Ma, P., and Murdie, A. (2022). Shifting Sands: How Change-Point and Community Detection Can Enrich our Understanding of International Politics and Polarity. In preparation.

Presentations

- Poster, Georgia Statistics Day 2021
Decoding the Single-molecule Force Spectroscopy Data by a Network-based Automatic Clustering Algorithm
- Poster, Georgia Statistics Day 2019
Communities and Brokers in NGO Network
- Invited Presentation, The 8th International Forum on Statistics 2018
Effectiveness of Rapid Rail Transit System in Beijing
- Poster, International School and Conference on Network Science, NetSci-X 2018
Joint Nonnegative Matrix Factorization for Community Structures Detection in Signed Networks
- Invited Presentation, The 10th China R Conferences 2017
Data Integrating and Credit Risk Assessment

Teaching and Mentoring Activities

- Teaching Assistant
 - STAT 2000 Introductory Statistics. Fall 2018 & Spring 2019
STAT 2000 is one of the largest introductory courses in UGA with more than 2000 undergraduate students registering each semester. My primary duty was teaching lab sessions.

- Mentor

- Mentor a female K-12 student in the UGA Young Dawgs Program. Fall 2020 & Spring 2021
UGA Young Dawgs Program is an internship program preparing high-achieving high school seniors for future careers. As a mentor, I supervised her in a project working on smart seismic sensor network. From data collection to data analysis, I provided step-by-step guidance.

Professional Activities

- Review for Journal (more than 20 articles)

- Journal of the American Statistical Association 2020-present
- Journal of Machine Learning Research 2020-present
- Statistica Sinica 2019-present
- Bioinformatics 2019-present
- IISE Transactions 2019-present
- Protein & Cell 2019-present
- Information Sciences 2019-present
- Frontier in genetics 2018-present
- PLOS One 2018-present

- Review for Conference (more than 10 articles)

- International Conference on Machine Learning (ICML) 2020-present
- Neural Information Processing Systems (NIPS) 2020-present
- International Conference on Learning Representations (ICLR) 2020-present
- Artificial Intelligence and Statistics (AISTATS) 2019-present