

CURRICULUM VITAE

Huimin Cheng

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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 Honor

- Southeastern Conference (SEC) Emerging Scholars Award (\$35,000), University of Georgia. 2022
Only three recipients
- Summer Research Grant (\$15,00), University of Georgia. 2022
- Best Beginning student, Department of Statistics, University of Georgia. 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

- Book

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

- Refereed Journal Articles

- [2] 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.
- [3] Yu, J., **Cheng, H. M.**, Zhang, J. N., Zhong, W. X., Ye, J., Song, W. Z., and Ma, P. (2021). CONGO²: Colored-node Graph Square Model for Anomaly Detection and Localization in Smart Grids. *IEEE Internet of Things Journal*.
- [4] **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 Part B*, 125(34), 9660-9667. (**Our work is featured on the cover**).
- [5] **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*, 65(3), 724–738.
- [6] 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*, 13, 457-466.
- [7] 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.
- [8] 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.
- [9] 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.
- [10] 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*, 539, 122907.
- [11] **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*, 545, 123570.
- [12] 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*, 9, 846. (* Joint-first Author).
- [13] Liu, X., **Cheng, H. M.**, and Zhang, Z. Y. (2019). Evaluation of Community Detection Methods. *IEEE Transactions on Knowledge and Data Engineering*, 32(9), 1736-1746.

- [14] 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*, 192(2), 83-90.
- [15] 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*, 503, 687-697.
- [16] **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.
- [17] **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.
- [18] 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*, 464, 221-230.

• 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. (2021). 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. (2022). 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 (2022). 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
- Mentor
 - Mentor a female K-12 student in the UGA Young Dawgs Program Fall 2020

Professional Activities

- Review for Journal
 - Statistica Sinica 2018-present
 - Frontier in genetics 2018-present
- Review for Conference
 - International Conference on Machine Learning (ICML) 2021-present
 - Neural Information Processing Systems (NIPS) 2021-present
 - International Conference on Learning Representations (ICLR) 2021-present