

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
- Summer Research Grant, 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

- Complex network analysis and Differential geometry
- Nonparametric and Semiparametric Regression
- Machine Learning in Single molecule biophysics, chemistry and biology

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*.

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- [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*, in press.
 - [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), 724–38.
 - [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*, 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, 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, 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, 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 or In Preparation

- [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.**, Ma, T., and Zhong, W. X. (2022). Med-Reader: A query-based multisource learner using complex network. Submitted to *Nature Protocols*.
- [21] **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*.
- [22] **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 ICML.
- [23] **Cheng, H. M.**, Yu, J., Zhang, M. R., Ma, P., and Zhong, W. X. (2022). Toward a network analysis of variance. Submitted to *Journal of American Statistical Association*.
- [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] **Cheng, H. M.**, Ma, P., and Zhong, W. X. (2022). Variable screening for unlabeled networks and Euclidean predictors in Riemannian geometry. In preparation.
- [26] 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. In preparation.
- [27] Wu, S. S., **Cheng, H. M.**, Zhong, W. X., Shen, Y., and Ma, P. (2021). Personalized infection risk Score Prediction based on a COVID-19 Population-based Contact Tracing Network. In preparation.
- [28] Lu, H. R., **Cheng, H. M.**, Wang, Y., Wang, X. D., Xie, Y. G., Yan, H., Zhong, W. X., and Ma, P. (2021). Smoothing Spline with Phase Transition. Submitted to *Annals of Applied Statistics*.
- [29] Meng, C., Ke, Y., Zhang, J. Y., **Cheng, H. M.**, Cheng, Y. K., Zhong, W. X., and Ma, P. (2020). Variable selection for high-dimensional optimal transport problems using random permutation. Submitted to *Journal of American Statistical Association*.

- [30] 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*.

- Creative Contributions Other Than Formal Publications

- [1] BKF: A new tool to help expedite literature review by knowledge fusion. <https://bda1.shinyapps.io/BKF-system/>

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 Activities

- Teaching Assistant
– STAT 2000 Introductory Statistics Fall 2018 & Spring 2019

Professional Activities

- Review for Journal
– Statistica Sinica 2018-present
– Journal of the American Statistical Association 2018-present

Other Services

- Mentoring a female student in the University of Georgia Young Dawgs Program Fall 2020