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 Unversity 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 ($1,500), 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: 175)

*I have published **one** book and **18** peer-reviewed articles. I have **11** papers under review, **6** papers in preparation. 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: over **8,000** copies).

- Refereed Journal Articles (As First or Second Author)

  [2] Yu, J., **Cheng, H. M.**, Zhang, J. N., Zhong, W. X., Ye, J., Song, W. Z., and Ma, P. (2022). CONGO[2]: Colored-node Graph Square Model for Anomaly Detection and Localization in Smart Grids. *IEEE Internet of Things Journal* (IF[1] **9.936**, **top 3** in the area of Signal

[1] IF: 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] Wang, S. L., Min, S. J., Yu, J., **Cheng, H. M.**, Tse, Z., and Song, W. Z. (2021). Contact-less Home Activity Tracking System with Floor Seismic Sensor Network. *IEEE World Forum on Internet of Things (WF-IoT)*, 13-18.

[17] 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.

[18] 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.

[19] 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

[20] **Cheng, H. M.**, Chen, Y. K., Ma, P., and Zhong, W. X. (2022). Conformal Validation in Graphon Estimation. Submitted to *Journal of the American Statistical Association*.

[21] **Cheng, H. M.**, Yu, J., Lu, H. R., Ma, P., and Zhong, W. X. (2022). Comparison of Unlabeled Networks under a Graphon Framework. Submitted to *Journal of Computational and Graphical Statistics*.

[22] **Cheng, H. M.**, Ma, T., and Zhong, W. X. (2022). Med-reader: a Query-based Multisource Learner Using Complex Network. Submitted to *Nature Biotechnology*.

[23] **Cheng, H. M.**, Yu, J., Ma, P., and Zhong, W. X. (2022). Network ANOVA and Riemannian Manifold for Statistical Physics. Submitted to *Annals of Statistics*.

[24] **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 *Journal of the American Statistical Association*.

[25] 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 *International Conference on Learning Representations (ICLR)*.

[26] 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. Submitted to *Nature Communication*.

[27] 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*.

[28] Lu, H. R., **Cheng, H. M.**, Wang, Y., Zhong, W. X., and Ma, P. (2022). 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. (2021). Variable Selection for High-dimensional Optimal Transport Problems Using Random Permutation. Submitted to *Journal of the Royal Statistical Society: Series B*.

[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*.

- In Preparation

[31] **Cheng, H. M.**, Lu, H. R., Ma, P., and Zhong, W. X. (2022). A Highly Efficient RCT Emulator for Causal Inference. In preparation.

[32] **Cheng, H. M.**, Cai, J. Z., Zhong, W. X., Yuan, G. C. and Ma, P. (2022). Spatiotemporal Progression Reconstruction at the Cellular Level. In preparation.

[33] **Cheng, H. M.**, Ma, P., and Zhong, W. X. (2022). Regression for Unlabeled Networks and Euclidean Predictors in Riemannian Geometry. In preparation.

[34] **Cheng, H. M.**, Cheng, Y. K., Ma, P., and Zhong, W. X. (2022). Conformal Inference of graphon. In preparation.

[35] Lu, H. R., **Cheng, H. M.**, Ma, P., and Zhong, W. X. (2022). Graphon Estimation Using Smoothing Spline. In preparation.

[36] 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, Workshop on Statistical Network Analysis and Beyond (SNAB) 2022
  Graphon Convolutional Network: A Highly Efficient Learner for Random Graph
- 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 2021-present
  - Journal of Machine Learning Research 2020-present
  - Journal of Computational and Graphical Statistics 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