

# Hao Zeng

Postdoc, Department of Statistics and Data Science, Southern University of Science and Technology

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## EDUCATION

<b>Gregory and Paula Chow Institute for Studies in Economics, Xiamen University</b>	Sept. 2020 – Jun. 2024
<i>Ph.D. in Statistics, Supervised by Wei Zhong, Xingbai Xu, and Tuo Liu</i>	
<b>Wang Yanan Institute for Studies in Economics, Xiamen University</b>	Sept. 2018 – Jun. 2020
<i>M.S. in Quantitative Economics</i>	<i>Transfer to Ph.D. in Statistics</i>
<b>School of Mathematics, Shandong University</b>	Sept. 2014 – Jun. 2018
<i>B.S. in Mathematics (Peng's Class: Base of Financial Mathematics &amp; Financial Engineering)</i>	

## RESEARCH AREA

**Statistical Machine Learning:** Model Free Predictive Inference, Conformal Prediction, Transfer Learning

**Interdisciplinary Research:** Large Language Models, Spatial Statistics, Econometrics, and Biostatistics

## EXPERIENCE

<b>Southern University of Science and Technology &amp; National University of Singapore</b>	Jul. 2024 – Present
<i>Postdoctoral Researcher in Statistics, Supervised by Bingyi Jing, Hongxin Wei, and Wang Zhou</i>	
<b>Department of Statistics, National University of Singapore</b>	May 2023 – Oct. 2023
<i>Visiting Researcher, Cooperated with Tao Yu</i>	
<b>School of Economics, Xiamen University</b>	Fall 2022
<i>Teaching Assistant in Probability Introduction (Undergraduate)</i>	
<b>School of Economics, Xiamen University</b>	Spring 2022
<i>Teaching Assistant in Real Analysis (Undergraduate)</i>	
<b>School of Economics, Xiamen University</b>	Fall 2021
<i>Teaching Assistant in Advanced Probability Theory (Postgraduate)</i>	
<b>School of Economics, Xiamen University</b>	Spring 2021
<i>Teaching Assistant in Real Analysis (Undergraduate)</i>	
<b>School of Economics, Xiamen University</b>	Fall 2019
<i>Teaching Assistant in Advanced Econometrics I (Postgraduate)</i>	

## PUBLICATIONS

(\* means corresponding author, † means equal contribution.)

### Journal Articles

1. **Zeng, H.**, Zhong, W., & Xu, X. (2025). “Transfer Learning for Spatial Autoregressive Models with Application to U.S. Presidential Election Prediction.” (Accepted for *Journal of Business & Economic Statistics*, econometrics and statistics top journal)
2. Liu, K., Sun, T., **Zeng, H.**, Zhang, Y., Pun, C.-M., & Vong, C.-M. (2025). “Spatial-Aware Conformal Prediction for Trustworthy Hyperspectral Image Classification.” *IEEE Transactions on Circuits and Systems for Video Technology*. (CAS Q1 journal, Top)
3. **Zeng, H.**, Wan, C., Zhong, W., & Liu, T. (2024). “Robust Integrative Analysis via Quantile Regression with Homogeneity and Sparsity.” *Journal of Statistical Planning and Inference*.
4. Wan, C.†, **Zeng, H.**\*†, Zhang, W.†, Zhong, W.†, & Zou, C.†. (2024). “Data-driven Estimation for Multithreshold Accelerated Failure Time Model.” *Scandinavian Journal of Statistics*.
5. Chen, W., **Zeng, H.**, Wang, X., et al. (2022). “A Structural Equation Modeling Approach to Determine the Correlation between the Vertical and Sagittal Skeletal Patterns and Posterior Basal Bones Mismatching in Patients with Skeletal Class III Malocclusion.” *American Journal of Orthodontics and Dentofacial Orthopedics*. (Cover paper)
6. Chen, W., **Zeng, H.**, Sun, L., et al. (2021). “Match of the Bimaxillary Basal Bone Arches and Its Variations among Individuals.” *Scanning* 2021 (1): 9625893.

### Conference Papers

1. **Zeng, H.**†, Liu, K.†, Jing, B., & Wei, H. (2025). “Parametric Scaling Law of Tuning Bias in Conformal Prediction.” *42nd International Conference on Machine Learning*. (AI Top conference)
2. Xi, H., Liu, K., **Zeng, H.**, Sun, W., & Wei, H. (2025). “Robust Online Conformal Prediction under Uniform Label Noise.” *39th Annual Conference on Neural Information Processing Systems*. (AI Top conference)
3. Liu, K., **Zeng, H.**, Huang, J., Zhuang, H., Vong, C.-M., & Wei, H. (2025). “C-Adapter: Adapting Deep Classifiers for Efficient Conformal Prediction Sets.” *28th European Conference on Artificial Intelligence*.

## Working Papers

1. Zhang, J., Yue, Y., Zhong, W., & **Zeng, H.\*** (2025). "Robust Estimation of Grouped Network Vector Autoregression: An Empirical Analysis Based on China Air Quality Data." (Submitted to *Statistical Research*)
2. Huang, H., Liao, W., Xi, H., **Zeng, H.**, Zhao, M., & Wei, H. (2025). "Selective Labeling with False Discovery Rate Control." (Submitted to ICLR 2026)
3. Liu, Z., **Zeng, H.**, Huang, W., & Wei, H. (2025). "High-Power Training Data Identification with Provable Statistical Guarantees."(Submitted to ICLR 2026)
4. **Zeng, H.<sup>†</sup>**, Huang, J.<sup>†</sup>, Jing, B., Wei, H., & An, B. (2025). "PAC Reasoning: Controlling the Performance Loss for Efficient Reasoning."(Submitted to ICLR 2026)
5. Gao, H., Zhang, F., **Zeng, H.**, Meng, D., Jing, B., & Wei, H. (2025). "Exploring Imbalanced Annotations for Effective In-Context Learning."(Submitted to ICLR 2026)
6. **Zeng, H.**, Jing, B., & Wei, H. (2025). "Conditional Tuning in Conformal Prediction."
7. **Zeng, H.**, Jing, B., & Wei, H. (2025). "The Double Descent of Conformal Prediction."
8. **Zeng, H.**, Liu, K., Jing, B., & Wei, H. (2025). "On Tuning Bias in Conformal Prediction."
9. **Zeng, H.**, & Huang, J. (2025). "PAC Accelerate: A Statistically Guaranteed Acceleration Method for Large Generative Models."
10. **Zeng, H.**, & Huang, J. (2025). "Group-Conditional PAC Reasoning: Groupwise Efficient Reasoning with Statistical Guarantees."

## Software

1. Wan, C., **Zeng, H.**, Zhong, W., & Zou, C. (2023). "MTAFT: Data-Driven Estimation for Multi-Threshold Accelerate Failure Time Model." <https://cran.r-project.org/web/packages/MTAFT/index.html>

## CONFERENCE PRESENTATIONS

<i>Talk in The 2021 Forum for Doctoral Students in Quantitative Economics</i>	<i>Dec. 2021, Xiamen</i>
<i>Invited Talk in Xiamen University 2021 Symposium on Modern Statistics</i>	<i>Dec. 2021, Xiamen</i>
<i>Invited Talk in 2023 PhD Forum on Econometric Modeling and Economic Policy Research</i>	<i>Nov. 2023, Beijing</i>
<i>Poster in Conference of the Youth Association of the Chinese Association for Industrial Statistics</i>	<i>Mar. 2024, Xuzhou</i>
<i>Invited Talk in The 1st Outstanding PhD Forum in Economics and Management Statistics</i>	<i>Jun. 2024, Xiamen</i>
<i>Invited Talk in The 2nd Joint Conference on Statistics and Data Science</i>	<i>Jul. 2024, Kunming</i>
<i>Talk in The 13th Conference on Probability and Statistics</i>	<i>Nov. 2024, Xiamen</i>
<i>Poster in The 3rd Joint Conference on Statistics and Data Science</i>	<i>Jul. 2025, Hangzhou</i>
<i>Poster in Forty-Second International Conference on Machine Learning</i>	<i>Jul. 2025, Vancouver, Canada</i>

## ACADEMIC SERVICES

**Journal Reviewer** International Statistical Review, Journal of Multivariate Analysis, Spatial Economic Analysis, and Quarterly Journal of Economics and Management.

**Conference Reviewer** International Conference on Artificial Intelligence and Statistics (AISTATS), AAAI Conference on Artificial Intelligence(AAAI), International Conference on Machine Learning (ICML), International Conference on Learning Representations (ICLR), IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)

## AWARDS

<i>Excellent Teaching Assistant in Fall 2022-2023, Xiamen University</i>	<i>2024</i>
<i>Meritorious Winner, Interdisciplinary Contest in Modeling, USA</i>	<i>2016</i>
<i>3rd Prize at the Provincial Level, Mathematics Competition for Chinese College Students</i>	<i>2016</i>
<i>2nd Prize at the Provincial Level, China Undergraduate Mathematical Contest in Modeling</i>	<i>2015</i>
<i>1st Prize for Outstanding Students, Shandong University</i>	<i>2015</i>
<i>Merit Student, Shandong University</i>	<i>2015</i>