

Han Yan

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EDUCATION

Peking University Ph.D candidate in Statistics Advisor: Prof. Song Xi Chen	Sep 2020 – July 2025
Sichuan University B.S. in Mathematics	Sep 2016 – July 2020

RESEARCH INTERESTS

My research interests lie broadly in statistical inference and machine learning theories, and I am also actively involved in interdisciplinary studies. Some specifics are below:

- **Statistical and machine learning**
 - Deepen theoretical understanding of machine learning algorithms, and propose provably statistically optimal methods for machine learning topics, such as semisupervised learning, transfer learning, and model calibration.
- **Non-regular statistical models**
 - Establish inference theories and develop effective computation algorithms for non-regular models, such as segmented/change-plane regression, where the central limit theorem fails and optimizations are non-convex.
- **Observational studies**
 - Propose versatile and efficient statistical inference methods under general semiparametric and nonparametric frameworks with observational studies, including missing data, causal inference, dynamic treatment regimes, and reinforcement learning.
- **Interdisciplinary areas**
 - Develop statistical models for real-world applications, such as epidemiological models for COVID-19.

PUBLICATIONS

- [1] **Statistical Inference for Four-Regime Segmented Regression Models** [\[pdf\]](#)[\[supplement\]](#)
Han Yan and Song Xi Chen
The Annals of Statistics 52.6 (2024): 2668-2691.
- [2] **FAST: a Fused and Accurate Shrinkage Tree for Heterogeneous Treatment Effects Estimation** [\[pdf\]](#)
Jia Gu, Caizhi Tang, Han Yan, Qing Cui, Longfei Li and Jun Zhou
Neural Information Processing Systems (NeurIPS) (2023).
- [3] **Better Strategies for Containing COVID-19 Pandemic: A Study of 25 Countries via a vSIADR Model** [\[pdf\]](#)
Han Yan, Yuru Zhu, Jia Gu, Yaxuan Huang, Haoxuan Sun, Xinyu Zhang, Yuqing Wang, Yumou Qiu and Song Xi Chen
Proceedings of the Royal Society A 477.2248 (2021): 20200440.
- [4] **Comparing Containment Measures among Nations by Epidemiological Effects of COVID-19** [\[pdf\]](#)
Jia Gu, Han Yan, Yaxuan Huang, Yuru Zhu, Haoxuan Sun, Yumou Qiu, Song Xi Chen
National Science Review 7.12 (2020): 1847-1851.

- [5] **Tracking Reproductivity of COVID-19 Epidemic in China with Varying Coefficient SIR Model (with discussion)** [\[pdf\]](#)

Haoxuan Sun, Yumou Qiu, **Han Yan**, Yaxuan Huang, Yuru Zhu, Jia Gu and Song Xi Chen

Journal of Data Science 18.3 (2020): 455-472.

MANUSCRIPTS

- [1] **Transfer Learning with General Estimating Equations** [\[pdf\]](#)[\[supplement\]](#)

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- [2] **General Estimating Equations with Estimand-dependent Nuisance Functions**

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- [3] **Local Estimation by Fused Machine Learning with In-situ Calibration**

Han Yan, Yumou Qiu and Song Xi Chen

TALKS

- Statistical Inference for Segmented Regression Models
 - April 2023, The 12th National Probability and Statistics Conference of China
 - August 2023, Hangzhou International Conference on Frontiers of Data Science
- Transfer Learning with General Estimating Equations
 - June 2024, IMS-China International Conference on Statistics and Probability
 - July 2024, the 2nd Joint Conference on Statistics and Data Science in China (JCSDS)

TEACHING ASSISTENTS

- Large Sample Theory PKU, Fall 2023
 - Postgraduate and undergraduate course by Prof. Song Xi Chen
- Advanced Multivariate Statistical Analysis PKU, Fall 2022
 - Postgraduate and undergraduate course by Prof. Song Xi Chen
- Probability and Statistics PKU, Spring 2022 and 2021
 - Undergraduate course by Prof. Minya Xu

SCHOLARSHIPS AND AWARDS

- Outstanding Academic Scholarship, Peking University 2022,2023, 2024
- President Scholarship for Excellent Ph.D Student, Peking University 2021
- National Scholarship, Peking University 2021
- Outstanding Graduates, Sichuan University 2020
- National Scholarship, Sichuan University 2019, 2018

SKILLS

- **Programming:** Proficient in R and Python
- **Languages:** English (fluent), Chinese (native)