

Sinian Zhang

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EDUCATION

University of Minnesota, Twin Cities

Minneapolis, US

Ph.D. Student in Biostatistics

Sep 2024 – Jun 2029 (Expected)

Dissertation Advisors: [Sandra Safo](#) and [Jue Hou](#) (Division of Biostatistics and Health Data Science)
Also Supervised by: [Ju Sun](#) (Computer Science & Engineering)

Renmin University of China

Beijing, China

B.S. in Statistics

Sep 2020 – Jun 2024

RESEARCH INTERESTS

Statistically principled methods for **transferable and trustworthy machine learning and deep learning**, with applications spanning biomedical, imaging, and engineering domains.

- **Transfer Learning** – estimators that keep their statistical guarantees when distributions shift or evidence must be pooled across sites, spanning distributional transfer, federated causal estimation, and reinforcement learning.
- **Uncertainty Quantification** – deciding when a model should abstain rather than guess, via selective prediction with explicit risk–coverage trade-offs.
- **Biomedical & Health Data Science** – computational and AI methods for electronic health records, biomedical knowledge graphs, medical imaging, and multi-platform biomarker data.

PUBLICATIONS

*Equal contribution.

Peer-Reviewed Publications

1. Elzbieta Jodlowska-Siewert, Yunhui Chen, **Sinian Zhang**, Jia Li, Robert Dellavalle, Rui Zhang, Jue Hou. Antidiabetic Drug Associations With Heart Failure Outcomes: Real-World Evidence Study Using Electronic Health Records. *JMIR Diabetes* 11 (2026): e85083. [📄Paper](#)
2. Kaicheng Zhang*, **Sinian Zhang***, Doudou Zhou, Yidong Zhou. Wasserstein Transfer Learning. *Advances in Neural Information Processing Systems (NeurIPS)*, 2025. [📄Paper](#) [🔗Code](#)
3. Yongkang Xiao, **Sinian Zhang**, Yi Dai, Huixue Zhou, Jue Hou, Jie Ding, Rui Zhang. DrKGC: Dynamic Subgraph Retrieval-Augmented LLMs for Knowledge Graph Completion across General and Biomedical Domains. *Findings of the Association for Computational Linguistics: EMNLP 2025*, pages 16432–16445. [📄Paper](#)
4. Feiqing Huang, Jue Hou, Ningxuan Zhou, Kimberly Greco, Chenyu Lin, Sara Morini Sweet, Jun Wen, Lechen Shen, Nicolas Gonzalez, **Sinian Zhang**, et al. Advancing the Use of Longitudinal Electronic Health Records: Tutorial for Uncovering Real-World Evidence in Chronic Disease Outcomes. *Journal of Medical Internet Research* 27 (2025): e71873. [📄Paper](#)
5. Yongkang Xiao, **Sinian Zhang**, Huixue Zhou, Mingchen Li, Han Yang, Rui Zhang. FuseLinker: Leveraging LLM's Pre-trained Text Embeddings and Domain Knowledge to Enhance GNN-based Link Prediction on Biomedical Knowledge Graphs. *Journal of Biomedical Informatics* 158 (2024): 104730. [📄Paper](#)

6. Jue Hou, Rachel Zhao, Jessica Gronsbell, Yucong Lin, Clara-Lea Bonzel, Qingyi Zeng, **Sinian Zhang**, et al. Generate Analysis-Ready Data for Real-world Evidence: Tutorial for Harnessing Electronic Health Records With Advanced Informatic Technologies. *Journal of Medical Internet Research* 25 (2023): e45662. [Paper](#)
7. Shiyao Huang, Junliang Lyu, **Sinian Zhang**, Ruiying Tang, Huan Xiao, Yuanyuan Zhang, Xiaoling Lu. A Post-processing Machine Learning for Activity Recognition Challenge with OpenStreetMap Data. *Adjunct Proceedings of UbiComp/ISWC 2023*, pages 557–562. [Paper](#)

Preprints & Under Review

1. Jiajun Liang, Yue Liu, Doudou Zhou, **Sinian Zhang**, Junwei Lu. The Wreaths of KHAN: Uniform Graph Feature Selection with False Discovery Rate Control. *Under review*. arXiv preprint: [2403.12284](#), 2024. [Code](#)
2. Gaoxiang Luo, Yifan Wu, **Sinian Zhang**, Aryan Deshwal, Ju Sun. Aligning Language Models with Selective Prediction. *Under review*. arXiv preprint: [2607.03528](#), 2026.
3. **Sinian Zhang***, Chongwei Chen*, Guanchen Li, Ju Sun. Ensemble Selective Classification. *Under review*, 2026. [Code](#)
4. Shruthi Venkatesh*, **Sinian Zhang***, Wen Zhu, Michele Morris, Rocco Mercurio, et al. Predicting the Timing of First Sustained Cognitive Worsening in Alzheimer's Disease Using Real-World Clinical Data and Machine Learning. *Under review*. *medRxiv* preprint: [10.64898/2026.06.02.26354764](#), 2026.
5. **Sinian Zhang***, Kaicheng Zhang*, Ziping Xu, Tianxi Cai, Doudou Zhou. Generalized Linear Markov Decision Process. *Under review*. arXiv preprint: [2506.00818](#), 2025.

SOFTWARE

IntegMultiReg – R package (MCMC sampler in C) 2026
Integrative Bayesian multi-regression of multi-platform biomarkers, supporting continuous, binary and survival outcomes with missing platforms.
[CRAN](#)

PyNILE & RNILE – Python and R wrappers 2025
Wrappers around the NILE Java library for clinical narrative extraction; development guided as a mentor.
[Python](#) [R](#)

TALKS & PRESENTATIONS

Talks

1. **7th ICSA-Canada Chapter Symposium**, McGill University, Montreal, Canada Aug 2026
Federated Adaptive Causal Estimation with High-Dimensional Covariates (FACE-HD)

Conference Abstracts

1. Shruthi Venkatesh, **Sinian Zhang**, Oscar Lopez, Tianxi Cai, Jue Hou, Zongqi Xia. Predicting the Timing of Cognitive Decline in Alzheimer's Disease Using Real-world Clinical Data and Machine Learning (P10-12.009). *Neurology* 106 (11_Supplement_1), 2026. [10.1212/wnl.00000000000217686](#)

TEACHING & MENTORING

Shuheng Kong & Conglin Ruan – master's students May 2025 – Sep 2025
Guided development of Python and R versions of the NILE package for natural language processing.

Teaching Assistant, Data Science Practice
Beijing, China

Renmin University of China
 Jan 2024 – Jun 2024

Teaching Assistant, Probability Theory
Beijing, China

Renmin University of China
Aug 2023 – Dec 2023

Brittany Wang – high school student

Jun 2023 – Sep 2023

Supervised research using real-world data to support an acute ischemic stroke (AIS) study.

ACADEMIC SERVICE

Conference Reviewer: ICLR 2027, AAAI 2027, NeurIPS 2026, ICLR 2026

Journal Reviewer: Journal of Intelligent Medicine and Healthcare

HONORS & AWARDS

- **1st Place in the 7th Annual UMN Interdisciplinary Health Data Competition, \$3000** – University of Minnesota, Twin Cities, 2026
- **Dean's PhD Scholars Award, \$5000** – University of Minnesota, Twin Cities, 2024
- **Scholarship for Academic Excellence** – Renmin University of China, 2023