

# Wenbo Zhang

*PhD Student of Statistics*

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🌐 [Website](#)

## Research Interest

Causal Inference, Causal Structure Learning, Machine Learning, Natural Language Processing (NLP), Model Explainability (XAI)

## Education

2021–present **PhD of Statistics**, *University of California, Irvine*

Adviser: Prof. Hengrui Cai

2019–2021 **Master of Science, Biostatistics**, *University of Washington*

2015–2019 **Bachelor of Science, Applied Mathematics**, *Xi'an Jiaotong-Liverpool University*

## Publications & Preprints

2022 **On Causal Rationalization**

[Wenbo Zhang](#) , Tong Wu, Yunlong Wang, Yong Cai, and Hngerei Cai

Causal Machine Learning for Real-World Impact (CML4Impact) Workshop @ NeurIPS

2022 **Nonparametric Estimation of the Causal Effect of a Stochastic Threshold-based Intervention**

Lars Van Der Laan, [Wenbo Zhang](#) , and Peter Gilbert

Biometrics

2021 **Interpretable Discriminant Analysis for Functional Data Supported on Random Non-linear Domains**

Eardi Lila, [Wenbo Zhang](#) , and Swati Rane

Under review in Journal of the Royal Statistical Society Series B

2021 **Finding Atrophy Patterns of Grey Matter Through Orthonormal Non-negative Factorization**

[Wenbo Zhang](#) , Kwun Chuen Gary Chan, Dean Shibata, and David Haynor

SPIE Medical Imaging

2021 **A New Convolutional Neural Network Architecture for Automatic Segmentation of Overlapping Human Chromosomes**

Sifan Song, Tianming Bai, Yanxin Zhao, [Wenbo Zhang](#) , Chunxiao Yang, Jia Meng, Fei Ma, and Jionglong Su

Neural Processing Letters

2018 **Chromosome Classification with Convolutional Neural Network Based Deep Learning**

[Wenbo Zhang](#) , Sifan Song, Tianming Bai, Yanxin Zhao, Fei Ma, Jionglong Su, and Limin Yu

International Congress on Image and Signal Processing, BioMedical Engineering and Informatics (CISP-BMEI)

## Collaboration Papers

2021 **Immune Correlates Analysis of the mRNA-1273 Covid-19 Vaccine Efficacy Clinical Trial**

Peter Gilbert, David Montefiori, Adrian McDermott, Youyi Fong, David Benkeser et al.

Science

2021 **Antibody Correlates of Severe RSV Disease in a Vaccine Efficacy Trial**

Youyi Fong, Ying Huang, Bhavesh Borate, Lars Wim and Paul van der Laan, [Wenbo Zhang](#) , Lindsay N. Carpp, Iksung Cho, Greg Glenn, Louis Fries, Raphael Gottardo and Peter B. Gilbert

under review in Clinical Infectious Diseases

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## Industry Experience

June,2022 – **Machine Learning Research Intern**

Sep,2022 IQVIA, *Plymouth Meeting, PA (Remote)*

- Developed a novel selective rationalization approach to explain the predictions of neural models by leveraging two causal desiderata, non-spuriousness and efficiency for Natural Language Processing (NLP) and Electronic Health Records (EHR) datasets

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## Research Experience

Feb,2022 – **Causal Discovery from Text using Causal Representations**

May,2022 *Department of Statistics, University of California Irvine, Irvine, CA*

- Adapted representations from pre-trained language models to causally discovery the generation process of the simulated text data

Apr,2021 – **Multi-dimensional Classification with Generative based Methods**

Aug,2021 *Department of Computer Science, Southern University of Science and Technology, China*

- Develop a novel framework for multi-dimensional classification based on VAE and normalizing flows, which creates a flexible shared latent space for features and labels

Sep,2020 – **Functional Data Analysis for Neuroimaging Diagnosis**

Mar,2021 *Department of Biostatistics, University of Washington, Seattle, WA*

- Developed a functional penalized regression method over two-dimensional manifolds with a smooth surface penalty; proposed an iterative optimization algorithm to solve this problem

June,2020 – **Correlation Study of Antibody Markers with Causal Inference**

Sep,2020 *Fred Hutchinson Cancer Research Center, Seattle, WA*

- Helped to develop a non-parametric model based on Causal Inference techniques to estimate immune response threshold of risk

Oct,2019 – **Finding Atrophy Patterns of Grey Matter through Non-negative Matrix Factorization**

June,2020 *Department of Biostatistics, University of Washington, Seattle, WA*

- Proposed an orthogonal non-negative matrix factorization based approach in Matlab and R to obtain biologically meaningful components of the brains

Apr,2018 – **Chromosome Classification and segmentation with Deep Learning based approaches**

Sep,2018 *Department of Applied Mathematics, XJTLU, China*

- Proposed a CNN model to classify each pair of chromosomes and automatically generated images

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## Fellowships & Awards

2021 **School of Public Health's Outstanding MS Student Award**, awarded to one master student in Department of Biostatistics every year, University of Washington.

2020 **UW Summer Institutes Scholarship**, University of Washington.

2018 **University Academic Achievement Award**, awarded to 10% of all undergraduates, XJTLU.

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## Skills

Programming Languages Python, PyTorch, R, SQL, Linux, Matlab