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 Hngerui 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 Benkeserw et al.
Science

Industry Experience

June,2022 – Sep,2022 **Machine Learning Research Intern**
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 NLP and EHR datasets

Research Experience

Feb,2022 – May,2022 **Causal Discovery from Text using Causal Representations**
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 – Aug,2021 **Multi-dimensional Classification with Generative based Methods**
Department of Computer Science, Southern University of Science and Technology, China
- Utilized PyTorch to 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

Apr,2021 – Aug,2021 **Multi-dimensional Classification with Generative based Methods**
Department of Computer Science, Southern University of Science and Technology, China
- Utilized PyTorch to 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 – Mar,2021 **Functional Data Analysis for Neuroimaging Diagnosis**
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 – Sep,2020 ***Correlation Study of Antibody Markers with Causal Inference***
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 – June,2020 **Finding Atrophy Patterns of Grey Matter through Non-negative Matrix Factorization**
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 – Sep,2018 **Chromosome Classification and segmentation with Deep Learning based approaches**
Department of Applied Mathematics, XJTLU, China
- Proposed a CNN model to classify each pair of chromosomes and automatically generated images

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.

Skills

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