

Wenbo Zhang

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EDUCATION

University of Washington, Seattle, WA 2019 - 2021 (Expected)
M.S. in Biostatistics, GPA: 3.81

Xian Jiaotong-Liverpool University (XJTLU), Suzhou, China 2015 - 2019
B.S. with honours in Applied Mathematics (First Class), GPA: 3.82 (WES Evaluation)

Liverpool University, Liverpool, UK (Dual Degree)
B.S. with honours in Applied Mathematics (First Class)

RESEARCH EXPERIENCE

Department of Biostatistics, University of Washington June 2020 - Present
Supervisor: Dr. Eardi Lila

- Analyzed mesh data and calculated the template of brain surfaces by using procrustes analysis
- Developed a functional penalized regression method over two-dimensional manifolds with a smooth surface penalty; discretized the brain surface with finite element analysis and solved the sparse equation in the regression setting
- Generalized this surface penalty to functional linear discriminant analysis within the optimal scoring framework; proposed an iterative optimization algorithm to solve this problem

Fred Hutchinson Cancer Research Center Feb 2020 - Present
Supervisor: Prof. Peter Gilbert

- Collaborated with bio-statisticians to update statistics analysis plan; analyzed antibody markers and demographic data to investigate associations
- Implemented superlearner regression, an ensemble model, for calculating the estimated optimal surrogate by using R package Superlearner; sped up the modeling computation with the parallel computing on the Linux clusters
- Designed the simulation study to verify a non-parametric model which was based on targeted maximum likelihood estimation framework to estimate immune response threshold of risk

Department of Biostatistics, University of Washington Oct 2019 - Present
Supervisor: Profs. KC Gary Chan, David Haynor and Dean Shibata

- Used orthogonal non-negative matrix factorization to obtain spatial components of the brains
- Evaluated the contribution of each component to the disease with non-negative least squares
- Computed the partial correlations between different components using a Gaussian copula graphical model; discovered the potential patterns in different groups
- Extended this framework for longitudinal measurements; helped radiologists compare the disease group and the control group by their long-term patterns

Department of Mathematical Sciences, XJTLU

Apr 2018 - Sep 2018

Supervisor: Prof. Fei Ma

- Processed and cleaned the image data; designed the structure of the network models
- Developed a method to segment overlapped chromosomes; classified each pair of chromosomes and automatically generated Karyotype images using proposed model

PUBLICATIONS

Wenbo Zhang, Yunbi Nam, Eardi Lila, "Interpretable Functional Linear Discriminant Analysis over Two-Dimensional Manifolds", *in preparation*

Lars Van Der Laan, **Wenbo Zhang**, Peter Gilbert, "Efficient Nonparametric Estimation of the Covariate-adjusted Threshold-response Function and Thresholds of Protection", *submitted to Biometrics*

Wenbo Zhang, Kwun Chuen Gary Chan, Dean Shibata and David Haynor, "Finding Atrophy Patterns of Grey Matter through Orthonormal Non-negative Factorization", *SPIE Medical Imaging*, San Diego, Cal, 2021, (Selected for oral presentation)

Wenbo Zhang, Sifan Song, Tianming Bai, Yanxin Zhao, Fei Ma, Jionglong Su, Limin Yu, "Chromosome Classification with Convolutional Neural Network based Deep Learning", *The 11th International Congress on Image and Signal Processing, BioMedical Engineering and Informatics*, Beijing, China, 2018

HONORS and AWARDS

UW Summer Institutes Scholarship , University of Washington	2019
University Academic Achievement Award (scholarship) (Top 10%) , XJTLU	2018
First Prize in Mathematical Modeling Contest (Top 5%) , XJTLU	2017

ACTIVITIES

Reading Group: The Elements of Statistical Learning	<i>Advisor:</i> Dr. Noah Simon, 2020
UW Summer Institutes in Statistics for Big Data and Statistics Genetics	2020

SKILLS

R, Python, Matlab, Java, Latex and Linux.