

ZIPEI GENG

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🌐 [Personal Website](#)

Education

ETH Zürich

M.S. in Statistics

GPA: 5.56/6.0 (master's thesis: 5.75/6.0, ranking: 15/41)

Sep. 2019 – May 2022

Zürich, Switzerland

The University of Manchester

B.S. (Honours) in Mathematics & Statistics

GPA: 83.3/100 (top 10%)

Sep. 2017 – Jun. 2019

Manchester, United Kingdom

Shandong University

B.S. in Statistics

GPA: 4.52/5.0 (top 10%)

Sep. 2015 – Jun. 2019

Jinan, China

Relevant Coursework

- Markov Chain Monte Carlo
- Smoothing and Nonparametric Regression with Examples
- High-dimensional Statistics
- Statistical Models in Computational Biology
- Applied Analysis of Variance and Experimental Design
- Biostatistics
- Deep Learning
- Mathematics of Data Science

Research Projects

Nonparametric Variable Selection under Latent Confounding

Oct. 2021

Master's thesis supervised by Prof. Peter Bühlmann, Dr. Mona Azadkia and Dr. Armeen Taeb

- Reviewed the variable selection methods and the definition of confounding.
- Proposed a new resampling scheme on variable selection based on FOCI and a rank-based measure of conditional dependence.
- Conducted latent confounder estimation using principal component analysis (PCA) and variational autoencoders with the theoretical justification of using PCA.
- Implemented simulation and real case studies. Achieved competitive prediction error using FOCI-based variable selection family.

Theoretical Properties and Algorithmic Solutions of Shuffled Linear Regression

Sep. 2021

Semester paper supervised by Prof. Fadoua Balabdaoui

- Reviewed the question of linear regression with permuted labels under different problem settings, as well as the feature matrix and permutation matrix estimation algorithms.
- Proposed a correct upper bound for the ML estimation of permutation matrix and feature matrix.

Eye Gaze Estimation Using EEG Signals

Feb. 2021

Course project in collaboration with Ard Kastrati and Martyna Plomecka advised by Prof. Nicolas Langer

- Proposed to process Electroencephalography (EEG) signals with the implementation of deep neural networks such as EEGNet and Xception as well as our newly defined architecture *DeepEye* to estimate human gaze position (left-right task).
- Successfully built the [coding repository](#) and facilitated to construct neural networks and tune the parameters.
- Actively contributed to the software development of [EEGEyeNet](#).

Hate Speech Detection on Twitter

Jan. 2021

Course paper in collaboration with Zehao Su and Stefan Thoma

- Conducted research on classifying tweets into hate speech, offensive speech, or neither.
- Implemented SMOTE data imputation method to overcome the data imbalance and performs several experiments including BERT-Transformer and SVM to disentangle the semantic space.

Estimation of Train Weight based on Time Series

May 2020

Research project working under Swiss Federal Railways in collaboration with Yunrong Zeng and Jiawei Ji

- Dug thoroughly into denoising the time series and data processing language R.
- Collaboratively estimated the actual weight of the train using non-parametric and parametric denoising methods.
- Led the 3-member group in designing novel data cleaning functions and algorithms.

Teaching Experience

401-0141-00L: Lineare Algebra (D-BAUG) **Summer 2021**
Teaching Assistant

Honours & Awards

University of Manchester School of Mathematics International Excellence Scholarship **Dec. 2018**

Interdisciplinary Contest in Modelling **Jan. 2017**
Honorable Mention

Chinese Mathematics Competition **Dec. 2016**
Second Prize

First Class Scholarship for Shandong University Undergraduates **Nov. 2016**

Second Class Scholarship for Shandong University Undergraduates **Nov. 2017**

Technical Skills

Languages: R, Python, C++, MySQL, PySpark, Bash

Developer Tools: VS Code, RStudio, Jupyter Lab

Technologies/Frameworks: Linux, Git, LaTeX, CUDA, PyTorch, Tensorflow