Zipei Geng

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Education

ETH Zürich **Sep. 2019 – Present**
M.S. in Statistics *Zürich, Switzerland*
GPA: 5.33/6.0

The University of Manchester **Sep. 2017 – Jun. 2019**
B.S. (Honours) in Mathematics & Statistics *Manchester, United Kingdom*
GPA: 83.3/100 (top 10%)

Shandong University **Sep. 2015 – Jun. 2019**
B.S. in Statistics *Jinan, China*
GPA: 4.52/5.0 (top 10%)

Relevant Coursework

- Introduction to Machine Learning
- Causality
- High-dimensional Statistics
- Statistical Inference
- Applied Analysis of Variance and Experimental Design
- Foundations of Modern Probability
- 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 causality.
- 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 and variantional autoencoders.

Theoretical Propeties 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 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++, PySQL, PySpark, Bash
Developer Tools: VS Code, RStudio, Jupyter Lab
Technologies/Frameworks: Linux, Git, LaTeX, CUDA, PyTorch, Tensorflow