Boxin Zhao

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Education Background

Booth School of Business, The University of Chicago *IL, USA*
- PhD in Statistics and Econometrics *Oct 2020 – June 2024*

Department of Statistics, The University of Chicago *IL, USA*
- Master of Science in Statistics, **GPA: 4.00/4.00** *Oct 2018 – June 2020*

School of Mathematical Sciences, Nankai University *Tianjin, China*
- Bachelor of Science in Statistics, **GPA: 93/100 (rank 1/82), Outstanding Graduate (top 3%)** *Sep 2014 – Jun 2018*
- Honors: National Scholarship (top 1%), Outstanding Graduate (top 3%), Tianjin Municipal People's Government Scholarship (top 3%), Zhide Scholarship (top 3%), First-Class Scholarship (top 5%)

Publication

■ Published

"Direct Estimation of Differential Functional Graphical Models"
NeurIPS 2019 (*Thirty-third Conference on Neural Information Processing Systems)*
Boxin Zhao, Y. Samuel Wang, Mladen Kolar
Link: http://papers.nips.cc/paper/8526-direct-estimation-of-differential-functional-graphical-models

■ Preprints

"FuDGE: Functional Differential Graph Estimation with Fully and Discretely Observed Curves"
Submitted to JMLR *(Journal of Machine Learning Research)*
Boxin Zhao, Y. Samuel Wang, Mladen Kolar
Link: https://arxiv.org/abs/2003.05402

■ Working Paper

"Personalized Federated Learning via Learning the Representation – A Computational Analysis"
Boxin Zhao, Filip Hanzely, Mladen Kolar
"Functional Graphical Models via Neighborhood Selection"
Boxin Zhao, Shengjun Zhai, Y. Samuel Wang, Mladen Kolar

Research Projects

"Direct Estimation of Differential Functional Graphical Models"
NeurIPS 2019 (*Thirty-third Conference on Neural Information Processing Systems)*
Boxin Zhao, Y. Samuel Wang, Mladen Kolar
Link: http://papers.nips.cc/paper/8526-direct-estimation-of-differential-functional-graphical-models
- Proposed a direct estimation approach for the differential structure of functional graphs.
- Provided efficient optimization algorithm using proximal gradient method.
- Developed theoretical guarantees for consistency in high-dimensional setting.
- Conducted experiments including both robust simulations and real data analysis.

"FuDGE: Functional Differential Graph Estimation with Fully and Discretely Observed Curves"
Submitted to JMLR *(Journal of Machine Learning Research)*
Boxin Zhao, Y. Samuel Wang, Mladen Kolar
- Defined a new type of differential functional graph structure.
- Considered discretely observed curves and developed new theoretical support for this setting.
- Proposed Functional Fused Graphical Lasso (FFGL) estimator as competitor.
- Developed efficient ADMM algorithm for implementation of FFGL.

"A Feature-Based Improvement of Computational Protein Function Prediction Using Machine Learning Methods"
Undergraduate Thesis
Boxin Zhao, Bowen Wang, Jianyi Yang
- Predicted multiple protein features by implementing feature prediction software on Linux platform; features predicted and software implemented included *transmembrane features* with MEMSAT-SVM, *Psipred-helices* with PSIPRED 3.3, etc.
- Implemented the classical FFPred model, a svm model with Gaussian kernel to predict Gene Ontology term, with the help of scikit-learn; approximately 90 features calculated in previous steps and 1,000 proteins were used for training.
- Constructed a paired model to address the problem of skewed data; classical sampling methods such as SMOTE were also utilized.

Community Contribution

- *Reviewer for ICML 2020*
- *Reviewer for NeurIPS 2019:* ***Top 400 highest scoring reviewers.***

Programming Skills

- Python, R, Linux Shell, C++