Xiangyu **Zhang**

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Education

University of Minnesota, twin cities — *Minneapolis,Minnesota*

Ph.D. in Statistics — *2020 - PRESENT*

- Focused on inference methodology and empirical process

University of Minnesota, twin cities — *Minneapolis, MN*

B.S. in Mathematics and Statistics — *2016-2020*

- with high distinction

Research Project

Project: Exhaustive goodness-of-fit via Smoothed Inference — *Minneapolis, MN*

Supervised by Prof. Sara Algeri, University of Minnesota — *May. 2019 - Present*

- Smooth test project

  -Design and implement a novel goodness-of-fit test for correcting the null hypothesis if rejected in a unified way. Through the idea, we achieve an algorithm for the detection of new signals under background mismodelling. The algorithm is a unified statistical strategy to perform modeling, estimation, inference, and signal characterization under background mismodelling. The methodology allows to incorporate the (partial) scientific knowledge available on the background distribution.

  -Write the python "LPBkg" package which achieves the algorithm mentioned above. Further details about the package could be found in the PyPI or in my GitHub: https://pypi.org/project/LPBkg/.
  https://github.com/Yorkee2018/LPBkg/tree/master/python

- Improvement of the test using Smoothed Bootstrap:

  -Conduct a research project focusing on the study of a smoothed bootstrap methodology which can be simultaneously applied to both continuous and discrete data. The main objective of this project is to provide a unified computational tool to perform inference for discrete and continuous data in a small and large sample regime.

  -Work mainly on the computational component of the project, which includes achieving our algorithm in R and conducting simulation tests for the theoretical derivation.

Project: Changepoint Detection for Online Streaming Data — *Minneapolis, MN*

Supervised by Prof. Jie Ding, University of Minnesota — *Feb. 2018 - Aug. 2018*

- Changepoint detection project:
  - Propose an algorithm which could quickly detect any change in distributions for online streaming data, supporting any user-specified distributions. A python package "onlineChange" is available to achieve this algorithm. Further details about the package could be found in the PyPI or in my GitHub: https://pypi.org/project/onlineChange/; https://github.com/Yorkee2018/onlineChange.

Teaching Experience

University of Minnesota, School of Statistics

TEACHING ASSISTANT — ***2019 - 2021***

- *STAT 4052 Introduction to Statistical Learning*
- *STAT 3301 Regression and Statistical Computing*
- *STAT 3021 Introduction to Probability and Statistics*
- *STAT 3011 Introduction to Statistical Analysis*
- *STAT 1011 Introduction to the Ideas of Statistics*

University of Minnesota Libraries

STUDENT PEER TUTOR — ***2018 - 2019***

Honors & Awards

2021	**Summer Research Fellowship,** $2,000 for statistics Ph.D students.	*University of Minnesota*
2020	**School of Statistics First Year Scholarship,** $2,500 for statistics Ph.D students.	*University of Minnesota*
2020	**Buehler Memorial Scholarship ,** $1,000 for top statistics major undergraduate students.	*University of Minnesota*
2016-2020	**Dean's List ,** A reward offered to students with semester GPA 3.666 or higher	*University of Minnesota*
2016-2020	**Global Excellence scholarship ,** Scholarship offered to excellent incoming students	*University of Minnesota*

Publications

Exhaustive goodness-of-fit via smoothed inference and graphics

Sara Algeri, **Xiangyu Zhang**. ***2021***

- Accepted by *Journal of Computational and Graphical Statistics.* https://arxiv.org/abs/2005.13011

Skills

Programming	R, Python, C++, JAVA, C, MySQL, Julia
Machine Learning	Tensorflow, Pytorch
Owned Packages:	
LPsmooth	an R package for smoothed inference and graphics by means of deviance tests and comparison density plot.
LPBkg	a python package for the detection of new signals under background mismodelling.
onlineChange	a python package for the detection of any change in distributions for online streaming data, supporting any user-specified distributions.