ZHUOYAN XU

(608)960-1191 ♦ zxu444@wisc.edu ♦ Personal Website

EDUCATION

University of Wisconsin-Madison Madison, WI
Ph.D. in Statistics 2020 – 2025 (Expected)
M.S. in Data Science 2018 – 2020

Wuhan University China
B.S. in Statistics 2015 – 2019

Relevant Major Coursework:
Mathematical Statistics | Statistical Learning Theory | Linear Regression Theory and Methods | Nonlinear Optimization | Machine Learning | Deep learning | Sampling Survey | Stochastic Process | Statistical computing | Experimental Design | Multivariate Analysis

SKILLS

Programming Languages: Python, R, Java, C, Bash, HTML, SQL
Developer Tools: Git, Unix/Linux Shell, Jupyter, Google Cloud Platform, Slurm, VS Code, Latex
Libraries: NumPy, Pandas, Matplotlib, Scikit-learn, Pytorch, ggplot2, dplyr

RESEARCH EXPERIENCE

Generalized Tensor Regression with Covariates on Multiple Modes **UW-Madison**
Research Assistant to Prof. Miaoyan Wang Spring 2019 – Summer 2020

- Proposed a tensor response regression model incorporating covariates on multiple modes.
- Extended proposed model to generalized tensor decomposition for observations in exponential family.
- Proved the theoretical accuracy guarantees of the proposed model.
- Proposed efficient alternating updating algorithm robust to outliers. Evaluated on both simulations and two real dataset(Human Connectome Project (HCP) & Nations data).
- Developed the R package to implement the algorithm.

Face-to-Painting Machine based on Image Analysis (repo: Pytorch-CNN) **UW-Madison**
Group Leader for Image Analysis Project Spring 2019

- Proposed a face-to-painting machine identifying a person and then produce a portrait of a certain individual automatically based on a given painting style.
- Implemented transfer learning of image scraped on Google Images to test the performance of different CNN architectures.
- Implemented methods from FaceNet with triplet loss to perform the face verification based on different CNN architectures.

Introduced a neural style transfer method to generate portraits in different painting styles.

Uncertainty Quantification Seminar (repo: UQ-Seminar) **UW-Madison**

Presenter & Discussant in seminar held by Prof. Peter Chien Spring 2019

- Discussed state-of-art statistical machine learning methods for quantifying uncertainties in complex systems and applications in engineering, medical, finance hand other fields.
- Presented papers in optimization, convolutional neural work and deep reinforcement learning to PhD and professor audiences.

Optimal Transport Project (repo: OT-project) **UW-Madison**
Student Researcher supervised by Prof. Nicolas Garcia Trillos Fall 2019

- Constructed the Optimal Transport map over geodesic metric space. Characterized the distribution of pixel values of nuclei images. Computed Wasserstein distance using Sinkhorn's algorithm proposed by Marco Cuturi.
- Implemented shape interpolation between nuclei images using Convolutional Wasserstein Distances proposed by Justin Solomon et al. 2015.

Boosting Method Implementation on Machine Learning Task **UW-Madison**
Major Researcher for Graduation Project Spring 2019 – Summer 2019

- Investigated the classical papers of boosting methods including Adaboost, Gradient Boosting, XGBoost.
- Discussed the relationship between boosting method and non-parametric approximation from a statistical perspective. Presented the relevant papers from Jerome Friedman, Trevor Hastie, and Robert Tibshirani.

WORKING EXPERIENCE

Teaching Assistant UW-Madison
Introductory Applied Statistics for the Life Sciences Fall 2020
Introductory Statistical models Spring 2021
Instructor UW-Madison
Introduction to Big Data and Machine Learning Spring 2020
Data Analyst Shanghai, China
China Merchants Bank Summer 2018

PROJECT EXPERIENCE

Natural Language Processing Project (repo: Yelp-NLP) **UW-Madison**
Group Leader Fall 2019

- Implemented NLP preprocessing on review text. Implemented word counting and statistical analysis.
- Constructed Ordered Logit Regression model predicting the rating of each business.
- Constructed LSTM with other techniques identifying topics in review text. Conducted sentiment analysis.