



# Yifei(Francis) Zhang

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## EDUCATION

**University of North Carolina at Chapel Hill**

Aug 2023-Present

*M.S. Statistics and Operation Research*

**University of Liverpool**

Aug 2019 - June 2023

*B.S. Applied Mathematics*

GPA: 3.96/4.0

## COURSEWORK

**Courses:** Deep Learning(Ph.D. level), Applied Statistics(Ph.D. level), Stochastic Modeling(Ph.D. level), Optimization(Ph.D. level), Machine Learning, Optimization for Machine Learning and Neural Networks, Abstract Algebra, Physics

**Awards:** First Honor Class Graduated in Mathematics

## RESEARCH EXPERIENCE

**Chronic Back Pain Prediction Project**

*Supervised by: Prof. Paul Geha & Prof. Zhengwu Zhang*

Feb. 2024 - Present

- Developed a Meta-Matching Framework to select relevant features associated with Chronic Back Pain (CBP) from the UK Biobank dataset, enhancing the specificity of the predictive model.
- Utilized the SBCI pipeline to process raw fMRI images, assembling them into a comprehensive input image dataset for further analysis.
- Trained a Deep Neural Network (DNN) to accurately predict features related to CBP, integrating complex imaging data with clinical variables.
- Applied Kernel Ridge Regression (KRR) to identify and prioritize the best-performing features, significantly improving the accuracy of CBP prediction.

**Assessing Structural Connectomes for Trait Classification in Adolescents**

*Supervised by: Prof. Zhengwu Zhang*

Feb. 2024 - Jun. 2024

- Employed PCA and Random Forest for effective dimensionality reduction, preparing the data for advanced analysis.
- Implemented multiple machine learning methods including SVM with RBF kernel, Logistic Regression, and Stacking to enhance trait prediction accuracy.
- Discovered significant improvements in predicting traits such as BMI when including structural connectome (SC) matrices, while some traits like sleep duration showed no similar enhancement.

## TEACHING EXPERIENCE

**STOR 113 Decision Models for Busi & Econ** | *Graduate Teaching Assistant*

Jan. 2024 – Present

Hold regular office hours for the undergraduate students to solve the homework and course-related questions. Helped the instructor design the midterm and final papers.

**STOR 445 Stochastic Processing** | *Graduate Instructor Assistant*

Aug. 2023 – Dec. 2023

Graded the Homework and Mid & Final papers

**PAL Teaching Program** | *Teaching Assistant*

Aug. 2022 – Jun. 2023

Hold regular office hours for the undergraduate students to solve the homework and course-related questions.

## SKILLS

**Programming Languages:** R, Python, L<sup>A</sup>T<sub>E</sub>X

**Tools:** Git/GitHub, Rstudio, Matlab, VS Code, freesurfer

**Languages:** Chinese(native), English(IELTS 7, GRE 331)