

# Xuelin Zhu

## Education

University of Michigan, Ann Arbor  
Master of Applied Statistics  
Current Overall GPA: 4.0/4.0

Ann Arbor, MI, U.S.  
Expected May 2024

Southern University of Science and Technology (SUSTech)  
Bachelor of Science in Statistics  
Overall GPA: 3.77/4.0 (90.04/100)

Shenzhen, P.R. China  
Sep. 2018 – Jun. 2022

## Publication & Academic Artifacts

### ArXiv Preprint:

Where to Serve and Return in Badminton Men's Double?

arXiv: 2310.18572

*Author: Xuelin Zhu, Yu Sun, Yumin Zeng, Cong Xu*

### Directed Study Reports & Scribing:

- Report on Statistical Properties of Kernel PCA
- Stein's Method: A Direct Approach for Proving the Central Limit Theorem
- STATS 601 - Statistical Learning at University of Michigan

## Academic Experience

**Where to Serve and Return in Badminton Men's Double?**

Jan. 2022 – Aug. 2022

*Advisor: Professor Cong Xu*

- Collected service and return data from the videos of 20 matches
- Visualized the service and return data, and obtained regular behaviors of the service and return landing area
- Fitted generalized logits model, and gained significant predictors of the return landing area
- Drew suggestions for the players for the on-spot judgement

**Directed Study on Kernel PCA**

Apr. 2023 – Aug. 2023

*Advisor: Professor Tailen Hsing*

- Learned the theoretical foundation for functional data in the way of functional analysis.
- Derived the probabilistic bounds on the reconstruction error of kernel PCA.
- Considered the kernel PCA application in the federated learning.

**Independent Study on Stein's Method**

Nov. 2022 – Jan. 2023

- Learned the basic idea of Stein's method to test the closeness of distributions.
- Derived a proof of the Lindeberg-Feller CLT by Stein's method with the help of Prof. Qi-Man Shao and his book, *Normal Approximation by Stein's Method*.

## **Hepatocellular Carcinoma Predictions**

Oct. 2022 — Nov. 2022

- Course project of STATS 600 at University of Michigan
- Involved 421 patients and expressions of 60660 genes (real-world data from the Cancer Genome Atlas)
- Used regularized logistic regressions and PCA for dimensionality reduction
- Obtained an optimal forecasting model with prediction accuracy 99%

## **Study of Music Listening Habits of SUSTech Undergrads**

Jan. 2021 — May 2021

- Surveyed 500 undergraduates with a designed questionnaire including questions about length of listening music, preference, music platform, and spending on buying service
- Conducted descriptive statistics to obtain some general information such as the average listening time

## **Core Courses**

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### **Southern University of Science and Technology:**

- |   |                                       |
|---|---------------------------------------|
| • MA104 - Linear Algebra II                 | • MA301 - Real Analysis               |
| • MA304 - Multivariate Statistical Analysis | • MA314 - Sample Surveys              |
| • MAT7035 - Computational Statistics        | • MAT7036 - Nonparametric Statistics  |
| • MAT7041 - Bayesian Statistics             | • MAT7055 - Generalized Linear Models |

### **University of Michigan (PhD-Level):**

- |   |   |
|---|---|
| • STATS 600 - Regression Analysis         | • STATS 601 - Statistical Learning        |
| • STATS 610 - Statistical Inference       | • STATS 621 - Probability Theory          |
| • MATH 625 - Prob. Theory and Rand. Proc. | • MATH 627 - Applied Stochastic Processes |

## **Internship and Volunteer**

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### **Tencent Technology (Shenzhen) Co., LTD**

Shenzhen, P.R. China

*Data Analysis Intern*

Jul. 2021 — Aug. 2021

- Used SQL to preprocess data, compare and summarize

### **Volunteer for FIBA Basketball World Cup 2019**

Shenzhen, P.R. China

- Backstage scheduling and audience guidance

Aug. 2019 — Sep. 2019

## **Honor & Awards**

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Outstanding First Year Applied Stats. Master's Student Awards (Top 10%)    UMich; 09/2023

Outstanding Graduation Thesis for Undergraduates (Top 10%)    SUSTech; 06/2022

Outstanding Student Scholarship (Top 15%)    SUSTech; 2019 - 2021

Gold Medal of Badminton Men's Singles    Zhixin College, SUSTech; 2019 - 2021

## **Skills**

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Latex, R, Python, SAS, MySQL