Yufei Zou

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Education:

Bachelor of Science in Statistics 2019-2023
North Carolina State University, Raleigh, NC
Minor: Economics | GPA: 3.89/4.0

Master of Science in Applied Math 2023-2025
Tulane University, New Orleans, LA

Research Experience:

Evolutionary Impact of Interlocus Gene Conversion in Segmental Duplicates of Primates Sep 2021 - Present

Advisor: Jeffrey Thorne (NCSU, Departments of Biological Sciences and Statistics)
Advisor: Xiang Ji (Tulane, Department of Mathematics)

- Inferred the evolutionary impact of interlocus gene conversion on segmental duplications in mammals.
- Collected DNA sequence data from genetic databases via an API, organized data using Python and R.
- Applied Multiple sequence alignment with MAFFT; Analyzed sequence data with composite likelihood-based inferential procedures for studying interlocus gene conversion.
- Conducted weekly meetings with advisors and senior students to discuss problems and present research progress.

Projects:

Analyze simulated clinical trial data - SAS| November 2020 – December 2020

- Imported, validated, manipulated, subsetted, and grouped data; merged and appended a simulated clinical trial data set related to safety and efficacy of the test drug in a four-arm crossover design.
- Created charts to improve reading and work with data stacked across visits.
- Provided statistical summaries of diastolic blood pressure and pulse.

Statistical Quality Control - R | March 2022-April 2022

- Establish statistical control by using quality control charts and estimate process performance during Phase 1 and Phase 2.
- Measure process capability ratio and increase sensitivity of control chart.
- Construct gauge capability studies.

Principle Component Analysis - **Python** | November 2023- December 2023

- Implemented Principal Component Analysis (PCA) to perform dimensionality reduction on high-dimensional data, improving interpretability while retaining key variance.
- Explored theoretical foundations of PCA, including eigenvalue decomposition and Singular Value Decomposition (SVD), to transform correlated features into uncorrelated principal components.
- Developed Python scripts to standardize data, compute covariance matrices, and extract principal components using eigenvectors.
- Visualized results through scree plots and scatter plots to assess variance explained by each principal component and the transformed data structure.
- Applied PCA to genetic datasets, demonstrating its effectiveness in reducing data complexity while preserving essential information.

Awards:

SISG Travel award	University of Washington-Seattle	2023
SISG Scholarship	University of Washington-Seattle	2023

SSE Caregiver awards Evolution meeting 2025

Conference Prensentations:

- **Yufei, Zou** (2025 June) *Characterizing Interlocus Gene Conversion in Segmentally-Duplicated Regions of Primate Genomes.* Evolution 2025 meeting, University of Georgia, Athens, GA
- **Yufei, Zou** (2025 May) *Characterizing Interlocus Gene Conversion in Segmentally-Duplicated Regions of Primate Genomes.* 2025 Spring ASA Louisiana Chapter Meeting, LSU Health Science Center, New Orleans, LA

Engagement Experience:

Career Group Leader | NCSU Chinese Student and Scholars Friendship Association | September 2021 - Present

- Designed presentations to share information related to career development topics
- Held workshops to help Chinese international students get a better understanding of improving professional skills and career issues.

Statistics Club | September 2021 - Present

- Participate in weekly meetings with other statistics students to better understand statistics careers and to network with statistics professionals working at SAS and sports teams.

Teaching Assistant | Tulane University | Calculus | August 2024-December 2024

- Conduct 75-minute recitations twice a week
- Grade homework and exams
- Hold office hour to support student learning

Skills

Programming: R, Python, SAS, STATA, Matlab
Relevant Coursework: Linear Algebra / Mathematical Statistics / Linear Regression / Experimental Design / Survey Sampling / Stat Quality Control / Econometrics / Scientific Computing / Applied Math/ Analysis /Machine Learning /Bioinformatics
Language: English, Chinese(native)