

# Zixin (Jessie) Li

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## EDUCATION

<b>University of California, Berkeley</b> <i>Master of Arts (MA), Biostatistics — GPA: 4.0/4.0</i>	Aug. 2024 - Present Berkeley, USA
<b>Xidian University</b> <i>Bachelor of Science (BS), Mathematics and Applied Mathematics — GPA: 3.9/4.0</i>	Sept. 2020 - Jun. 2024 Xi'an, China
<b>University of California, Berkeley</b> <i>Visiting Student — GPA: 4.0/4.0</i>	Sept. 2022 - Dec. 2022 Berkeley, USA

## PUBLICATIONS

- Li, Z.**, Zhou, R., Cribben, I. Reproducibility in Business and Economic Statistics. Under review at *The Review of Economics and Statistics*.
- Sun, H., **Li, Z.**, Marshall, J. BSAN: Behavioral State Attention Network for Modeling Mosquito Host-Seeking Behavior. *AAAI 2026 Artificial Intelligence for Social Impact Track*.

## AWARDS AND HONORS

<b>Outstanding Graduate Scholarship for Overseas Study</b> <i>1 of 20 awarded students</i>	2024
<b>China Scholarship Council (CSC) Undergraduate Research Award</b> <i>1 of 30 awarded students in China</i>	2023
<b>National Scholarship</b> <i>Top 1% of students</i>	2021
<b>Outstanding Undergraduate</b> <i>Top 1% of students</i>	2021
<b>Meritorious Winner of Interdisciplinary Contest in Modeling (ICM)</b> <i>Top 8% of teams</i>	2021

## RESEARCH EXPERIENCE

<b>Trajectory Generation for Synthetic Populations via Diffusion Models</b> <i>Research Assistant (Supervisor: Prof. Serina Chang)</i>	Jun. 2025 – Present Berkeley, US
<ul style="list-style-type: none"><li>Developed diffusion-based generative models for synthesizing large-scale human mobility trajectories with realistic spatial-temporal dynamics.</li><li>Built a BART-based autoencoder coupled with a Diffusion Transformer (DiT) for latent-space trajectory generation.</li><li>Designed conditional trajectory generation method to control micro-plausibility (realistic individual behaviors) and macro-consistency (statistical fidelity to population patterns).</li></ul>	
<b>Deep Learning for Mosquito Behavioral Modeling and Public Health</b> <i>Research Project (Supervisor: Prof. John M. Marshall)</i>	Jun. 2025 – August. 2025 Berkeley, US
<ul style="list-style-type: none"><li>Developed the Behavioral State Attention Network (BSAN), a deep learning framework modeling mosquito host-seeking flight trajectories from multimodal sensory inputs (olfactory, thermal, visual).</li><li>Designed a recurrent variational architecture integrating cross-modal attention, mixture-of-experts, and mixture density networks to capture stochastic behavioral transitions.</li><li>This work has been accepted to AAAI 2026 (Artificial Intelligence for Social Impact Track).</li></ul>	
<b>Offline Reinforcement Learning for Deep Brain Stimulation Control</b> <i>Research Assistant (Supervisor: Prof. Lexin Li)</i>	Dec. 2024 – Feb. 2025 Berkeley, US
<ul style="list-style-type: none"><li>Proposed neural reward-redistribution methods to infer step-wise rewards from trajectory-level clinical outcomes.</li><li>Evaluated multiple offline RL algorithms for DBS control under trajectory-level action constraints.</li></ul>	

- Integrated the new method into established RL evaluation pipelines, enabling robust off-policy and simulated online evaluation under DBS-specific constraints.

## Computational Methods for Statistical Reproducibility and Neuroimaging Jul. 2023 – Nov. 2023

*CSC-funded Research Assistant (Supervisor: Prof. Ivor Cribben)*

*Edmonton, Canada*

- Investigated reproducibility across statistical journals by reproducing published results from code repositories and documenting challenges in computational replication.
- Applied statistical and machine-learning methods to fMRI time-series analysis, introducing local-stationarity techniques to model dynamic ROI-to-ROI coherence.
- Employed the mvLSW package to characterize time-varying connectivity and extended longitudinal models for group-level comparisons.
- Designed and implemented an interactive R package for 3D boxplot visualization supporting multi-dataset comparison and customizable data exploration.

## Bandit Methods in Wireless Networks

Dec. 2022 – Apr. 2023

*Undergraduate Research Assistant (Supervisor: Prof. Nan Cheng)*

*Xi'an, China*

- Analyzed cumulative regret and convergence behavior of classical bandit algorithms ( $\epsilon$ -Greedy, UCB, Thompson Sampling).
- Benchmarked algorithmic performance and evaluated applicability to dynamic wireless-network settings.

## PROJECT EXPERIENCE

### LLM-Guided Reinforcement Learning for Sepsis Management

Apr. 2025

*Group Project*

*Berkeley, US*

- Leveraged the MIMIC-IV v3.1 clinical database to compare traditional human-defined rewards with LLM-generated intermediate rewards for RL-based sepsis treatment.
- Designed a framework that elicits LLM-based clinical assessments from patient trajectories, incorporating vitals, labs, interventions, and notes.
- Evaluated RL policies via Off-Policy Evaluation and survival analysis, and incorporated natural-language rationales to improve interpretability.

### Computational Modeling and Evaluation of Clinical Decision Rules

Dec. 2024

*Group Project*

*Berkeley, US*

- Performed systematic cleaning and preprocessing of the PECARN dataset, addressing missingness while maintaining clinical fidelity.
- Designed weighted binary cross-entropy loss function to optimize model performance, achieving 98% sensitivity while improving specificity from 26% to 31%.
- Conducted stability analysis across sites and patient subgroups to ensure robustness under data/model perturbations.

## TEACHING

### PH 142: Introduction to Probability and Statistics in Biology and Public Health

Jul. 2025

*Teaching Assistant, UC Berkeley School of Public Health*

*Berkeley, US*

- Assisted in teaching statistical and data science concepts to public health students using R, covering probability distributions and statistical inference.
- Supported lab sessions, graded assignments, and provided guidance on biomedical data analysis and interpretation.

## EXTRACURRICULAR ACTIVITIES

### Youth Volunteer Association

Jul. 2021

*Member*

*Xi'an, China*

- Participated in the Volunteer Teaching Program, providing educational support to children with disabilities.
- Managed curriculum design, teaching material selection, scheduling, logistics coordination, and organized regular meetings.
- Oversaw task allocation and management, ensuring efficient distribution of responsibilities and effective completion of tasks to achieve program objectives.

## TECHNICAL SKILLS

**Python, R, MATLAB, C,  $\text{\LaTeX}$ , GitHub**