

# CALEB SKINNER

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2727 Revere St Apt 3014 Houston, TX 77098

## EDUCATION

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### Rice University – Houston, TX

- PhD in Statistics (M.S. earned en route) (ongoing)
- Advisor: Dr. Meng Li
- GPA: 3.96
- Qualifying Exam - Passed Summer 2025

### Baylor University – Waco, TX

- Bachelor of Business Administration May 2024
- Majors: Statistics, Economics, Mathematics, Business Fellows
- Honors Program; Overall GPA: 3.97

## WORKING PAPERS

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### Skinner, C, Li, Meng. "Exact Partial Constancy Prior for Structured Ensemble Forecasting"

- Proposes a widely applicable exact partial constancy prior for a principled Bayesian approach to forecast aggregation and ensemble learning.

## PUBLICATIONS

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### Skinner, C, Patrick, J, Bryson, C. & Sturdivant, R. (2025, June 16). Mixed Martial Arts - Interrater Reliability. "The SCORE Network." <https://doi.org/10.17605/OSF.IO/F8VBQ>

- Interactive teaching tool details Interrater Reliability using data from Mixed Martial Arts judges.

### Skinner, C, Sturdivant, R., "Is Momentum Real: On the Existence and Influences of Psychological Momentum in Tennis" (Honors Undergraduate Thesis)

- Defining momentum as the backward approximation of the derivative of the players' smoothed point margin curve, we find that a player's momentum entering a point has a significant impact on his or her likelihood of winning the next point.

## HONORS AND AWARDS

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- Gettermann Scholar – Full Ride Scholarship to Baylor University 2020 – 2024
- Crane Scholar (Highly Selective Interdisciplinary Program) 2021 – 2024
- Most Outstanding Undergraduate in Statistics May 2024

## OTHER RESEARCH PROJECTS

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### Sleeper Bayesian

Fall 2024

- Developed a Normal Bayesian Hierarchical Model to estimate NBA player performance and future outcomes. Incorporated Game Theory decision boundaries to optimize fantasy basketball roster decisions.

### Sparse Trustworthy Variational Bayes

Spring 2025

- Implemented a novel extension of Trustworthy Variational Bayes (Liu and Li, 2024) applied to the discrete spike-and-slab prior (Ray and Szabo, 2022) to address variance underestimation and improve variational credible intervals coverage.

- Model Averaged Doubly Robust Estimator* Spring 2025
- Compared the Model Averaged Doubly Robust Estimator (Cefalu et al., 2017) with competing methods like stepwise model selection and Bayesian Adjustment for Confounding (Wang et al., 2012) in a three-part simulation study.
- Detecting Presence of Brain Aneurysms* Fall 2025
- Develop a deep learning pipeline for identification and localization of brain aneurysms from three-dimensional brain scans. Pre-processed multi-modal scans and implemented a two-step 3-D Convolutional Neural Network with modern block architecture.

## STATISTICAL EXPERIENCES

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- Rice Teaching Assistant* August 2024 – Present
- Led study sessions and office hours for undergraduate statistics; responsible for developing exam questions and grading assignments.
- SCORE Network Material Developer* May 2023 – August 2023
- Developed three extensive (20-50 page) interactive lesson plans communicating statistical concepts (Cluster Analysis, Interrater Reliability, Logistic Regression).
  - Produced interactive and engaging modules utilizing R-Markdown and ISLE.
- Sports Analytics Club – Vice President* August 2021 – May 2024
- Developed a production-ready R Shiny application, delivering numerous interactive visualizations and predictive tables utilized by baseball coaching staff.
- Undergraduate Economics Research Assistant* September 2023 – May 2024
- Researched and developed a data set for Dr. Mark Hoekstra for an Economic Research paper.

## MEMBERSHIPS

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- American Statistical Association* 2024-Present
- Section on Bayesian Statistical Science* 2025-Present
- Business and Economic Statistics Section* 2025-Present

## VOLUNTEERING

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- Vice President – Rice ASA Student Chapter* 2025-Present
- Judge for Undergraduate Statistics Capstone* Fall 2025
- PhD Student Representative for Prospective Students* 2024
- STARS Book Club Reading Buddy – Crestview Elementary, Waco, TX* August 2021 – May 2023
- Mentored 4<sup>th</sup>-5<sup>th</sup> grade students weekly, improving their reading skills and fostering friendships.
- Assistant Tennis Coach at Live Oak High School, Waco, TX* January 2022 – April 2022
- Led weekly practices for 15 high school students, focusing on form correction and individual instruction.

## MISCELLANEOUS

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- Mathematical Contest in Modeling (MCM), Problem C Writer* 2023