LOU ZHOU

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Education

Rice University	**Expected Graduation May 2027**
Bachelor of Arts in Statistics and Sport Analytics(3.93 GPA)	*Houston, TX*

Relevant Coursework: Computational Thinking(COMP 140), Statistics for Data Science(STAT 315), Multivariable Calculus(MATH 212)

Experience

Rice Sport Analytics Team	**October 2023 – Present**
Technical Team Analyst	*Houston, TX*

- Develop and maintain internal projects for Rice Athletics, including measuring correlation between Offensive Line performance and practice intensity, and developing a metric which measures player contribution in women's soccer

Shelby County Election Commission	**June 2023 – July 2023**
Summer Intern	*Memphis, TN*

- Analysis and cleaning of past electoral and voter registration data
- Creation of an in-house Python programs that updated pre-2022 precinct voter registration data to new, redrawn voting precincts and amalgamated per-person voting data to give per-voting method and per-primary counts for each Shelby County Voting Precinct for given elections

Air Force Research Laboratory	**June 2022 – July 2022**
Summer Intern	*Dayton, OH*

- Created Python program which located and cropped certain objects of interest in a busy image through a normalized cross-correlation algorithm, cleaning 15620 images for ML training
- Collected photos within the MARVEL Lab of scale model tanks which emulated photos taken from aircraft
- Completed Controlled Unclassified Information (CUI) Training
- Presented Poster and Final Technical Paper on the project to AFRL Administration

Projects

Team Coin Flip: Travel Fatigue and Performance	**January 2024**

- Project which looked to gauge whether an MLB teams fatigue and travel schedule had an effect on team performance
- Usage of Granger Causality Testing in EDA to look to find correlation between OBP and distance a team travelled
- Development of modified ELO ranking based on 538's NFL ELO ranking, taking into consideration margin of victory and pitching form to gauge baseline performance
- Created XGBoost algorithm which predicted the odds of the home team winning a given game using fatigue metrics(distance travelled, jet lag, days on the road, and differences in direction traveled) as well as each team's ELO to find whether fatigue had an effect on performance
- Submitted as part of the 36-hour 2024 Rice Datathon, finishing 2nd place overall out of 59 teams

Play Value Without Penalty	**October 2023 - January 2024**

- Proposed a way to gauge tackling penalties in the NFL by accounting for the yardage the offense lost due to the penalty in a strictly instant replay refereeing environment, limiting the scope of the variables
- Usage of two random forests to predict the odds of a missed tackle as well as the potential yardage gain without the influence of the tackler who caused the penalty
- Submitted as part of the 2024 Big Data Bowl and academic credit through the Rice Department of Sport Management

Breaking the Cycle: Reducing Recidivism in Iowa State Prisons	**October 2022 - May 2023**

- Team Lead of work which looked to estimate the cost and the root causes of recidivism within the Iowa state prisons
- Development of a Feedforward Neural Network(FNN) which predicted the odds a specific inmate, given certain variables, would re-offend as well as a Monte Carlo Simulation which looked to predict the fiscal cost of recidivism to Iowa.
- Submitted for the 2023 Modeling the Future Challenge(MTFC), finishing 2nd place nationally out of 227 teams and receiving a $15,000 team award.

Technical Skills

Languages: Python(Proficient), R(Proficient), Java(Intermediate)
Libraries: pandas, numpy, scipy, matplotlib, scikit-learn, openCV, seaborn, Keras. tidyverse, dplyr, ggplot2
Technologies: Anaconda, VS Code, Excel, RStudio, Jupyter, Google Colab