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: Algorithmic Thinking(COMP 182), Statistics for Data Science(STAT 315), Introduction to Sport Analytics(SMGT 430), Linear Algebra(MATH 355)

Experience

St. Jude Children's Research Hospital   **June 2024 – July 2024**
Biostatistics Summer Intern   *Memphis, TN*
- Implemented functional Principal Component Analysis(fPCA) to model and project ALS progression
- Utilization of Genome-Wide Association Studies(GWAS) to find statistically significant genes connected to ALS progression
- Presented final project to Research Scientists at the Center for Applied Bioinformations
- Assistant mentor for younger interns part of the St. Jude High School Research Immersion Programs

Shelby County Election Commission   **June 2023 – July 2023**
Summer Intern   *Memphis, TN*
- Analysis and cleaning of past electoral and voter registration data
- Creation of internal 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, successfully 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 model predicting the odds of the home team winning using fatigue metrics as well as each team's ELO to determine connections between fatigue and 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