Jiping Li

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Summary

A third-year double major in Applied Mathematics and Statistics & Data Science at UCLA, with multifaceted experiences in data analysis, machine learning, technical programming, statistical consulting, and interpersonal collaboration. Passionate about conducting research that leverages mathematical methods to advance algorithms.

Education

University of California, Los Angeles (UCLA) **Sept. 2021 – Present**

Bachelors of Science in Applied Mathematics (primary), in Statistics and Data Science (secondary)

- Overall GPA: 4.0/4.0, Dean's Honors List in every quarter; Data Science Engineering Minor

Relevant Coursework

- Machine Learning
- Data Mining
- Numerical Methods
- Optimization
- Algorithms
- Real Analysis
- Mathematical Modeling
- Data Regression

Projects

Generalization Error Research Project at UCLA | *Denoising, Mathematical Research* **In Progress**

- Work with Prof. Rishi Sonthalia to conduct research on generalization errors in various ML models and optimizing model performance through denoising techniques, leveraging concepts from random matrix theory.
- Currently collaborating on a research paper that explores optimal methods for recovering data generation models affected by random noise under technical assumptions in both input and output data.

Spider Taxonomy Generation Model | *Python, TensorFlow* **Dec. 2023**

- Developed a character-level recurrent neural network (RNN) model with the gated recurrent units (GRU) architecture using the tensorflow package, in order to automate the species naming process for spiders.
- Incorporated dropout layers, Xavier initialization, and the Adam optimizer, together with fine-tuned hyperparameters and properly encoded sequential data, to optimize model performance.
- Designed assessment criteria that capture both scientific and creative aspects for existing name completion and new name generation, created heatmaps for correlation analysis across performance metrics.

Kalah Board Game | *C++, Project Management* **May 2023**

- Developed the ancient Kalah game with two-player functionality in C++ using object-oriented programming practices
- Employed the minimax algorithm to formulate game trees and thus programmed smart players that generate intelligent moves against a human player efficiently.
- Established evaluation metrics that incorporate various rules of the game and the opponent's possible countermoves to make informed decisions.

Data Mining on Electoral Vote and Loan Origination | *R, tidymodels* **Sept. 2023**

- Utilized the tidymodels framework in R to construct regression models for predicting electoral vote changes and classification models for generating loan decisions, both using large real datasets.
- Examined variations in performance among diverse models, such as random forest, decision tree, and extreme gradient boosting, and adopted stacking ensemble practice to combine predictions of heterogeneous learners in parallel.

Work Experience

Ardent Academy for the Gifted Youth **Oct. 2022 – Present**

Instructor, Tutor, Teaching Assistant *Irvine, CA*

- Instructed and managed 3 Intensive AMC Bootcamps for over 2 weeks to help students enhance problem-solving skills at the competition math level.
- Conducted weekly private sessions with students and and served as teaching assistant for a wide range of subjects, including AP Calculus BC, Pre-Calculus, AP Physics, AMC 12, and AIME.

UCLA Department of Mathematics **Oct. 2023 – Dec. 2023**

Course Reader *Los Angeles, CA*

- Graded over 200 assessments on a weekly basis, providing constructive feedback for students to enhance conceptual understanding, and collaborated with teaching staff to discuss student performance.

Relevant Skills

Programming Languages: Python (libraries: NumPy, Sklearn, Pandas, TensorFlow, Matplotlib), R (packages: tidymodels, ggplot2, tidyr, dplyr, stringr, lubridate) , C++, intermediate MATLAB, basic Java
Spoken Languages: English (full professional proficiency), Mandarin (native), Japanese (limited working proficiency)