Kai Li

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Education

Stony Brook University — Stony Brook, NY
Ph.D. in Applied Mathematics and Statistics — *Aug 2022 - May 2026*
M.S. in Applied Mathematics and Statistics — *Aug 2020 - May 2022*
Advanced Graduate Certificates in Data Science and Operations Research — GPA: 3.950/4.000

The Ohio State University — Columbus, OH
B.S. in Mathematics (Theoretical Track) — *Aug 2017 - May 2020*
Minors in Computer Information Science and Economics — GPA: 3.672/4.000

Research Experience

Department of Applied Mathematics and Statistics, Stony Brook University — Stony Brook, NY
Reinforcement Learning for Enhanced Tic-Tac-Toe and Behavioral Science Applications — *August 2022 - Present*

- Spearheaded the development and implementation of innovative reinforcement learning algorithms for enhancing traditional 5x5 tic-tac-toe strategies, including stochastic-gradient Monte Carlo.
- Conducted in-depth investigations into human decision-making processes in game scenarios to integrate cognitive behavioral science with tic-tac-toe strategy.
- Collaborated intensively with advisors to author a research paper targeted for publication in top-tier academic journals.

Teaching Experience

Department of Applied Mathematics and Statistics, Stony Brook University — Stony Brook, NY
Instructor - Statistical Laboratory (Fall 2022, 2023) and Mathematical Statistics (Spring 2023) — *August 2022 - Present*

- Orchestrated and delivered compelling lectures through hands-on R programming on a range of statistical topics, including exploratory data analysis and statistical inference.
- Engineered comprehensive course materials, assignments, and assessments, effectively managing an average class size of 52 students.
- Provided one-on-one academic support during office hours, significantly enhancing student understanding.
- Received consistent positive feedback through course evaluations from students for effective teaching methods and ability to explain complex statistical concepts in an understandable manner.

Skills

Programming Languages and Statistical Software: R, Python, SQL, RStudio (e.g., R Markdown, R Sweave), Visual Studio, Jupyter Notebook
Machine Learning and Data Science: Reinforcement Learning (e.g., Dynamic Programming, Monte Carlo Methods, Temporal-Difference Learning Methods), Data preprocessing, Data analysis and visualization, Feature engineering

Academic Projects

Department of Computer Science, Stony Brook University — Stony Brook, NY
Data Science - Understanding Flight Delays — *August 2021 - December 2021*

- Retrieved relevant flight arrival performance datasets from the Bureau of Transportation Statistics.
- Preprocessed datasets by subsetting, imputing missing data, merging, and encoding variables.
- Gained insights through descriptive statistics, significance testing, and data visualization for model building.
- Implemented machine learning models for flight delay prediction and compared their effectiveness.
- Presented research in a reproducible and well-documented notebook with an academic report.

Department of Applied Mathematics and Statistics, Stony Brook University — Stony Brook, NY
R Package - Statistical Methods for Partially Matched Samples — *Mar 2021 - May 2021*

- Developed an R package for statistical analysis of partially matched samples, combining independent samples and matched pairs designs.
- Implemented specialized procedures for hypothesis testing, parameter estimation, and more.
- Designed user-friendly interfaces, ensuring accessibility for researchers.
- Collaborated to validate statistical procedures, resulting in a reliable tool.