Samuel Liu

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EDUCATION

Washington University in St. Louis **St. Louis**
PhD Student in Computational and Data Sciences *Aug 2024-Present*

Williams College **Williamstown**
Bachelor of Arts in Statistics *Aug 2019-May 2023*

- GPA: 3.96, Relevant Coursework: Statistical Computing, Data Structures, Data Mining and Statistical Learning, Generalized Linear Models, Statistical Inference, Regression Theory, Bayesian Statistics, Instrumental Methods.
- Awards: Harold H. Warren Prize

SKILLS

Programming Languages: Proficient in Python, Java, R, SAS, SQL, LaTeX.
Frameworks & Libraries: NumPy, pandas, scikit-learn, XGBoost, PyTorch, seaborn, matplotlib, ggplot2, tidyverse, tidymodels.

WORK EXPERIENCE

Pharmapace Inc. **San Diego**
Analyst I *June 2023-Present*

- Collaborated with statisticians to convert statistical analysis plans into validated programs for clinical study reports.
- Crafted and documented SAS programs for creating SDTM and ADaM datasets, statistical tables, figures, and listings.

WorldCare Inc. **Boston**
Clinical Operations and Data Analytics Intern *May 2022-September 2022*

- Developed and implemented techniques to extract data and insights from WorldCare and its partners, using SQL, R, Python, and machine learning techniques, then built financial models to assist with product pricing and model profits.
- Reorganized data extracted from Salesforce into a more manageable context, by using crosswalks and developing data dictionaries.
- Consulted on appropriate marketing angles for second opinion cases.
- Negotiated with NLP vendors on refining use cases for WorldCare data.

RESEARCH EXPERIENCE

Professor Yeoh and Professor Jackson **Washington University in St. Louis**
Research Assistant *August 2024-January 2025*

- Designed and implemented transformer-based models for next-location prediction using spatiotemporal and user-specific embeddings.
- Integrated multi-modal behavioral features (e.g., audio, activity, phone use) into transformer architectures to enhance predictive accuracy.
- Developed and evaluated novel embedding strategies for temporal and behavioral data, including stacked embeddings for multi-feature integration.
- Optimized training loss functions to address class imbalance in location prediction, improving performance on less frequent location classes.
- Conducted extensive experiments on mobility datasets, incorporating individual-level psychological features to explore their impact on predictive accuracy.
- Automated hyperparameter tuning and multi-run configurations using YAML-based configuration files for scalable experimentation.

Professor Cai Statistics Research Group **Williams College**
Research Assistant *August 2023-November 2023*

- Produced framework for analyzing sentiment of electronic review data utilizing a variety of different methodologies
- Generated cross comparison analysis on accuracy of data dictionaries in predicting text sentiment

Professor Upton Statistics Research Group **Williams College**
Research Assistant *November 2022-Present*

- Developed and tested methodologies for applying stacked models using tidymodels in R
- Streamlined hyperparameter selection and base model selection for computational efficiency
- Utilized stacked modeling to model changes in cognitive performance over time in humans
- Tracked changes across various subtests, and utilized clustering methodologies to group similar patterns of decline across gender and education
- Presented research results at New England Statistical Society NextGen Conference

TEACHING EXPERIENCE

Williams Statistics and Chemistry Department **Williams College**
Teaching Assistant *December 2019-Present*

- Courses: Intro to Statistical Modeling, Statistical Inference, Probability, Bayesian Statistics
- Held office hours and guided students through R and other advanced statistics concepts.
- Graded complex assignments, providing detailed feedback to enhance student understanding.

PUBLICATIONS

Congdon EL, **Liu S**, Upton EM. A cross-sectional exploration of cognitive ability across age via stacked ensembles. Psychol Aging. 2024 Nov 21. doi: 10.1037/pag0000868.