Yuyang Wu

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EDUCATION

University of California, Berkeley   *2025*
Master of Arts in Statistics

Peking University   *2024*
Bachelor of Science in Mathematics and Statistics
- **GPA:** 3.65
- **Relevant Coursework:** Mathematical Statistics, Deep Learning and Reinforcement Learning, Statistical Models and Computing Methods, High-Dimensional Probability, Applied Regression Analysis

INTERNSHIPS

Tsinghua University, Center for Collaborative & Conversational Intelligence   *04/2023-06/2023*
Advisor: Prof. Bowen Zhou(Tsinghua University)
- **Survey:** Investigated different evaluation metrics for text generation including BLEU, METEOR, and metrics in GPT-4 Technical Report. Compared the evaluation metrics of large language models for text generation and identified an evaluation gap in evaluating text style.
- **Metric Design:** Designed a noval metric for text style evaluation based on a metric 'style-matching' which utilized the difference of part of speech (POS) proportion to judge the stylistic differences between sentences. Extracted the percentage distribution of different parts of speech as sentence features and applied linear regression to identify the optimal coefficients for these features.
- **Testing:** Utilized python to test the noval metric on real datasets and demonstrated its effectiveness by comparing the test results with human evaluation results.

RESEARCH EXPERIENCES

UCLA, Safe Policy Gradient Based Algorithm for Constrained MDPs   *06/2023-09/2023*
Research Associate, Advisor: Prof. Lin Yang(UCLA)
- **Background Study:** Conducted a review on policy gradient algorithms for MDPs including natural policy gradient primal-dual methods (NPG-PD), constraint-rectified policy optimization (CRPO), etc. Acquired in-depth knowledge in machine learning techniques such as gradient ascent and sub-gradient descent applied to MDPs.
- **Algorithm Design:** Developed a safe policy gradient algorithm based on the NPG-PD method to solve constrained MDPs which do not violate constraints in every iteration.
- **Convergence Prove:** Constructed proofs of the algorithm convergence under softmax parametrization and showcased convergence while extending the algorithm to a sample-based scenario.

Different Models and Inference Methods of Covid-19 Epidemic Based on SIR Model   *10/2022-12/2022*
Researcher, Advisor: Dr. Cheng Zhang, Instructor of: Statistical Models and Computing Methods
- **Data Processing:** Collected an extensive COVID-19 dataset (12/2019-10/2022) using the 'nCov2019' R package, extracting key epidemic data from diverse cities and periods to build the foundational dataset for SIR-based modeling.
- **Model Development:** Developed three statistical analysis methods--Bayesian inference with change points, Manifold-constrained Gaussian process, and Time-dependent SIR model--to capture the complex dynamics of the COVID-19 epidemic.
- **Model Implementation:** Implemented these models in Python, leveraging efficient MCMC techniques to ensure scalability and accuracy, and conducted testing to validate their performance across different scenarios.
- **Analysis & Reporting:** Authored a comprehensive technical report comparing the performance of these models, providing insights into their relative strengths for different stages of epidemic spread.

Solving the Stationary Schrödinger Equation Based on Neural Network   *10/2022*
Researcher, Advisor: Dr. Lin Wei, Instructor of: Deep Learning and Reinforcement Learning
- **Algorithm Design:** Designed a Physics-Informed Neural Network (PINN) approach to solve the Stationary Schrödinger Equation.
- **Programming:** Implemented the solution in PyTorch, comparing the neural network results against traditional numerical methods, demonstrating the potential for deep learning in solving complex physical equations.

HONORS & AWARDS

Grand Prize, The 13th Chinese Mathematics Competitions(CMC) (junior year students)   *03/2023*
(CMC is a national high-level competition for undergraduate students)

Grand Prize, 2022 National Competition, China Undergraduate Mathematical Contest in Modeling (CUMCM)   *09/2022*
(CUMCM is the largest mathematical contest in modeling in China)

Gold Medal, The 35th Chinese Mathematical Olympiad(CMO)   *11/2019*
(CMO is the highest level math competition for high school students in China)

PROFESSIONAL SKILLS

Programming languages and libraries: Python, R, SQL, Matlab, C, Scikit-learn, Pytorch