Haoqun Cao

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EDUCATION

- **Uniersity of Wisconsin, Madison** - PhD Student in Statistics — Sep 2024-present
- **Renmin University of China** - B.S. in Statistics — Sep 2020-Jun 2024

  GPA:3.75/4.0 rank 1/13 during Year 1-3
  Relevant Coursework:
  Mathematical Analysis I(98)II(93) III(91) | Higher Algebra II(95) | Point Set Topology(94) | Real Analysis(91)| Mathematical Statistics(91)| Design and Analysis of Algorithms(96)| Optimization(95)| Statistical Computing(94)|Nonparametric Statistics(89)| C Programming(94)|Functional Analysis(84)|Topics in Statistical Machine Learning(89)

PAPERS

* denotes equal contribution

1. **Haoqun Cao**, Zizhuo Meng, Tianjun Ke, Feng Zhou. **Is Score Matching Suitable for Estimating Point Process** , *NeurIPS 2024 Poster*
2. Tianjun Ke*, **Haoqun Cao***, Zenan Lin, Feng Zhou. **Revisiting Logistic-Softmax Likelihood in Bayesian Meta-Learning for Few-Shot Classification**, *NeurIPS2023 Poster*
3. Tianjun Ke, **Haoqun Cao**, Feng Zhou. **Accelerating Convergence in Bayesian Few-Shot Classification**, *ICML 2024 Poster*
4. Yucong Lin, Liyuan Xu, **Haoqun Cao**, Hongyi Yuan, Junwei Lu. **Schrodinger Bridge to Bridge Generative Diffusion Method to Off-Policy Evaluation**, *under review*

RESEARCH PROJECT

Score Matching as A Way for Learning Temporal Point Processes - Nov 2023-Sep 2024

Supervised by Prof. Feng Zhou @ Renmin University

- Theoretically demonstrate that the existing work on Score Matching(SM) for Temporal Point Process(TPP) fails in most of the scenarios and gives a necessary and sufficient condition regarding when SM is applicable to TPP.
- Propose a weighted Score Matching for parameter estimation when SM fails and prove its consistency.
- Derive a non-asymptotic parameter estimation bound related to the choice of optimal weight function.

Statistical Modeling for Sleep Trajectory Data - Jun 2023- Mar 2024

Supervised by Prof. Annie Qu @ UC Irvine

- The research is about modeling sleep trajectory data collected from pregnant women. We model the trajectory as a discrete-time semi-markov process and derive its multinomial representation.
- We run our model on real data and derive patterns for pregnant women's sleep.

Revisiting Logistic-Softmax Likelihood in Bayesian Meta-Learning for Few-Shot Classification - Jan 2023- Jun 2023

Supervised by Prof. Feng Zhou @ Renmin University

- Theoretically and empirically showed that softmax can be viewed as a particular case of logistic-softmax and logistic-softmax induces a larger family of data distributions than softmax under a Gaussian process multi-classification framework.
- Derived an analytical mean-field approximation for posterior inference through data augmentation.

Diffusion Schrodinger Bridge for Model-Based Reinforcement Learning - Sep 2022-Nov 2023

Supervised by Prof. Junwei Lu @ Harvard University

- The research is about using diffusion model as a transition learner for model-based RL. I implement the main algorithm in PyTorch and conduct most of the numerical experiments.

ACTIVITY EXPERIENCE

Vice-President - Statistical Investigation Association of Renmin University of China(2022-2023)

- We have a group that writes articles and gives lectures on R and Python in our university, and I've led several of these projects

Principal of Strings - Chinese Orchestra of Renmin University of China(2022-2023, 2023-2024)

- Lead other performers of Strings(other Hu instruments, Cello and Base) practicing and rehearsing.

SKILLS

Coding: C/C++, R(tidyverse/Rmarkdown), Python(Pytorch, DL framework)
Language: English(TOFEL 110, Speaking 25), Mandarin(Native)

HONORS & AWARDS

2024 - Outstanding Undergraduate Thesis. *Renmin University of China*

2021,2022, 2023 - Academic Excellence Award. *Renmin University of China*

2022 - Provincial First Prize. *Contemporary Undergraduate Mathematical Contest in Modeling*

Last updated November 21, 2024