Hu, Liyuan

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Education

London School of Economics | Ph.D. in Statistics, Reinforcement Learning *2022.09-2026*

- **Honor**: Full Ph.D. Scholarship

Sun Yat-sen University | B.S. in Statistics, School of Mathematics

2018.09-2022.06

- **GPA**：4.3/5.0 (Ranked 2/78); Relevant Coursework: Statistical Learning, Complex Data Analysis, Data Structures, Mathematical Statistics
- **Honors**: National Scholarship (2×), First-Class University Scholarship (3×), National Second Prize in Chinese Mathematical Contest in Modeling (2019)

Professional Experience

TikTok Global Monetization Product and Technology | Research Scientist *2025.07-Present*

- Participated in TikTok e-commerce platform GMV Max product development, conducting automated development, data analysis, and A/B testing to improve overall ROI revenue.

Huatai Securities Research Institute | Researcher, Financial Engineering Group *2025.04-2025.07*

- Enhanced value factors using large language models based on annual report data. balanced context length limitations, cost constraints, and training effectiveness in machine learning methods for LLM training. Implemented end-to-end factor mining using Graph Neural Networks to model cross-sectional stock return factors.

Invesco Great Wall Fund | Quantitative Researcher *2024.10-2025.2*

- Developed end-to-end index enhancement strategies. Reproduced and improved LinSAT (a differentiable combinatorial optimization neural network component), optimizing training time by nearly 10× while maintaining equivalent performance. Achieved 10%-40% improvement in Information Ratio (IR) for enhancement strategies on CSI 300, CSI 500, and CSI 1000 indices compared to traditional non-end-to-end multi-factor stock selection frameworks.

Research Projects

Q-Function Strategy Optimization Addressing Inter-Group Data Correlation | First Author
2023.01-2025.05

- Investigated applications of Generalized Estimating Equations in reinforcement learning. Proposed a novel Fitted Q-iteration algorithm that improves learning strategy effectiveness by estimating inter-group data correlations. Submitted to Statistics Journal.

Deterministic Linear Reinforcement Learning Strategy Optimization | First Author *2023.08-Present*

- Developed linear deterministic reinforcement learning strategies suitable for device-constrained environments. Addressed existing device limitations in storage and design aspects. Conducted simulation validation on medical school simulators.

Strategy Optimization for Non-Stationary Heterogeneous Data | First Author *2022.04-2025.02*

- Developed novel reinforcement learning algorithms for temporally non-stationary and individually heterogeneous data. Enhanced reinforcement learning applicability and efficiency in dynamic environments. Preparing submission to Journal of the Royal Statistical Society Series B.

COVID-19 County-Level Mortality Risk Analysis in the United States | First Author *2020.04-2021.09*

- Conducted risk analysis of COVID-19 mortality rates across 3,125 U.S. counties. Explored health and socioeconomic factors related to mortality rates. Published in Infectious Diseases of Poverty.

Software Development

abess: Fast Best Subset Selection Package (PyPI & R CRAN) *2020.12-2021.09*

- Co-developed the abess library, implementing and extending core algorithms based on C++ kernel. Developed corresponding R interface for the library. Created efficient toolkit for best subset selection problems in machine learning (linear regression, classification, PCA). Achieved 20× speed improvement compared to existing tools. Published in The Journal of Machine Learning Research.

bestridge: Best Subset Selection with Ridge Penalty Package (R CRAN) *2020.02-2021.03*

- Responsible for algorithm design and C++ kernel implementation. Led R interface development.

Technical Skills

- **Programming Languages**: Python、C++、R；**Languages**: English, Chinese