

## Educational Background

<b>Shanghai University of Finance and Economics</b>	Sep 2022 – Jun 2024
M.S. in Applied Statistics	GPA: 3.58/4 (86.78/100)
<b>China University of Geosciences</b>	Sep 2018 – Jun 2022
B.S. in Statistics	GPA: 4.04/5 (ranking: 1/26)

## Awards

<b>The 13th Li Siguang Talent Program</b>	China University of Geosciences	2019
<b>National Scholarship</b>	Ministry of Education of the People's Republic of China	2019
<b>Academician Scholarship</b>	China University of Geosciences	2021
<b>Outstanding Undergraduate Thesis</b>	China University of Geosciences	2022
<b>Outstanding Graduate</b>	China University of Geosciences	2022
<b>Second-class academic scholarship</b>	Shanghai University of Finance and Economics	2022, 2023

## Publications

- (\* authors contributed equally)
- Yu, S.\*, **Xu, W.\***, et al (2024). Enhancing Prediction Performance through Influence Measure. *The Thirteenth International Conference on Learning Representations (ICLR2025)*. Accepted.
  - Xu, W.**, Peng, R., et al. (2024). Improvement Research on Reinforcement Learning Algorithms Based on Bayesian Dynamic Ensemble
  - Yan W., Feng X., Lin T., et al., including **Xu, W.** (2022). Diverse Subclade Differentiation Attributed to the Ubiquity of *Prochlorococcus* High-Light-Adapted Clade II. *mBio*, 13(1):e03027-21.

## Research Experience

<b>InfluenceDriven Training: Enhancing Training Robustness</b> [Webpage]	Mar 2024 – Nov 2024
<ul style="list-style-type: none"><li>Developed a novel metric based on the influence measure to assess the impact of individual data points on machine learning model performance, enhancing the robustness and accuracy of models.</li><li>Designed and validated a dynamic active learning algorithm and a data selection method, demonstrating their effectiveness through extensive simulations and real-world datasets.</li><li>This work has been accepted by <b>ICLR 2025</b> (see <a href="#">1</a>).</li></ul>	
<b>Bayesian Dynamic Ensemble Framework for MBRL</b> [Webpage]	Jul 2023 – Jan 2024
<ul style="list-style-type: none"><li>Collaborated with Zhejiang Lab to create a Bayesian Dynamic Ensemble (BDE) model, focusing on enhancing the robustness and convergence speed of Model-Based Reinforcement Learning (MBRL) algorithms.</li><li>Implemented the BDE model using the mbrl library within the Mujoco simulation environment, which led to significant improvements in long-term strategic planning and faster convergence of algorithms.</li><li>We have submitted this work (see <a href="#">2</a>).</li></ul>	
<b>LLMs for Enhanced World Modeling in POMDPs</b> [Github]	Jul 2024 – Dec 2024
<ul style="list-style-type: none"><li>Led research on utilizing Large Language Models (LLMs) as world models in POMDPs, enhancing predictive capabilities of world model and agent decision-making.</li><li>Developed an auxiliary loss function to preserve semantic information, enhancing the model's generalization across varied scenarios. Implemented Low-Rank Adaptation to efficiently fine-tune the models.</li></ul>	
<b>Reinforcement Learning with Psychometric Models for Trait Evaluation</b> [Webpage]	Nov 2024 – Present

- Developed a framework combining reinforcement learning techniques with psychometric models using Partially Observable Markov Decision Processes (POMDPs) to estimate personal traits from noisy observations and evaluate individual-specific abilities.
- Designed a latent dynamics model with variational inference to infer hidden states and integrate complex datasets, enabling detailed assessments of individual traits and decision-making patterns.

## Competition Experience

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### The 2nd Meituan Business Analysis Competition

Apr 2022

- Explored factors influencing the sales of expired food from the perspective of product design.
- Developed an *Expired Food Decision Optimization System* to provide better decision support for merchants to optimize product descriptions and forecast sales.
- Achieved **Top 50/1296** ranking in the preliminary round and **Top 30** ranking in the final round.

### KDD Cup 2022 Wind Power Forecasting

Jun 2022

- Developed a hybrid time series prediction strategy based on tree models (such as LightGBM), incorporating recursive-direct hybrid forecasting techniques.
- Achieved a ranking of **11th (top 10%)** in the final stage of the competition.

## Additional Information

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### Research Interest Technical Skills

Reinforcement Learning, Trustworthy AI, AI for Social Good, Psychometrics.  
Proficient in Python, including object-oriented programming and scientific computing libraries such as NumPy and PyTorch. Familiar with R, C++. Experienced in working with Linux systems and familiar with Git workflow.