

# YIHAO SUN

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## EDUCATION

### M.Sc. in Computer Science and Technology

Nanjing University, Jiangsu, China

LAMDA Group, School of Artificial Intelligence

Sep 2021 - Expected Jun 2024

### B.Sc. in Software Engineering

Sichuan University, Sichuan, China

School of Software Engineering

Sep 2017 - Jun 2021

## RESEARCH INTERESTS

My research interest is reinforcement learning (RL). Currently, I focus on offline reinforcement learning (Offline RL) and model-based reinforcement learning (MBRL). I am committed to improving the sample efficiency of online RL, deriving a performant policy from offline datasets, and learning a faithful environment model that enables reliable offline policy evaluation.

## PUBLICATIONS

### Model-Bellman Inconsistency for Model-based Offline Reinforcement learning

ICML'23

Co-first author.

- Proposing a novel uncertainty quantification for uncertainty-driven model-based offline RL, which can better estimate the ideal uncertainty quantification, i.e., the Bellman error.
- Achieving SOTA on 20 of 27 evaluated benchmark datasets. Compared with MOPO, a representative model-based offline RL algorithm, the performance of our algorithm is improved by 42.4%.

### Model-based Reinforcement Learning with Multi-step Plan Value Estimation

ECAI'23

Co-first author.

- Proposing multi-step plan value to mitigate the influence of compounding error.
- Showing a better utilization of the learned model and achieving a better sample efficiency than previous model-based RL approaches.

### Environment Model Learning Should be Policy-conditioned

Submitted to NeurIPS'23

Co-first author.

- Proposing a new environment model learning techniques with better generalization ability utilizing the implicit multi-source nature of the offline dataset.
- Outperforming previous OPE methods by a large margin and achieving SOTA on 6 of 6 evaluated benchmark datasets.

## OPEN SOURCE PROJECTS

### OfflineRL-Kit: An elegant PyTorch offline reinforcement learning library.

110 stars

95% code contribution.

- An elegant offline reinforcement learning library based on pure PyTorch.
- State-of-the-art offline RL algorithms, including model-free and model-based approaches.
- The first reproduction that matches or even exceeds the performance in the original papers of model-based offline RL.

## AWARDS AND HONORS

### First Prize Scholarship in Nanjing University

Nov 2021

### First Prize Scholarship in Sichuan University

Nov 2018

### Excellent Student

Nov 2018