

Xinqi Wang

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EDUCATION

Tsinghua University(THU), Beijing, China

Aug 2019 - July 2023

Bachelor of Engineering, Institute for Interdisciplinary Information Sciences(Yao Class)

University of Washington(UW), Seattle, WA, USA

Sep 2023 - Present

PhD in Computer Science & Engineering, Paul G. Allen School of Computer Science & Engineering

PUBLICATIONS

[1] **Xinqi Wang**, Qiwen Cui, & Simon S.Du. (2022) On Gap-dependent Bounds for Offline Reinforcement Learning. *arXiv preprint arXiv:2206.00177*. [Accepted by NeurIPS2022]

RESEARCH EXPERIENCE

Credit-targeted Reinforcement Learning

Sep 2023- Present

Principle researcher; Advisor: Simon S.Du

- Define Credit-targeted Reinforcement Learning(CTRL), which intuitionally aims to reach a given target Credit through states.
- Develop DP-based algorithm for CTRL and test it on tabular environments.
- Implement function approximation with DP-induction to develop ML algorithms for more complicated environments.

All-task RL

Sep 2023- Present

Assistant researcher; Advisor: Simon S.Du, Abhishek Gupta

Collaborator: Chuning Zhu

- Develop theories for the reaching probability-based learning methods, ATRL.
- Test modifications of ATRL.

Extra-Agent Method in MARL

Jul 2022- Feb 2023

Principle researcher; Advisor: Simon S.Du

Analyzed the inborn defects of the naive Policy Gradient(PG) method in MARL.

- Unified previous attempts and improvements based on PG into two main categories.
- Came up with a new algorithm family with performance lower bounded by PG and random search.

Causal experiment system over CARLA

Sep 2021- Jul 2023

Advisor: Yang Gao, Assistant Professor of Institute for Interdisciplinary Information Science, THU

- Built up a tool based on CARLA to systematically analyze the causality between agent's behaviors.
- Designed a new causality test standard with short scenes and tested SOTA algorithms with it.
- Implemented popular autonomous driving algorithms on Carla.
- Conducted a comprehensive review of imitation and reinforcement learning in autonomous driving.

On Gap-dependent Bounds for Offline Reinforcement Learning

Mar 2022-Jun 2022

Principle researcher; Advisor: Simon S.Du

- Analyzed algorithms for offline learning in tabular cases.
- Provided both the upper bounds and lower bounds of gap-dependent sample complexity.
- Provided a new technique to analyze LCB-style algorithms.
- Proved the necessity of overall optimal-policy coverage assumption for LCB.
- Submitted the work to NeurIPS2022.

SKILLS

Programming Skills: C, Python, Pytorch, MATLAB, Latex

Language Skills:

TOEFL IBT: Total 106 (Reading 30, Listening 28, Speaking 23, Writing 25)

GRE: Total 328+3.5 (Verbal 158, Quantitative 170)

The Japanese-Language Proficiency Test, N1(The highest-level amateur examination of Japanese)