

Linjie Xu

Homepage: egg-west.github.io
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EDUCATION

Nanchang University, Jiangxi, China

2016-2020 B.E. Software Engineering

Graduate Project: Gradient-based Intrinsic Reward for Reinforcement Learning

Queen Mary University of London, London, UK

2020-present PhD student Game AI

RESEARCH EXPERIENCE

Abstraction Method for Game Playing

September, 2020 – Present

PhD Program

Game AI Group, Queen Mary University of London, UK

- For a sequential decision-making problem, the *abstraction* technique firstly extracts a new problem (usually a simpler one) from the original problem. The original problem is solved by solving this generated problem.
- We found the existing abstraction methods for strategy games rely on human knowledge, while abstraction methods in planning domain does not. Abstraction based on human knowledge performs well but cannot generalize to other games. Planning abstraction generalizes well but it finds difficulty to scale up. We designed *Elastic Monte Carlo Tree Search*, a domain-knowledge-free abstraction method that scales to strategy games.

Multi-Agent Learning for Multi-Task Learning

September, 2019 – September, 2020

Visiting Research Student

Yu Zhang Lab, SusTech, China

- I tried to model each task as an agent and use multi-agent reinforcement learning to solve the optimization of supervised multi-task learning problem.

Voice Assistant R&D for OPPO's Mobile Phone

October, 2018 – December, 2018

R&D Intern

Voice Assistant Group, OPPO Corp. China

- Together with colleagues, we designed the first-generation voice assistant for OPPO's mobile phones. I was working on Natural Language Understanding that maps text to tasks.

SELECTED PUBLICATIONS

Linjie Xu, Diego Perez-Liebana, Alexander Dockhorn. Towards Applicable State Abstractions: a Preview in Strategy games. *The Multi-disciplinary Conference on Reinforcement Learning and Decision Making (RLDM) - RL as Agency workshop*

Linjie Xu, Alexander Dockhorn, Jorge Hurtado-Grueso, Dominik Jeurissen, and Diego Perez-Liebana. Elastic monte carlo tree search with state abstraction for strategy game playing. *To appear 2022 IEEE Conference on Games (CoG), pages 1–8. IEEE, 2022.*

Linjie Xu and Yihong Chen. A Hierarchical Approach for MARLÖ Challenge. *2019 IEEE*

Conference on Games (CoG) (pp. 1-4). IEEE.

OPENSOURCE CONTRIBUTION

Code Contributor: **pytorch/pytorch**, Microsoft/nni

My Repository: [egg-west/AdamW-pytorch](#) got **90 stars** and **19 forks** from the community

SELECTED AWARDS

3rd Place (Solo) 2018 Marlo Challenge.

In Minecraft, an agent is supposed to finish levels of 3 different tasks. This challenge is held by Microsoft Research Cambridge.

Top 20 (5-people Group) ASC 2017 Challenge.

An international supercomputer challenge. I was responsible for GPU programming and Machine Comprehension Problem.

TEACHING

Machine Learning at Queen Mary, Demonstrator

Spring 2020, Autumn 2021

Game Artificial Intelligence at Queen Mary, Demonstrator

Autumn 2021

SKILLS

C++, C, CUDA, python