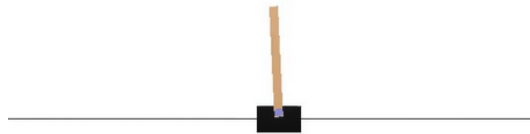

Deep Reinforcement Learning with Tianshou

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1 Experiment Description

Complete the experiment on **CartPole-v0** with **TianShou**. And answer following questions in your report.



2 Experimental Guidance

2.1 Step 1

Log into `~/work/tianshou/homework`.

2.2 Step 2

Run `python3 homework.py`

3 Questions:

- [1] Description the observation space of CartPole-v0.
- [2] Description the action space of CartPole-v0.
- [3] We use **Policy Gradient** in this experiment, please read the paper and write down your understanding for this algorithm.
- [4] Which method(on-policy or off-policy) is used in this experiment? And what is the difference of on-policy and off-policy?

4 Bonus (Optional)

You can complete this section to get bonuses.

4.1 The Effect of Discount Factor

You should change the discount factor(γ) in the code and re-run the experiment.

You need to discuss the function of the discount factor and how the discount factor influences the result. Write down your findings in your report.

4.2 Test and Visualization

Write a python file named test.py to test and visualize your trained model.

You need to submit your code files to tianshou/submission/code/ if you want to get the bonus.

5 Submission Requirements

You should submit a PDF file (report.pdf). The PDF file should contain your answers for above questions, the experimental results and your conclusion.

6 Attention

- We recommend that you typeset your report using appropriate software such as \LaTeX . If you submit your handwritten version, please make sure it is cleanly written up and legible. The TA will not invest undue effort to decrypt bad handwritings.
- Do not paste a lot of codes in your report (only some essential lines could be included).
- Please include experiment results using figures or tables in your report, instead of asking TA to run your code.
- **Plagiarism is not permitted.** Please finish your homework independently.

7 Reference

[1] Source code of Tianshou: <https://github.com/thu-ml/tianshou>