Selected Topics in RL

Lab 0

2024/9/03

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Basic Rules

- There are 4 labs with demo + 1 project.
- Demo on Monday evening.
- Demo pipeline:
  - Run model testing.
  - Explain your code.
  - Answer some questions.
- Plagiarism is prohibited.
- We will open a discussion forum on E3 for each lab and project.
- If you have any problems, please contact TA with email.
  - Use E3 email system.
  - Send emails to all TAs. (except the lab questions)
  - Clarify your problem.

LAB & Demo Requirements

- Upload your work to E3.
  - Code and report (.pdf).
  - Zip all files in one file and name it like DL_LAB1_yourstudentID_name.zip
    - E.g. RL_LAB1_312551113_蔡昀叡.zip
- Do not send it to TA.
- Do not upload your model weight to E3.
- Save your model weights in your machine for demo.

LAB & Demo Requirements

- Lab score:
  - Lab report score + Lab demo score.
  - The criterion details will be listed in each lab specification.
- Delayed hand in:
  - Hand in before the end of this semester. (score * 0.8)
- Please do your assignment as early as possible.

Lab 0

- Build the environment of gym and pytorch.
- Run the sample code given in E3.
- Don’t need to hand in anything in this lab.

```
import numpy as np
import torch
import torch.nn as nn
import gym

env = gym.make("ALE/Enduro-v5", render_mode="human")

# if you don't have GUI, you can use the following code to record video
# env = gym.make("ALE/Enduro-v5", render_mode="rgb_array")
# env = gym.wrappers.RecordVideo(env, 'video')

observation, info = env.reset()

total_reward = 0
for _ in range(100):
    action = env.action_space.sample()
    observation, reward, terminated, truncated, info = env.step(action)
    total_reward += reward
    # disable render() when you are recording video
    env.render()
    if terminated or truncated:
        observation = env.reset()

print("Total reward: {}".format(total_reward))
env.close()
```

Lab 0 Recommended Package Version

- python==3.9.17
- pytorch==2.0.1
- gym==0.26.2

Recommended Package Version

- gym 0.26.2
- numpy 1.25.2
- pytorch 2.0.1
- tensorboard 2.14.0
- opencv-python 4.8.0.76
- moviepy 1.0.3

Environment download tutorial

Create Environment in Conda

```
conda create --name RL python=3.9.17 # assign python version for conda environment
conda activate RL
conda install pytorch=2.0.1
pip install gym==0.26.2 # conda cannot install gym=0.26.2
pip install "gymnasium[atari, accept-rom-license]"
pip install moviepy
```

Conda download link: https://www.anaconda.com/download/success