Homework Assignment 3

AML 2024, Chennai Mathematical Institute

Due: Dec 20, 2024

Deep Reinforcement Learning for OpenAI Gym:

Your task is to train a DeepRL model to play the “Acrobot” game from the OpenAI Gym.
See: https://github.com/openai/gym on details about how to install and use this environment.

The Acrobot is a two-joint, two-link mechanism, and the goal is to get the end of the mechanism to touch the horizontal height marker. You can read more about this environment here.

The following is an example of a successful game:
https://www.youtube.com/watch?v=XNXxWhb8at0

Below is an example of running a random (untrained) agent in this environment.
https://www.youtube.com/watch?v=ACst59L0RLQ

You must first understand and document the actions, rewards and environment states. Then you have to develop a DeepRL model to play the game. You must compare the performance of this model with a random agent. You may build upon the “Cartpole” example we saw in class.

Instructions:

- You have to submit a jupyter notebook (ipynb) with all your code and outputs of the code
- You should also submit a 1 page writeup documenting what you have done
- If you don’t include the outputs you will get partial credit
- You can work in groups of 2 or 3
- Only one member of the group should submit the assignment
- Please mention the names and roll-numbers of all group members
- You are free to build upon examples shown in class
- Please confirm with the TAs that your submission has been received on time.
- No requests for re-submitting the assignment later because of various reasons will be entertained.