Assignment 1: Imitation Learning

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December 2022

1 Behavioral Cloning

1.1 Answer

Following files are modified:

- rl_trainer.py
- bc_agent.py
- MLP_policy.py
- replay_buffer.py
- utils.py
- pytorch_utils.py

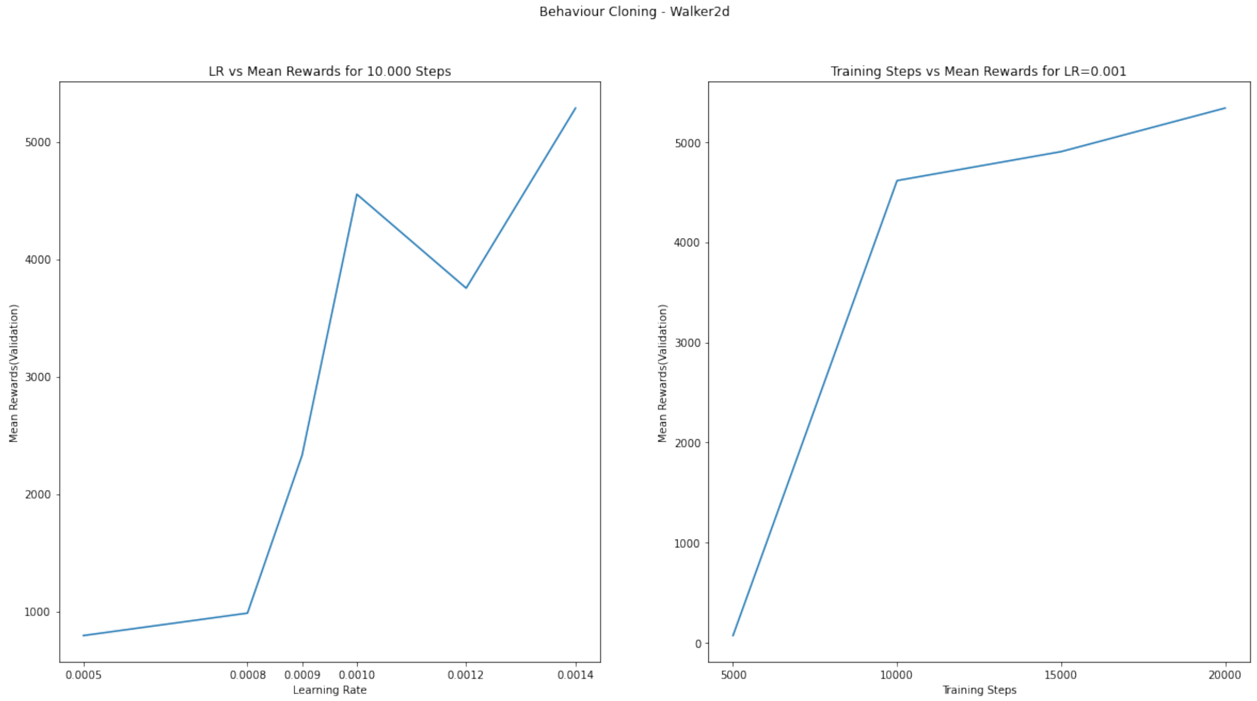
1.2 Answer

eval_batch_size 5000
ep_len 1000
num_agent_train_steps_per_iter 1000
n_layers 2
size 64
learning_rate 0.0005

	Hopper	Ant	HalfCheetah	Walker2d
Eval_AverageReturn	961	4604	4009	441
Eval_StdReturn	285	91	67	325
Train_AverageReturn	3773	4714	4206	5567
Train_StdReturn	2	12	83	9
Log_Loss	-351	-1518	-804	-507

1.3 Answer

Walker2d is performing worst. Mean and std results indicate learning is not happening. First thing to play with is the learning rate. After finding a reasonable LR, then training steps are adjusted.



Network with 2 Hidden Layers of size 64, 10K training steps per iteration, LR=0.001

2 DAgger

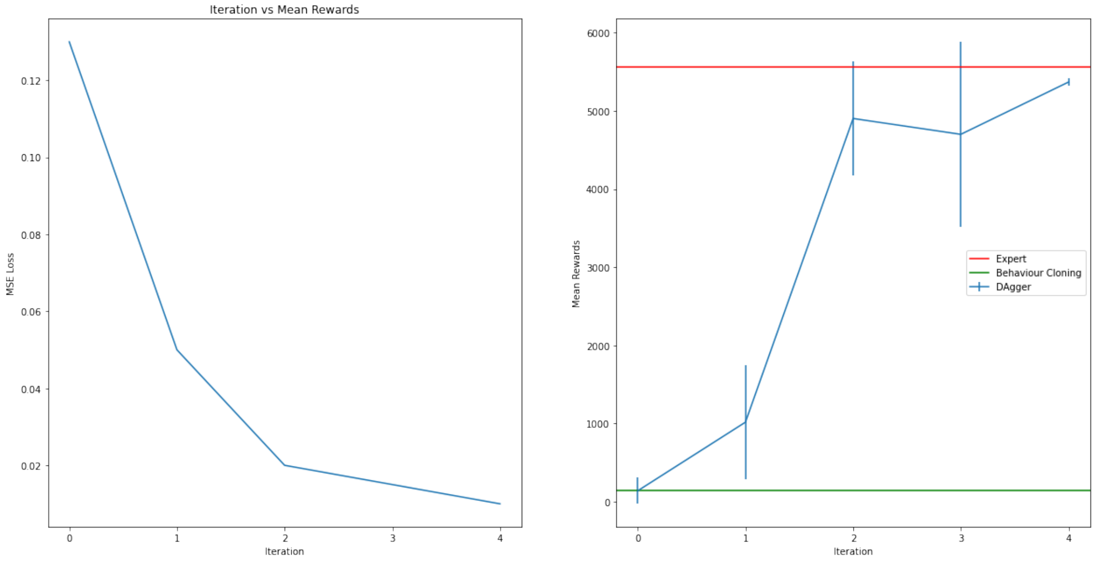
2.1 Answer

DAgger implementation is similar.

2.2 Answer

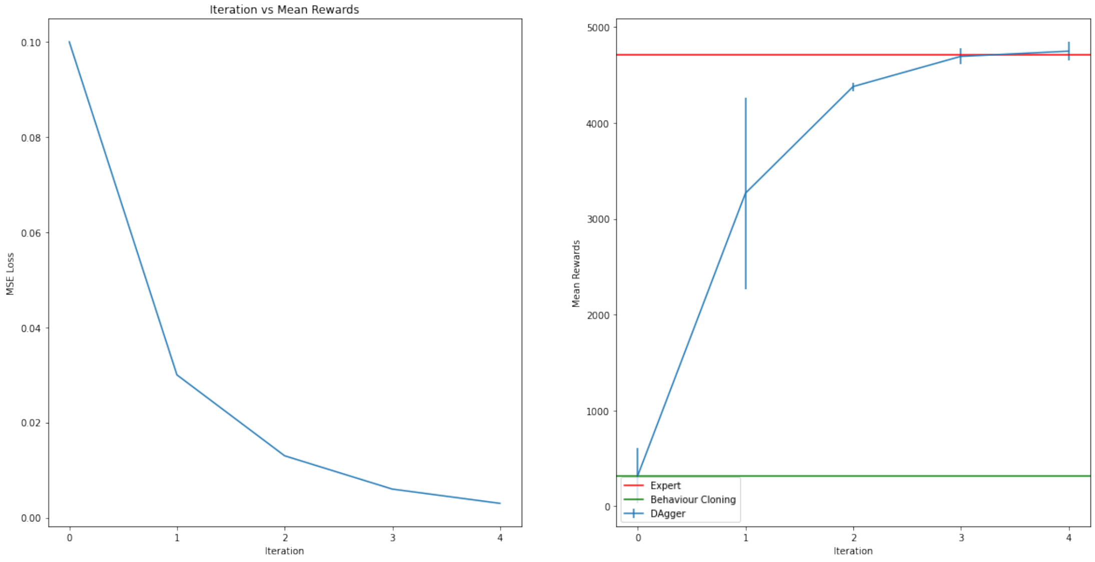
Ant and Walker2D environments are run with DAgger. Training steps are set to 2K. Learning rate is set to 0.001.

DAgger - Walker2d



Network with 2 Hidden Layers of size 64, 2K training steps per iteration, LR=0.001

DAgger - Ant



Network with 2 Hidden Layers of size 64, 2K training steps per iteration, LR=0.001