Reinforcement Learning results analysis

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Contents

Abstract

Reinforcement Learning results analysis.

1 Measures

One hundred tests were run a maze environment with two different hyper parameters configurations.

Each test consist of 1000 episodes with a limit of 300 steps per episode.

2 Adam optimizer

The figure 2 show the comparison between the SGD and ADAM alghoritm.

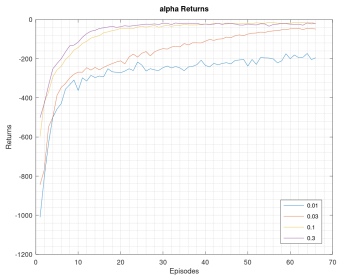
3 Hyper paramaters

The best value of α hyper parameter for linear regression single layer neural network is 0.1 with binary inputs not normalized (0 / 1 values).

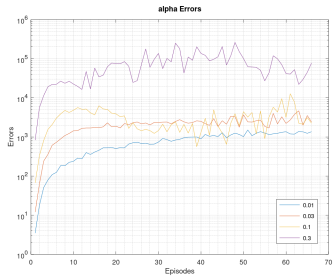
In case general with normalized inputs (-1 / 1 values) and multi layer neural network the α hyper parameter may be set to

$$\alpha = \frac{0.1}{n} \tag{1}$$

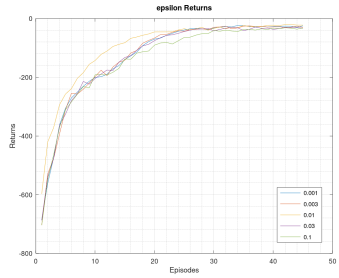
where n is the number of neural network parameters



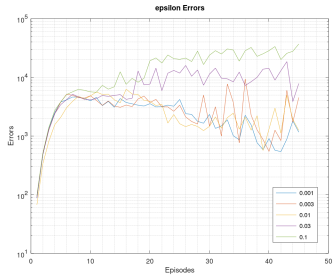
(a) α Returns.



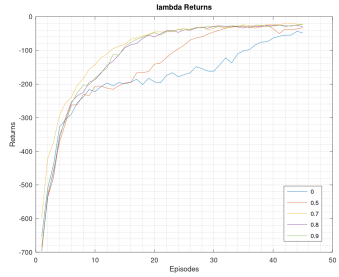
(b) α Errors.



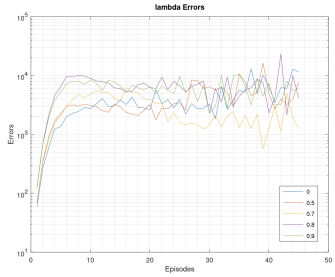
(c) ε Returns.



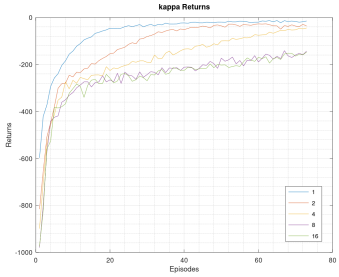
(d) ε Errors.



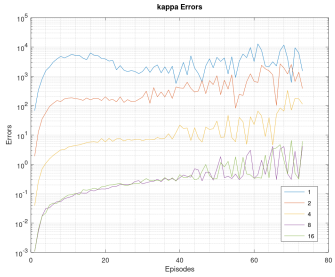
(e) λ Returns.



(f) λ Errors.

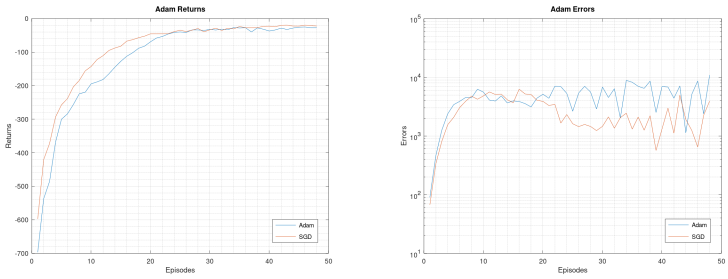


(g) κ Returns.



(h) κ Errors.

Figure 1: Hyper parameters



(a) α Returns. (b) α Errors.

Figure 2: Adam optimizer