CSE 4/546: Reinforcement Learning

Spring 2022

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Quiz 6

Due Date: March 20, Sun, 11:59pm

Description

You will be required to use one of the deep learning frameworks to implement value function approximation algorithms. For this quiz review the basics of the framework, that will help you to get started with Assignment 2.

You can go with any of Keras / Tensorflow / Pytorch frameworks. Although all of these frameworks are versatile and can solve deep learning problems, we encourage you to explore Pytorch. Recently this framework has been accepted by RL communities, and it also mostly provides better performance and faster convergence on RL-related tasks.

If you are planning to use CCR GPU resources, complete the task on CCR.

Task

1. Complete ONE of the tutorials listed below [9 points]

Use your own example values and hyperparameters, where applicable, while following the tutorial examples.

2. Hyperparameters changing [7 points x 3 (different sets of parameters for NN)]

Provide the results of the neural network setup using THREE different sets of parameters (consider changing the number of layers, number of nodes, activation function, optimizer, etc).

While evaluation, accuracy will not be considered as a priority. The main motivation is for you to explore how different NN setup influences the accuracy of the model.

Tutorials (choose one)

Pytorch

Deep Learning with Pytorch: A 60 Minute Blitz

Tips:

1. To get started -- click on Next button on the bottom right
2. Complete all parts:
    - Tensors
    - A Gentle Introduction to torch.autograd
    - Neural Networks
    - Training a Classifier
3. You can combine all the results into one jupyter notebook file. There is no need to include theoretical materials. Code with your values and clear section naming is sufficient.

Keras / Tensorflow

Introduction to Keras

Submission [Due: March 20, Sunday, 11:59pm]

Submit the work as Jupyter Notebook (.ipynb) with all the outputs to UBlearns under Quiz 6.