Homework 3 (Due 03/01/2022, 8PM EST)

Starter code repository and references:

d3rlpy: https://github.com/takuseno/d3rlpy

To submit HW3, please send the link to the Google Colab notebook

1. **Build a pipeline for offline RL using d3rlpy:**

   Hint: In this homework, you will implement a simple pipeline for offline RL using the APIs provided in d3rlpy repository.

   Train CQL:

   - Pick (any) one environment/dataset in d3rlpy (https://github.com/takuseno/d3rlpy).
   - Train your CQL agent with the data from the behavior policy.
   - Generate true Q vs training steps (may include different dataset sizes, task difficulties) plots.
   - Generate estimated Q vs training steps (may include different dataset sizes, task difficulties) plots.

   Train OPE (FQE):

   - Train OPE (FQE) to evaluate the trained policy.
   - Generate estimated Q vs training steps (may include different trained policies) plots.
   - Include the true Q in the same plots.

[Requirements]:

- Build a pipeline for offline RL (data processing, training, evaluation).
- Compare the true Q value with estimated Q value for both offline RL training and offline evaluation.

[Software Setup for Development]:

1. git clone the d3rlpy source code repo (development version) to your local machine (no need to install it on your local machine). https://d3rlpy.readthedocs.io/en/v1.0.0/installation.html#install-from-source
2. Download the Google Drive Desktop (to sync with your Google Drive). https://www.google.com/drive/download/
3. Sync the cloned d3rlpy code repo (on your local machine) with the one in your Google Drive using Google Drive Desktop.
4. Connect your cloned d3rlpy code repo stored in your Google Drive with your Google Colab notebook.
5. Install the cloned d3rlpy code repo in your Google Drive using Google Colab (install it on Colab). https://d3rlpy.readthedocs.io/en/v1.0.0/installation.ht

ml#install-from-source

6. Use any editor (e.g. Sublime, PyCharm, etc.) for the code implementation (modify the code in the cloned d3rlpy on your local machine).
7. Test your implementation and running experiments using Colab.
8. Push your code in the cloned d3rlpy on your local machine to your repo in your GitHub account.

[Submission]:

(We don't need a link to your Google Drive. We only need the link to your GitHub using the Colab notebook)

1. Create a new Colab notebook.
2. *!pip install git+"your github URL"*
3. Training/testing experiments using the Colab notebook.