

EE466000 introduction to reinforcement learning

Homework 3: Gridworld

Due: April 25, 2021 23:59

Goal

- Use dynamic programming to find an **optimal policy** in HW2.2

Todo

- Implement an algorithm:
 - ✓ Use bellman equation for $q_*(s, a)$

Details

- File description
 - `HW3.ipynb`: You'll implement an algorithm in the file.
- Gridworld environment

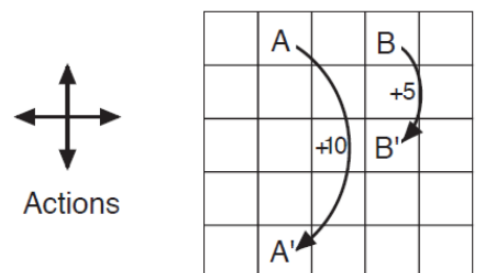
Example Gridworld

- State: cell of the grid
- Action: north, south, east, and west
- Reward:

Actions take the agent off the grid $\rightarrow R=-1$ and its location unchanged

Actions move the agent out of A or B $\rightarrow R=10$ or 5 ,
its location is relocated to A' or B'

Other actions $\rightarrow R=0$



18.78	24.42	18.78	19.42	14.73					
18.78	21.98	24.42	24.42	21.98	17.48	19.42	19.42	17.48	14.73
17.80	24.42	17.80	19.42	14.42					
19.78	21.98	19.78	17.48	15.73					
16.80	19.78	17.80	17.80	19.78	16.02	17.80	14.42	16.02	13.42
16.02	17.80	16.02	14.42	12.98					
17.80	19.78	17.80	16.02	14.42					
15.02	17.80	16.02	16.02	17.80	14.42	16.02	12.98	14.42	11.98
14.42	16.02	14.42	12.98	11.68					
16.02	17.80	16.02	14.42	12.98					
13.42	16.02	14.42	14.42	16.02	12.98	14.42	11.68	12.98	10.68
12.98	14.42	12.98	11.68	10.51					
14.42	16.02	14.42	12.98	11.68					
11.98	14.42	12.98	12.98	14.42	11.68	12.98	10.51	11.68	9.51
11.98	13.42	11.98	10.68	9.51					

table of an algorithm.

Requirements and Installation

- Python version: 3.6
- pip install matplotlib
- pip install numpy

Report

- **Title, name, student ID**
- **Implementation**
 - ✓ Briefly describe your implementation.
- **Experiments and Analysis**
 - ✓ Plot tables of an algorithm. (As example above)
 - ✓ Whether q_values are reasonable?
 - ✓ Compare the table to the table of HW2.2.

Reminder

- Please upload your code main.py and report.pdf to iLMS before 4/25 (Sat.) 23:59. **No late submission allowed.**
- DO NOT zip your code into a single file.
- Please do not copy&paste the code from your classmates.
- Please **write a README file** to explain how to run your code if you implemented extra functions.