

CS432/632: Reinforcement Learning

Lab Assignment #2

Due Date: February 15, 2023

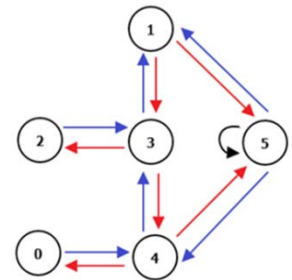
Instructor: Dr. Surya Prakash (E-mail: surya@iiti.ac.in)

Course TAs:

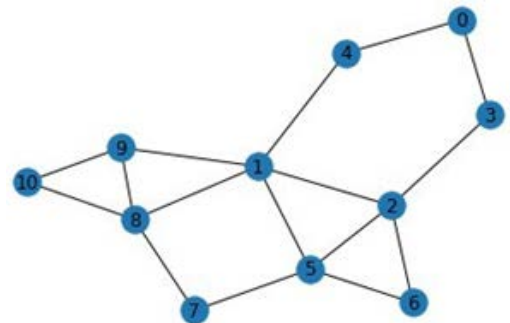
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Use Q-Learning and provide solution to following problems. You should make use of epsilon-greedy strategy to handle the exploration/exploitation trade-off.

Problem 1: The figure shows a maze through which the agent should go and find its way up to the goal stage (stage 5). Given an initial condition of, say, **state 2**, find the optimal path, in order to maximize a certain outcome. For example, given an initial condition of, say, state 2, the optimal sequence path is clearly 2 - 3 - 1 - 5.



Problem 2: Find the shortest path from 0 to 10. Hint: To attract walks to edges involving 10, give these actions high reward. Set all rewards to 0 except the actions arriving node 10.



Problem 3: Find the optimum solution (path) for the car to start from the given point and reach designated destination without falling into the pits shown as shaded area in the below grid world.

Start			
			End

Problem 4: Solve the above problem considering shaded cells as pillars in place of pits.

Submission: The programs written for these problems need to be submitted at the end of the lab. The submissions will be taken using a Google form and the link for the same is <https://forms.gle/RqKo73ksers7LfAQ6>.