Universitat Pompeu Fabra Barcelona

24304: Artificial Intelligence 2022

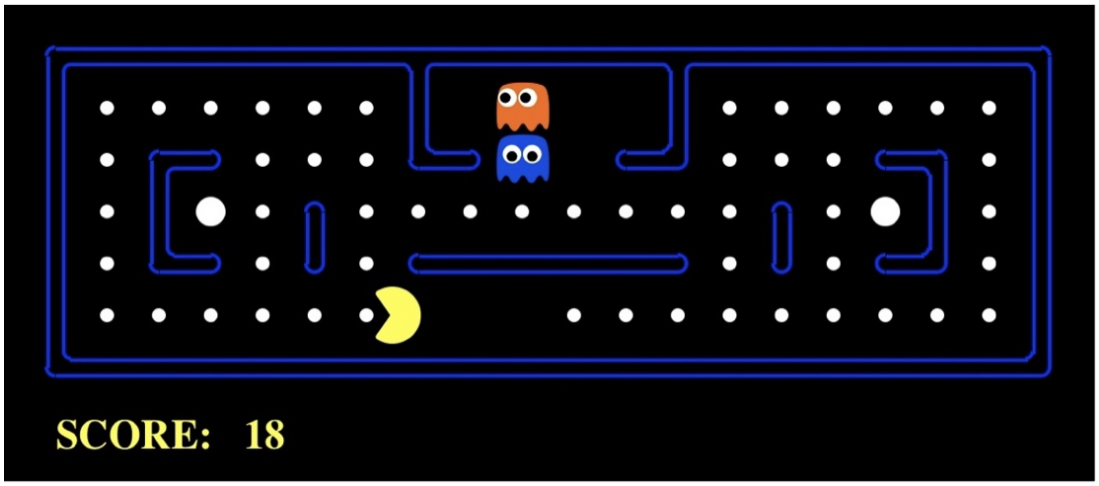
Lab Project 3: Reinforcement Learning

Deadline: 23 November @ 11:59pm (no questions after 21 November 12:00am)

This project counts towards 5% of the grade for this course.

This assignment must be done in groups of 2 students.

The purpose of this project is to get you acquainted with reinforcement learning using Berkeley Pacman:



https://inst.eecs.berkeley.edu/~cs188/su21/projects/

Your task is to answer **questions 1, 2, 3, 6 and 7** of Project 3 (P3: Reinforcement Learning). **You do not need to complete the remaining questions.**

https://inst.eecs.berkeley.edu/~cs188/su21/project3/

You can download the zip with all the necessary files to complete the project, the description of the task is contained within that. Please make sure you follow the instructions in the project specification and in the source code. In particular, you should add your code where it says: "***** YOUR CODE HERE *****".

Comments: You are required to **add comments to your code**, explaining how the functions you implemented work. This helps us interpret your code and assess your understanding of your proposed solution.

Marking criteria: We will follow the marking criteria specified in the project instructions. Observe that while the autograder is a useful indication of your performance, it is not the ultimate mark. We reserve the right to run more tests and inspect your code manually.

Submission: Your group must submit the solution to the Aula Global submission, only one submission per group. Please make sure you adhere to the following instructions:

1. Your code should adhere to **Python 3.6**. The whole Pacman infrastructure works under that version, so please program your solutions for 3.6. Using a different version will risk your program not running with the autograder and you may risk losing points.

2. You have to **submit just one zip** file with extension .zip. It's name must be "p3_uX_uY.zip", where X and Y are each student's personal U number at UPF. Any other compression format (e.g., rar, tar, bzip2, etc.) will not be marked.

3. In the zip file, **include only the** `py` **files you have to modify** according to the project's description. Do not modify the filenames, otherwise our scripts will fail to execute your code and it will attract zero marks. So in this project you must submit the file `valueIterationAgents.py`,`qlearningAgents.py` and `analysis.py`.

4. Put all your `py` files in the **root** of the zip files. Do not create any directory in the zip file submitted.

5. **Only one group member should submit** the zip file.

Submissions not compatible with the instructions above may lead to points being subtracted and do not warrant a re-submission. Please make sure to adhere to the instructions.

Silent Policy: A silent policy will take effect on 21 November. This means that no question about this assignment will be answered after this day, whether it is asked on the forum, by email, or in person.

Academic Misconduct: This assignment is worth 5% of the overall course grade. You may not collaborate with people outside your group, or plagiarise their work. Groups are expected to present the results of their own thinking, problem solving, and coding. Never copy another group's work and never give your written work to others. Never copy your solution, or part of it, from the web or any other resource. Adapting someone else solution does not make it your own work: you are meant to generate the solution to the questions by yourself. You may however reuse code or techniques that are auxiliary to the problem being solved, for small things (e.g., use a NumPy function to perform an operation), as long as you understand well the code being reused and document where it comes from. In this case, make sure to document the source of this code in the comments, and the specific use you are making.

Plagiarism is a very serious issue. Suspected collusion or plagiarism will be dealt accordingly.

Forum postings on assignment: Do not ever post any information on the forum that may disclose how to solve a question or what the solution may be. You can only post assignment related questions for clarification on what is being asked, for example, whether a formal proof is required in a given exercise or to clarify certain notation. Any post discussing possible solutions or strategies may directly be considered plagiarism, see above. **If in doubt, do not post** and ask your question to the tutor instead.

Good luck!