

Here are the instructions for the last assignment.

1. Pick an Atari game from this [page](https://gym.openai.com/envs/#atari) (<https://gym.openai.com/envs/#atari>)

You may use the image two different kinds of observations:

- IMAGE: the observation is an RGB image of the screen, which is an array of shape (210, 160, 3)
- RAM: the observation is the RAM of the Atari machine, consisting of 128 bytes

2. Select a subject

You may choose one of the methods discussed in class (Qlearning / Value function approximation / Policy gradient), and one subject of study, such as (for example):

- **Comparison of strategies for epsilon** (constant, linearly decreasing, other decreasing function),
- **Comparison of values for gamma** (several values between 0 and 1),
- **Comparison of values for alpha** (pick several values),
- **Comparison of topologies for the ANN** (nb. of layers, nb. of neurons, dense or convolutional),
- **Comparison of strategies for the rewards,**
- **Other free subject (to be validated with an instructor).**

3. Fill in the [spreadsheet](#) (aller voir le fichier `si4-ia-groups-2021.xlsx`)

Input your choice in the spreadsheet before May 6 noon.

IMPORTANT: given the large choice, no 2 groups are allowed to pick the same combination!

4. Do the job

v0: code that allows you to play and see rewards during the game (print on stdout)
First run: print the scores for each game. The curve could be very noisy. So use a running average of cumulative rewards (watch the size of running average or the method used for computing the average).

Depending of your subject choice, vary some parameters and print the results as for the first run, and compare.

You can use any piece of code you can find on Internet but it is **mandatory** to cite all sources in your report.

5. Submit your work before Friday May 14 18:00

The work is to be done in groups of 2 (groups of 3 exceptionally, grading more strict).
Submit py+pdf or ipynb+pdf export before Friday May 14 18:00.

One submission per group.

Submission consists of :

- an archive with a text document (pdf) and code (.py)
- **or** an archive with a jupyter notebook (with your text inside the notebook) and a pdf export of the notebook.

Text can be written in french or english using available tools for orthographic and grammatical corrections (Grammalecte, ...).