# RL code challenge for internship 

This is an exercise for the internship position interview process. Hopefully you will enjoy playing with RL as much as we do. Beyond that, the purpose of this is exercise is to showcase your:

- Understanding of different elements of a RL solution,
- Capabilities in modifying an environment,
- Ability to develop a quick RL solution,
- Knowledge on shortcomings of your solution and possible remedies for them,
- Coding practices, and
- Presentation abilities.

Please note that the goal is not to create a new RL algorithm, or training a very high performing agent! Nevertheless, feel free to do that if you like ;)

**Task 1:**

- Get yourself familiar with the CartPole environment in gym
- The environment has two actions: push and pull. Add a third action to the possible actions where the agent does not do anything, not pushing, not pulling

**Task 2:**

- Find a deep RL solution for your new environment, either develop an algorithm from scratch or use a RL library. What matters here is you should be able to explain how the algorithm works.

**Task 3:**

- Make a presentation of your solution, with an emphasize on:
    - Description of the environment
    - Clarifying the steps you took towards the solution
    - Possible extension of your solution
    - Possible shortcomings

**Task 4 (Bonus):**

- The current design of the reward is equivalent to the optimization goal of holding the stick up as long as possible. Can you modify the reward to reflect the energy/effort used by the agent in the optimization goal?
- Super-bonus: Implement your suggested reward and analyze the results of the training.

Please keep your solution and the presentation in **Private** github repo and share them with us (github id: ahmed-akakzia)