

HER = **H**indsight **E**xperience **R**eplay is a method in reinforcement learning that focusses on learning from positive experiences rather than negative ones.

If the agent does not get to the goal state \mathbf{g} but instead ends up in state \mathbf{s}' , usually one defines a negative reward associated with failure, which is assigned to all terminal states \mathbf{s}' except \mathbf{g} . However this can lead to problems. Consider the following example:

Task:	Go from green to red without crossing black lines
Actions:	up, down, left, right
Terminal state:	red
Secondary terminal conditions:	maximum number of steps taken.

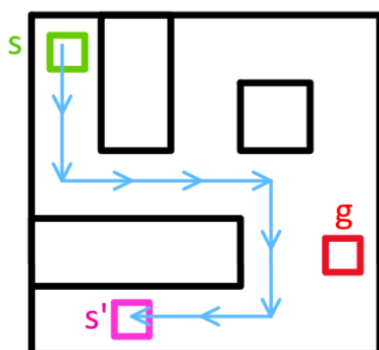


Figure A: wrong path

HER tries to improve this reward assignment by redefining the goal before assigning rewards. This requires the goal to be an explicit input though, that is saved in the state. This can increase the complexity of the state significantly.

In this new state representation every action sequence can be rewarded because the final state is always considered to be the goal, making the agent learn from every episode, even if it did not reach the actual goal.