UDACITY

PROJECT

Train a Smartcab to Drive

A part of the Machine Learning Engineer Nanodegree Program

PROJECT REVIEW

CODE REVIEW

NOTES

SHARE YOUR ACCOMPLISHMENT!

Requires Changes

3 SPECIFICATIONS REQUIRE CHANGES

You have made great progress.

Think through the questions I asked and put your thoughts in your report. I hope they are helpful for your understanding of the whole project.

实施基础驾驶智能体

✓

学生能够实施智能体接受指定输入所需的接口。

✓

驾驶智能体产生有效输出（one of None、'forward'、'left'、'right'），以响应输入。

✓

驾驶智能体在模拟器中正常运行，未产生任何错误。奖励和惩罚没有必要——我们允许智能体出错。

确认并更新状态

学生确认了模拟驾驶智能体和环境的状态，并给出了合理的理由。

> From your report, it is not clear what are included in the agent state.
> You mentioned about "Time Left", "Traffic state", "Next_waypoint", and "Locations". Are they the states you are considering for agent states? In your code, you are using system "inputs" for the state.
> Could you please clearly explain what are the "factors" you are using for the agent state?
> Remember, agent uses the states to make decision for actions and learn from the result (action and reward).

For Question 2, it is not still not clear what should be included and what should not.

You have listed "location" and "deadline" in "factors of states", but in the next "states of numbers" part they are not in calculation. Are they in or out? Is there any confusion or concerns?

This is the core of Q-Learning and this whole project, so please make sure to address this clearly in your report to demonstrate you have thought it through.

✓

驾驶智能体运行时会根据当前输入更新自己的状态。确切的状态并不重要，也无需与输入有关系，但应该在运行时进行相应更改。

实现 Q 学习

✓

驾驶智能体会正确更新 Q 值的表/映射，从而实施 Q 学习算法。

Great job!

✓

鉴于某个状态当前的 Q 值集，智能体会选择可用的最佳动作。

✓

学生报告了观察到的行为变化，并提供了合理解释。

增强驾驶智能体

✓

驾驶智能体不断按规定时间到达目的地，并且净奖励保持为正数。

Found your QLearning.py and it runs great!!!

已报告了学生在 Q 学习基础实现期间所做的改进。

You are on the right track!

Good job listing different combination of parameters.

Now you have a good understanding of those parameters, you can do more combinations.

- What epsilon values you used for running those combinations (don't see them in the combination table)? You mentioned in your report 0.1 or 0.01. Are they good enough? Can you try 0.05, 0.1, 0.15, and 0.2 to see whether epsilon makes differences.
- How you get the success rate, how many 100-trails you have run to get the rates in your combinations? Since the runs are randomly generated, it is recommended to run the same combination multiple times to reduce the randomness.

Parameter tuning is very important step to improve agent performance. Make sure to do it thoroughly. Make sure to report and present it thoroughly to demonstrate you have mastered this part.

从最终驾驶智能体与学习最佳策略的关系角度讨论了该智能体的性能。

> The optimal policy is more related the ultimate goal of this project, what we want to achieve by training the agent.
> Please notice that, the agent is trained in a simplified simulation environment. All the conditions, e.g. next_waypoint, traffic lights, step rewards, and deadline, are all designed to help the agent to learn. Any changes of those conditions shall affect the agent performance.
>
> With that in mind, could you please use the performance of your agent and compare it to the optimal policy?
> Please discuss in your report,
>
> - is your agent learning the optimal policy well?
> - anything that limits the agent to fully learn the optimal policy?
> - if the agent can achieve 100% success rate, is it good enough to run in the real world?

The main points for this question are:

- What is the optimal policy

- Did your agent learn it from the training

Your report mentioned "Even the agent can have 100% success rate, there are still in-time situation occurs at driving. This model still need to be done for improvement", Good Point!
My question is: your agent has 97% of success rate, how can you draw the conclusion "So I think this optimal policy is well!"

RESUBMIT

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