Project 2 Wrapper

James Root - CS 3600 - Spring 2021

Question 1

As stated in the overview, score for the game is given by collecting power ups and doing tricks, but not for completing the course. This information is obviously reflected within the video. Since there are rewards for collecting the turbo power up, the MDP finds the most efficient way to collect the most turbo cans, resulting in the final loop we see from the boat. These turbo cans contribute to the utility of this area that the boat resides in along with the nearby trick ramp (which may explain why the boat chose these three specific cans) while progressing to a further part in the lap has no contribution to utility. There is no motivation within the MDP to move further in the course.

Question 2

For humans, there is an inherent incentive to finish a race and beat those that they are competing against. Though faster times and better placement is not reflected within the score, humans have a MDP-like process within their head which weighs the value of score, placement, and finishing. It is a loss for them to not finish the race, as there are other things for them to do.

Question 3

One way that this reward function could be modified is to add a distance from lap finish (not as crow flies, but Euclidian) for each state in the map into the reward function. The closer the state is to finishing the race, the more favorable it is for the boat to go there. Another modification could be to include the distance between the main boat and highest placed other boat into the reward function to incentivize the boat to be further along the map from the other boats.

Question 4

Consider a scenario in which the passenger is running late for a big meeting. They are needing for the car to be speedy and cut corners for them to arrive at their destination in time. If the car completes this task, the driver could potentially reward the system with a massive tip, thus incentivizing this behavior. If enough money is paid or enough of these situations happen, we run the risk of this behavior being learned for all future rides. This fast-driving style would put all three of the passenger, pedestrians, and other drivers in danger.