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COMP 341 ASSIGNMENT 2

REPORT

Answer 1:

As a feature, I used manhattan distance between ghost and pacman, and, manhattan distance between food and pacman to get higher score from the game. I used reciprocals for my features. Since pacman want to be close to the food in the minimum distance, to take that value, we should reciprocals. I am using negatives some of the ghost contributions whether scared times 0 or not. If one of the values in scared times is 0, we should take negative of ghost heuristic since pacman will want to be as far as from ghosts. Otherwise, pacman can eat the ghosts, so pacman wants to be as close as possible to the ghosts.

Answer 2:

In my test cases, AlphaBetaAgent was faster than MinimaxAgent between pacman actions. AlphaBetaAgent is making 2 more moves compared to MinimaxAgent in 20 secs. Since AlphaBetaAgent uses pruning, which does not visit every game state, it is faster than MinimaxAgent that visits every game state.

Answer 3:

They followed the same path till some point, but, in 20 secs, because AlphaBetaAgent is faster than MinimaxAgent, AlphaBetaAgent made 2 more moves compared to MinimaxAgent in given 20 secs. If we should be able to observe their resulting paths at the end of the game, we would see their resulting paths were the same. Hence, for given 20 secs, their paths were not the same.

Answer 4:

In given 20 secs, both ExpectimaxAgent and MinimaxAgent have the same performance. They are doing same amount of actions (13 movement in 20 secs). Since AlphaBetaAgent runs faster than MinimaxAgent, AlphaBetaAgent also runs faster than ExpectimaxAgent consequently (15 movement in 20 secs for AlphaBetaAgent).

Answer 5:

Different from what I did question 1, I added value of currentGameState.getScore() to the resulting contribution, which is named as heuristic in my evaluation function, additionally. The rest is same with what I did question 1. In question 5, we evaluated how good is being our current state. In question 1, we evaluated how much is better taking an action to next state from current state.

Answer 6:

In question 5, the only thing different from question 1 is contribution of score in resulting contribution, which is named as heuristic in my evaluation function, additionally. In question 5, we evaluated how good is being our current state. Adding score in resulting contribution, I calculated the value of current state.