Tristan Bowler
U0672504
Project2 Written

Question 1:
(0.5 pt) What feature (or features) did you use for your evaluation function?

I used the closest ghost, the closest food, and the scared status of the ghosts. For the food, Pacman has a positive weight of 8/closestFoodDistance to move him towards the food. For the ghosts, if they are scared, Pacman moves towards the closest one and vice versa with a weight of 16/closestGhostDistance.

Question 2:
When Pacman believes that his death is unavoidable, he will try to end the game as soon as possible because of the constant penalty for living. Give an explanation as to why the Pacman rushes to the closest ghost in this case ?

This action would result in a higher overall score. By wasting time avoiding inevitable death, Pacman lowers his score in the long run so rushing toward the ghost gives a slightly higher final score.

Question 4:
You should find that your ExpectimaxAgent wins about half the time, while your AlphaBetaAgent always loses. Explain why the behavior here differs from the minimax case.

Expectimax Agents run on an average value of all of their available moves, thus their wins and losses should be expected to be a wash. AlphaBeta Agents however, have the unlucky aspect of going second to a Pacman agent that gets to go first and won't waste time looking at options once he's already guaranteed to win. In minimax, the agents still have the disadvantage going second, but Pacman exhaustively looks at all of his options, thus wasting time in the Agents' favor.

Question 5:
What features did you use for your new evaluation function?

I used all the same factors as in part one: closest ghost, closest food, and scared status of ghosts. I lucked out and my code from part one was good enough to satisfy this part as well.

Self Evaluation:

1. What was the hardest part of the assignment for you?
Firstly, trying to think of good features for the first and fifth part. I basically had to break down the goals of Pacman into its building blocks and think of it that way. Which were: 1) eat all the dots, 2) don't get eaten by ghosts, 3) eat scared ghosts for a score boost. Secondly, getting the minimax agent set up.

2. What was the easiest part of the assignment for you?
The Alpha Beta and Expectimax Agents. These were VERY similar to minimax and the pseudocode was provided on slides and in the assignment. So once minimax was implemented only a couple of changes needed to be made to get these working.

3. What problem(s) helped further your understanding of the course material?
One and Five helped me learn to break down problems into bite sized chunks (pun intended). The rest helped give me a deeper understanding of the algorithms we have discussed in class.

4. Did you feel any problems were tedious and not helpful to your understanding of the material?
No I think this assignment was pretty spot on as far as having focused learning objectives and outcomes.

5. What other feedback do you have about this homework?
Prof. Kuntz was right, this once did feel a lot shorter than the other one. I feel like since we had to work so hard to understand the code base in the last one, it was pretty easy to find what I was looking for in the code this time round.