

Comp341 Assignment 2 Report

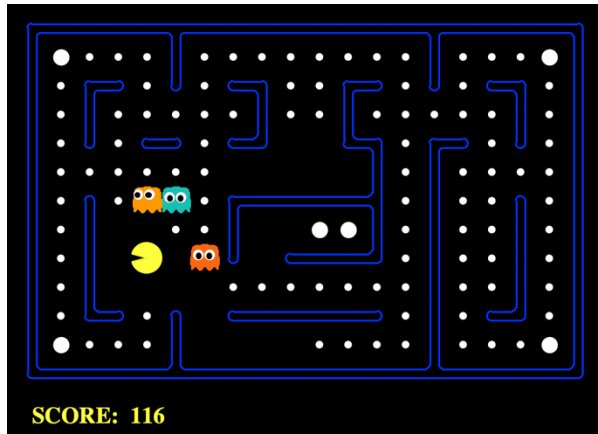
Name Surname: Burak Yıldırım

Student ID: 72849

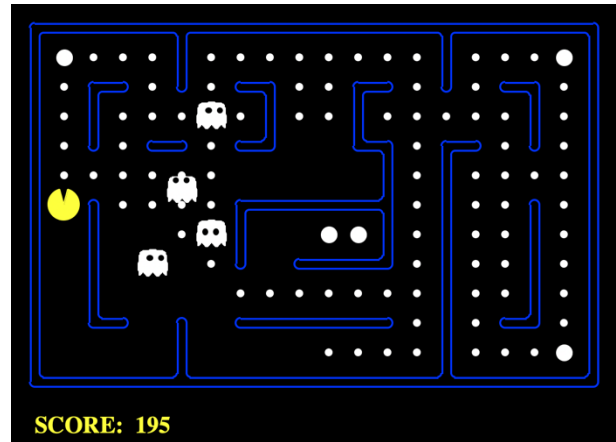
Q1)

I used the current score, the nearest food distance and the nearest ghost distance for the reflex agent. I picked them because they are the most apparent due to having a nearby food should impact positively and having a nearby ghost should impact negatively. Although, I prioritized ghost over food by giving weights due to food can be eaten later on but we shouldn't be caught by a ghost. I think that using reciprocals and negatives of some values is a good idea due to the fact that we can prioritize some features. For instance, if we eat a capsule then we could use reciprocal values for ghosts.

Q2)



Minimax



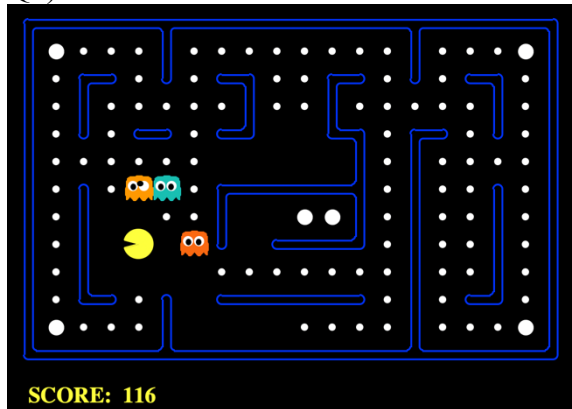
AlphaBeta

In the same amount of time which is 20 seconds, it can be seen that AlphaBeta gives decisions faster due to pruning some of the nodes. It acted faster and achieved a higher score in the same amount of time.

Q3)

Yes, pacman performed the same moves since minimax and alphabeta algorithms work the same and find the same root value in the end. Although, alphabeta can have incorrect node values except root. Both algorithms give optimal results. Alpha beta prunes the tree so that it eliminates some nodes which results with being more faster compared to minimax.

Q4)



Expectimax agent and minimax agents came to the same state in 20 seconds of time. Since it doesn't involve any kind of pruning operation expectimax and minimax performs same in terms of time. They both have to look for the whole tree.

Expectimax

Q5)

My evaluation function for the reflex agent was achieving high scores. Thus, I followed an almost similar approach but this time I looked for the currentgamestate instead of successorgamestate. In addition, I subtracted the total number of remaining capsules from the total score. Taking the remaining capsules into account increased the average score significantly.

Q6)

While tuning the weight of the features that I used in my evaluation function, I selected a lower constant for eating the nearest food than for escaping from the nearest ghost because running away from ghosts is more important than eating a food. For the remaining number of capsules, I multiplied it with 32 and subtracted from the total score because I performed tests and find 32 as a reasonable weight by increasing the score. I tested other constants as well and find 0.92 as the weight for eating the nearest food and 1 as the weight for escaping from the nearest ghost.