

Assignment 5: Adversarial Search

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Discuss Your Evaluation Functions

First evaluation function

Document the features you considered, tried and/or used for your evaluation functions. You should include at least three distinct features.

The features that I have used in my evaluation function are:

- Distance to closest food
- Distance to closest ghost
- Is there less food in successor state (does the Pacman eat food?)?
- Is there a power pellet in the successor state?
- Sum of the ghosts' scared timer
- Is the action taken STOP (Pacman does not move)?

Which feature weights proved the most fruitful? Why would you (not) use reciprocals of the features?

The features that have weights:

- Distance to closest food
- Distance to closest ghost
- Is there less food in successor state (does the Pacman eat food?)?
- Sum of the ghosts' scared timer (current and successor state)

The rest have a solid 10000 score addition (eating capsules) or subtraction (not moving).

I did not use reciprocals for any of these features because they are important to the score calculation and any big change in these features should result in a big change in score.

Second evaluation function

Document the features you considered, tried and/or used for your evaluation functions. You should include at least three distinct features.

The features that I have used in my evaluation function are:

- Amount of food
- Distance to closest food pellet
- Distance to closest power capsule
- Distance to closest ghost
- Sum of the ghosts' scared timer
- Is the closest ghost scared?

I also tried to use the amount of ghosts, but it had no effect in my evaluation function, probably because there are no power capsules in the tests and the number of ghosts remains unchanged.

Which feature weights proved the most fruitful? Why would you (not) use reciprocals of the features?

The features that have a weight different than one are:

- Distance to closest ghost
- Distance to closest capsule
- Sum of the ghosts' scared timer

The features that use reciprocals are:

- Amount of food
- Amount of ghosts
- Amount of power pellets

I tried putting a weight to the "Is the closest ghost scared?" but it did not have any effect on the score.

I also tried putting a weight on the amount of food or ghosts, but it did not have any effect either.

I used a weight first for the closest capsule distance, but changed it to a reciprocal later because it gave me a higher average score.

I did not use reciprocals of the distance to closest food or ghost, because I needed them to have the backbone of the result. They are more important and as such need to have the most weight in the result calculation.

I used reciprocals on the amount features because I wanted them to have a smaller impact on the score (big numbers have smaller impact).