edX

p2_multiagent_q5_evaluation_functions
Question 5 (6 points): Evaluation Function

Write a better evaluation function for pacman in the provided function `betterEvaluationFunction`. The evaluation function should evaluate states, rather than actions like your reflex agent evaluation function did. You may use any tools at your disposal for evaluation, including your search code from the last project. With depth 2 search, your evaluation function should clear the `smallClassic` layout with one random ghost more than half the time and still run at a reasonable rate (to get full credit, Pacman should be averaging around 1000 points when he's winning).

```
python autograder.py -q q5
```

Grading: the autograder will run your agent on the `smallClassic` layout 10 times. We will assign points to your evaluation function in the following way:

- If you win at least once without timing out the autograder, you receive 1 points. Any agent not satisfying these criteria will receive 0 points.

- +1 for winning at least 5 times, +2 for winning all 10 times

- +1 for an average score of at least 500, +2 for an average score of at least 1000 (including scores on lost games)

- +1 if your games take on average less than 30 seconds on the autograder machine. The autograder is run on EC2, so this machine will have a fair amount of resources, but your personal computer could be far less performant (netbooks) or far more performant (gaming rigs).

- The additional points for average score and computation time will only be awarded if you win at least 5 times.

Hints and Observations

- As for your reflex agent evaluation function, you may want to use the reciprocal of important values (such as distance to food) rather than the values themselves.

- One way you might want to write your evaluation function is to use a linear combination of features. That is, compute values for features about the state that you think are important, and then combine those features by multiplying them by different values and adding the results together. You might decide what to multiply each feature by based on how important you think it is.