## Artificial Intelligence Course

## Project 2: Multi-Agent Pacman

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### Comments about the assignment (if you have)

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**Question 1: Reflex Agent (4 points)**

In this task we were supposed to create logic for Pacman, where it is able to realize nearest food and ghosts around him. We try to calculate tge best possible move

First we calculated how much food there is left on the board, and search for the closest one. After we fave found the closest food, we see where the closest ghost is.

The evaluation function takes in the current and proposed successor GameStates (pacman.py) and returns a number, where higher numbers are better.

### Question 2: Minimax (5 points)

### First we search to a recursive depth search, where we check minimaxes, and the we return max.

### Question 3: Alpha-Beta Pruning (5 points)

With Alpha-Beta pruning we minimize the amount of not worthy calculations, by abandoning a path that has already been traversed, and proven to be worse possibility than what we have already.

Alpha stores the value for best already explored option along path to the root for maximizer, and beta stores the value for best already explored option along path to the root for minimizer.

Function returns best possible direction that yields the best possible score.

**Question 4: Expectimax (5 points)**

We use the function exHelper to determine if a node is a exp node or a max node with expFinder and maxFinder. Expfinder and maxfinder functions return output that is added to the outputlist via expHelper and we return this outputlist

**Question 5: Evaluation function (6 points)**

First we find the closest food using manhattan distance. After that we find the locations of the ghosts which are not scared, and look for the closest one. Next we find the locations of scared ghosts.

Next we get the initial score for the game, and modify it based on ghosts and pellets on board. We wan’t pacman to be focused on eating pellets, not capsules. Pacman always prioritizes food over everything.

When the ghost is close to pacman we give pacman less points.