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**Homework 6: Decision Making**

**November 19, 2015**

Best PacMan start locations:

Map 1: Top-Middle Chamber, Top-Right Chamber, Bottom-Right Chamber, Far-Left Chamber

Map 2: Top-Left Chamber, Top-Right Chamber, Bottom-Middle Chamber, Far-Right Chamber

Performance Analysis:

It is always best if you start PacMan far away from the starting location of the ghosts. This gives him more time to eat as much pellets as possible before the ghosts catch him. Our algorithm is the best because Pacman is given a chance to find a further away group of pellets to eat if ghosts start approaching him. Instead of waiting till the ghosts are right on top of him, PacMan is pro-active on staying alive. Also, when the ghosts are far away from PacMan, they move randomly because they have no idea where he is. If they’re semi-close, they move in his general direction to move the game along and, when very close, they chase him as best they can.

**Ghost Finite State Machine:**

Chase Pacman

Move Randomly

If Pacman is very far

If Pacman is very far

If Pacman is very close

If Pacman is semi-close

If Pacman is very close

If Pacman is semi-close

Move in PacMan’s general direction

**Ghost Decision Tree:**

Is Pacman Close?

**No**

**Yes**

Is he one tile away?

Is he very far away?

**No**

**No**

**Yes**

**Yes**

Move in his general direction

End Game

Move Randomly

Chase Him

**PacMan Finite State Machine:**

Continue eating current group of pellets.

Go after pellets in a farther away area.

Is closest ghost very close?

**PacMan Decision Tree:**

**No**

**No**

**No**

**Yes**

**Yes**

**Yes**

Is it very far away?

Run Away

End Game

Is it one tile away?

If nearest ghost is semi-close

If nearest ghost is semi-close

If nearest ghost is very close

If nearest ghost is very far

If nearest ghost is very close

If nearest ghost is very far

Eat Pellets

Run away from ghost

Move to eat pellets away from closest ghost