

CS 511 AI 2 - Project 2

Alias : Snitch

Model based Agent

The model reflex agent consists of an internal model which is constructed based on the current state and percepts.

I have modified the process function in the AgentFunction file. I have defined the actions to be done based on the situations.

The action table consists of the following,

```
actionTable[0] = Action.NO_OP;  
actionTable[1] = Action.GO_FORWARD;  
actionTable[2] = Action.GO_FORWARD;  
actionTable[3] = Action.GO_FORWARD;  
actionTable[4] = Action.TURN_RIGHT;  
actionTable[5] = Action.TURN_LEFT;  
actionTable[6] = Action.GRAB;  
actionTable[7] = Action.SHOOT;
```

Based on this, I am deciding the action to do.

Model Construction:

I am creating a model which will create an internal mapping of the wumpus environment. Let's say that we start from 0,0 and there is no stench or no breeze, it means that the model will mark the adjacent positions (0,1 and 1,0) as safe. And, can make a decision to move towards 0,1 or 1,0.

For argument sake, let's say that the agent moves to the location 1,0. Now, if it feels a stench, it means either 2,0 or 1,1 has a wumpus and it is unsure where the wumpus might be located. So, it will mark these two locations unsafe and move back to 0,0 and choose the other path and move to 0,1. Now, it doesn't feel any stench which means that 1,1 is perfectly safe.

Now, the model can update that 1,1 is safe. This means that 2,0 is the location with wumpus. And, the agent can prevent visiting the location.

And, during every step, the previous action is taken into account and based on that the current action is decided.

Process:

I always check if the location has glitter, if so I am grabbing it. That's my initial condition.

Then, I am checking if there is no bump and no glitter and no breeze and no stench and no scream, I am moving forward

If I meet a bump, I am turning towards the right. (It can be modified to left as well)

If there is stench, it means that the wumpus is near. So, there is two possibilities for this.. The agent can shoot or do no actions. I generate random value here to determine to choose whether to shoot or do no action. Shooting will happen only 5% of the time.

If there is scream and there is no breeze, it means that there is no one on the way and the agent can move forward. Else, there is no action taken.

Sample Outputs:

I tried running the project and the outputs were as follows

No. of trials : 10000

Total Score: 2110006
Average Score: 211.0006

Total Score: 213137
Average Score: 213.137

Total Score: 211408
Average Score: 211.408