L02 - Agent states

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1 agents

1. Be intelligent
2. Solve a problem perform a task
3. Goal, Actions, Utility

Reactive Agent

1. Traction control
2. Airplane Flight Control (saftey locks)

1.1 Pacman

Setup: Cats & Mouse

1. There are N cats (12)
   (a) Cats are randomly moving
   (b) consider walls, other cats
   (c) pseudocode:

```
if mouse_in_view:
        move in mouse direction
else:
        move randomly

def mouse_in_view():
        if mouse.x = cat.x:
                for block from abs(mouse.x - cat.x):
                        if block == wall:
                                return -1
                if (mouse.x > cat.x):
                        return right
                else:
                        return left
        if mouse.y = cat.y:
                same as above but up and down.
```

2. There are K cheese bits
3. 1 mouse
   (a) Moves up down left right
   (b) finding cheese **cannot be reactive**
4. Agent states
   (a) x, y
   (b) cat visibility
   (c) direction
   (d) etc ...
   (e) Sensors
   (f) Goals: Eat cheese, stay alive
   (g) Available actions

Statespace

1. Set of all possible "world" states
2. all agents
3. all environments
4. In cat & mice consider the case with a 4x4 maze
   (a) # of possible states? (16×16)
   (b) if there were 2 more cats? $(16 \times 16 \times 16 \times 16)$
   (c) good midterm question.

5. Search space: all possible states that it can become
6. in above example would be $4x4 = 16$ states