

Pranav Nair
2019130042
TE Comps Batch – C
5th October, 2021

Experiment-1

Aim: To build an intelligent agent

Theory:

A rational agent could be anything that makes decisions, as a person, firm, machine, or software. It carries out an action with the best outcome after considering past and current precepts (agent's perceptual inputs at a given instance). An AI system is composed of an agent and its environment. The agents act in their environment. The environment may contain other agents. An agent is anything that can be viewed as: perceiving its environment through sensors and acting upon that environment through actuators.

Types of Agents

Agents can be grouped into four classes based on their degree of perceived intelligence and capability:

- Simple Reflex Agents
- Model-Based Reflex Agents
- Goal-Based Agents
- Utility-Based Agents
- Learning Agent

Simple reflex agents ignore the rest of the percept history and act only on the basis of the current percept. Percept history is the history of all that an agent has perceived to date. The agent function is based on the condition-action rule. A condition-action rule is a rule that maps a state i.e, condition to an action. If the condition is true, then the action is taken, else not.

Model-based agent works by finding a rule whose condition matches the current situation. A model-based agent can handle partially observable environments by the use of a model about the world. The agent has to keep track of the internal state which is adjusted by each percept and that depends on the percept history.

Goal-based agent take decisions based on how far they are currently from their goal (description of desirable situations). Their every action is intended to reduce its distance from the goal. This allows the agent a way to choose among multiple possibilities, selecting the one which reaches a goal state.

A learning agent in AI is the type of agent that can learn from its past experiences or it has learning capabilities. It starts to act with basic knowledge and then is able to act and adapt automatically through learning.

PEAS:

Performance measure	Safety, Optimum speed, Comfortable journey
Environment	Roads, vehicles, traffic lights, street signs, humans, animals
Actuators	Steering, Accelerator, Brakes

Sensors	Cameras
----------------	---------

Code:

```
def driving_agent(car_presesnt , obstacle):
    if(car_presesnt):
        if(obstacle == 0):
            print("\nPerson spotted!\n")
        elif(obstacle>=2 and obstacle<=7):
            print("\nVehicle ahead\n")
        elif(obstacle==9):
            print("\nSignal ahead\n")
        elif(obstacle==11):
            print("\nStop sign detected\n")
        elif(obstacle>=14 and obstacle<=23):
            print("\nAnimal Spotted\n")
        print("\nDecreasing Speed. \n")
    else:
        print("\nIncreasing Speed.\n")
```

Conclusion:

In this experiment I learnt about agents in ai, types of agents and implemented a simple reflex agent which using the current state and performs actions based on each condition. The agent detects vehicles or obstacles in front of the vehicle and tries to control the speed of the vehicle.