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TE COMPS

**AIML EXP 1**

**Theory:**

What is an Agent?

An agent can be anything that perceive its environment through sensors and act upon that environment through actuators. An Agent runs in the cycle of **perceiving**, **thinking**, and **acting**.

1. **Performance Measure:** Performance measure is the unit to define the success of an agent. Performance varies with agents based on their different precept.
2. **Environment**: Environment is the surrounding of an agent at every instant. It keeps changing with time if the agent is set in motion.
3. **Actuator**: Actuator is a part of the agent that delivers the output of an action to the environment.
4. **Sensor**: Sensors are the receptive parts of an agent which takes in the input for the agent.

**PEAS for self-driving car:**

**Performance:** measure safe, fast, legal, comfortable trip.

**Environments:** are the roads, pedestrians, the destination, curves and turns.

**Activators:** are steering, accelerator, break, display

**Sensors:** are camera, speedometer, odometer, GPS, etc.

**Code:**

import pygame

pygame.init()

window = pygame.display.set\_mode((1200,400))

track = pygame.image.load('track6.png')

car = pygame.image.load('tesla.png')

car = pygame.transform.scale(car, (30,60))

car\_x = 155

car\_y = 300

cam\_x\_offset = 0

cam\_y\_offset = 0

focal\_dis = 25

drive = True

direction = 'up'

clock = pygame.time.Clock()

while drive:

    for event in pygame.event.get():

        if event.type == pygame.QUIT:

            drive = False

    clock.tick(60)

    cam\_x = car\_x + cam\_x\_offset + 15

    cam\_y = car\_y + cam\_y\_offset + 15

    up\_px = window.get\_at((cam\_x, cam\_y - focal\_dis))[0]

    down\_px = window.get\_at((cam\_x, cam\_y + focal\_dis))[0]

    right\_px = window.get\_at((cam\_x + focal\_dis, cam\_y))[0]

    print(up\_px,right\_px, down\_px)

    #change direction

    if direction =='up' and up\_px!=255 and right\_px == 255:

        direction = 'right'

        cam\_x\_offset = 30

        car= pygame.transform.rotate(car, -90)

    elif direction =='right' and right\_px != 255 and down\_px == 255:

        direction = 'down'

        car\_x = car\_x + 30

        cam\_x\_offset = 0

        cam\_y\_offset = 30

        car = pygame.transform.rotate(car, -90)

    elif direction=='down' and down\_px != 255 and right\_px == 255:

        direction='right'

        car\_y = car\_y + 30

        cam\_y\_offset = 0

        cam\_x\_offset = 30

        car = pygame.transform.rotate(car, 90)

    elif direction =='right' and right\_px != 255 and up\_px == 255:

        direction = 'up'

        car\_x = car\_x + 30

        cam\_x\_offset = 0

        cam\_y\_offset = 0

        car = pygame.transform.rotate(car, 90)

    #driving

    if direction == 'up' and up\_px == 255:

        car\_y=car\_y - 3

    elif direction == 'right' and right\_px==255:

        car\_x = car\_x + 3

    elif direction == 'down' and down\_px == 255:

        car\_y=car\_y + 3

    window.blit(track, (0,0))

    window.blit(car, (car\_x,car\_y))

    pygame.draw.circle((window), (0,255,0), (cam\_x, cam\_y), 5, 5)

    pygame.display.update()

**OUTPUT:**

A picture containing logo

Description automatically generated

A picture containing waterfall chart

Description automatically generated

**Conclusion:**

I learnt to develop a simple intelligent agent. I learnt about the agent’s task environment. (Performance Environment Actuators Sensors).

Agents are basically a solution to a problem that does the work with self-learning and acting rationally. They perceive from the environment through their sensors and according to agent program.