Soccer Game Agent using PEAS

1. Introduction

An intelligent agent is an entity that perceives its environment using sensors and acts upon that environment using actuators. This assignment demonstrates a soccer game agent designed using the PEAS framework.

2. PEAS Framework

PEAS stands for Performance Measure, Environment, Actuators, and Sensors. It is used to describe the task environment of an intelligent agent.

Component	Description
Performance Measure	Score goals, prevent opponent goals, accurate passes, minimal fouls, efficient movement
Environment	Soccer field, ball, teammates, opponents, goalposts, referee
Actuators	Move forward/backward, turn left/right, kick ball, pass ball, shoot goal
Sensors	Ball position, goal position, opponent position, teammate position, score status

3. Algorithm

1. Start the agent
2. Sense the environment
3. Check possession of the ball

4. Decide action (move, pass, shoot)
5. Perform action
6. Repeat until game ends

4. Python Implementation

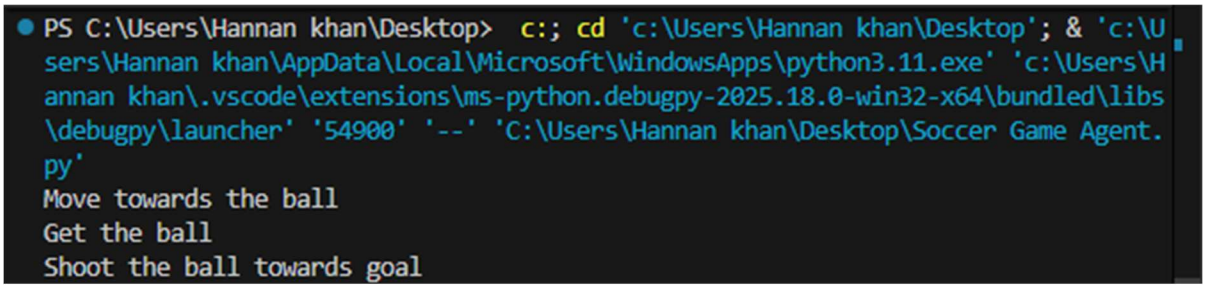
The soccer agent is implemented in Python using conditional decision-making to simulate intelligent behavior.

Code:

```
# Soccer Agent using PEAS Framework


class SoccerAgent:
  def __init__(self):
    self.has_ball = False
    self.ball_near = False
    self.goal_near = False


  def sense(self, ball_near, goal_near):
    self.ball_near = ball_near
    self.goal_near = goal_near


  def act(self):
    if self.has_ball:
      if self.goal_near:
        self.has_ball = False  # Reset after shooting
        return "Shoot the ball towards goal"
      else:
```

```
            return "Move towards the goal"
        else:
            if self.ball_near:
                self.has_ball = True
                return "Get the ball"
            else:
                return "Move towards the ball"

# Simulation
agent = SoccerAgent()

print(agent.act())
agent.sense(ball_near=True, goal_near=False)
print(agent.act())
agent.sense(ball_near=True, goal_near=True)
print(agent.act())
```

Output:



5. Limitations

1.Agent only handles binary states (near/far)

2.No opponent avoidance logic

3.No teammate coordination

4.Simple reset after shooting (no ball physics)

6. Conclusion

The PEAS-based soccer agent successfully demonstrates how intelligent agents make decisions based on environmental inputs. This approach helps in understanding real-world AI applications.