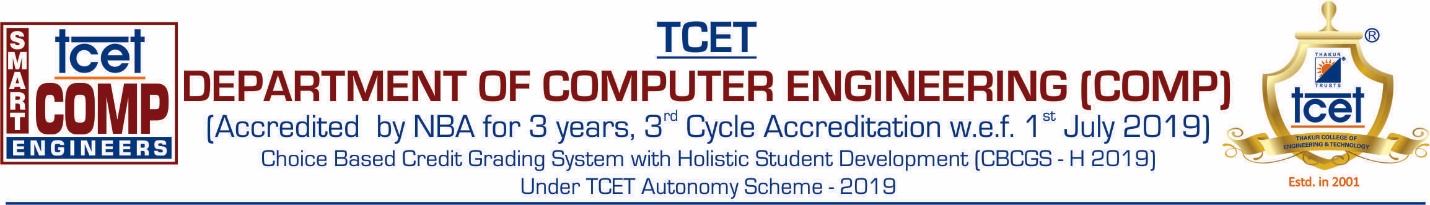
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**Experiment 01 PEAS Description and Environment Characteristics for at least 2 Agent**

**Experiment 01 a) PEAS Description**

**Learning Objective:** Specify PEAS description for at least 2 Agent.

**Tools:** MS Word

**Theory:**

A problem solving agent can be described formally by 4 components**:**

**Performance Measure:** How happy the agent is with its performance

**Environment:** Description of world around

**Actuator:** The actions taken by Agent

**Sensor:** What the agent perceives

**Implementation:**

**Problem Description:** Satellite image analysis system

**Performance Measure:** Correct image categorization

**Environment:** orbit of planet

**State Description:** Initial state: gathering the visual data of various region of the planet

Final state: transmitting the collected data to the facility

**Actuator:** boosters, solar panel, signal

**Sensor:** high resolution camera, thermal imaging sensor

**Problem Description:** Robot vacuum

**Performance Measure:** cleaning the room, dirt or dust detection

**Environment:** house environment, labs

**State Description:** Initial state: detecting dirt/dust

Final state: cleaning the environment

**Actuator:** electric motors

**Sensor:** photocells sensor, infrared sensor

**Learning Outcomes:** The student should have the ability to

LO1: identify the problem for PEAS description.

LO2: describe the problem in PEAS form.

**Course Outcomes:** Students will able to

CO2: Understand AI building blocks presented in intelligent agents.

**Conclusion:** By this experiment we were able to identify the problem for PEAS description. And describe the problem in PEAS (i.e. Performance, Environment, Actuator, Sensor) form.

**Experiment 01 b) Environment Characteristics**

**Learning Objective:** Specify Environment characteristics for a toy/real world problem.

**Tools:** MS Word

**Theory:**

A problem can be characterized formally into 6 environment types:

**Accessible/ Fully observable vs Partially observable:** If an agent's sensory apparatus gives it access to the complete state of the environment, then we say that the environment is accessible to that agent. An accessible environment is convenient because the agent need not maintain any internal state to keep track of the world.

**Episodic vs Sequential:** In an episodic environment, the agent's experience is divided into "episodes." Each episode consists of the agent perceiving and then acting. The quality of its action depends just on the episode itself, because subsequent episodes do not depend on what actions occur in previous episodes. Episodic environments are much simpler because the agent does not need to think ahead.

**Static vs Dynamic:** If the environment can change while an agent is deliberating, then we say the environment is dynamic for that agent; otherwise it is static. Static environments are easy to deal with because the agent need not keep looking at the world while it is deciding on an action, nor need it worry about the passage of time. If the environment does not change with the passage of time but the agent's performance score does, then we say the environment is semidynamic.

**Discrete vs Continuous:** If there are a limited number of distinct, clearly defined percepts and actions we say that the environment is discrete.

**Deterministic vs Stochastic:** If the next state of the environment is completely determined by the current state and the actions selected by the agents, then we say the environment is deterministic. In principle, an agent need not worry about uncertainty in an accessible, deterministic environment. If the environment is inaccessible, however, then it may appear to be nondeterministic.

**Single agent vs Multi agent:** An agent operating by itself in an environment.

**Implementation:**

**Problem Description:** Satellite image analysis system

**Accessible/ Fully observable vs Partially observable:** Fully observable

**Episodic vs Sequential:** Sequential

**Static vs Dynamic:** Dynamic

**Discrete vs Continuous:** Continuous

**Deterministic vs Stochastic:** Stochastic

**Single agent vs Multi agent:** Multi agent

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**Problem Description:** Robot vacuum

**Accessible/ Fully observable vs Partially observable:** Partially observable

**Episodic vs Sequential:** Sequential

**Static vs Dynamic:** Static

**Discrete vs Continuous:** Continuous

**Deterministic vs Stochastic:** Stochastic

**Single agent vs Multi agent:** Singleagent

**Learning Outcomes:** The student should have the ability to

LO1: Identify the problem.

LO2: State task environment.

**Course Outcomes:** Students will able to

CO2: Understand AI building blocks presented in intelligent agents.

**Conclusion:** By this experiment we were able to identify the problem. And State task environment.

**Viva Questions:**

1. Give PEAS Descriptors for a ROBOT meant for cleaning the house.
2. Characterize environment of a ROBOT soccer player.
3. Give PEAS Descriptors and Environment Characteristics for E-commerce Shopping Site.

For Faculty Use

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| --- | --- | --- | --- | --- |
| **Correction Parameters** | **Formative Assessment [40%]** | **Timely completion of Practical [ 40%]** | **Attendance / Learning Attitude [20%]** | **Total** |
| **Marks Obtained** |  |  |  |  |