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FACULTY OF EGINEERING

ARTIFICIAL INTELLIGENCE
LECTURE-07

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OUTLINE

- Agent Environment in AI
- Features of Environment
- Fully observable vs Partially Observable
- Deterministic vs Stochastic
- Episodic vs Sequential
- Static vs Dynamic
- Discrete vs Continuous
- Known vs Unknown
- Accessible vs Inaccessible
- MCQ
- References

Agent Environment in AI

•An environment is everything in the world which surrounds the agent, but it is not a part of an agent itself. An environment can be described as a situation in which an agent is present.

•The environment is where agent lives, operate and provide the agent with something to sense and act upon it. An environment is mostly said to be non-feministic.

Features of Environment

- Fully observable vs Partially Observable
- Static vs Dynamic
- Discrete vs Continuous
- Deterministic vs Stochastic
- Single-agent vs Multi-agent
- Episodic vs sequential
- Known vs Unknown
- Accessible vs Inaccessible

Fully observable vs Partially Observable

•If an agent sensor can sense or access the complete state of an environment at each point of time then it is a fully observable environment, else it is partially observable.

•A fully observable environment is easy as there is no need to maintain the internal state to keep track history of the world.

•An agent with no sensors in all environments then such an environment is called as unobservable.

Deterministic vs Stochastic

•If an agent's current state and selected action can completely determine the next state of the environment, then such environment is called a deterministic environment.

•A stochastic environment is random in nature and cannot be determined completely by an agent.

•In a deterministic, fully observable environment, agent does not need to worry about uncertainty.

Episodic vs Sequential

•In an episodic environment, there is a series of one-shot actions, and only the current percept is required for the action.

•However, in Sequential environment, an agent requires memory of past actions to determine the next best actions.

Single-agent vs Multi-agent

•If only one agent is involved in an environment, and operating by itself then such an environment is called single agent environment.

•However, if multiple agents are operating in an environment, then such an environment is called a multi-agent environment.

•The agent design problems in the multi-agent environment are different from single agent environment.

MCQ

1. External actions of the agent is selected by _____

a) Perceive

b) Performance

c) Learning

d) Actuator

2. The action of the Simple reflex agent completely depends upon _____

a) Perception history

b) Current perception

c) Learning theory

d) Utility functions

3. Which of the following could be the approaches to Artificial Intelligence?

a) Strong Artificial Intelligence

b) Weak Artificial Intelligence

c) Applied Artificial Intelligence

d) All of the mentioned

MCQ

4. An Artificial Neural Network Is based on?

a) Strong Artificial Intelligence approach

b) Weak Artificial Intelligence approach

c) Cognitive Artificial Intelligence approach

d) Applied Artificial Intelligence approach

5. The Face Recognition system is based on?

a) Strong Artificial Intelligence approach

b) Weak Artificial Intelligence approach

c) Cognitive Artificial Intelligence approach

d) Applied Artificial Intelligence approach

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