

SET – 1

1. Define state-space search in planning.

- A. State-space search is a method used in AI planning where the problem is represented as a graph, with nodes as states and edges as actions, to find a path from the initial state to the goal state.

2. What is a planning graph?

- A. A planning graph is a data structure used in GraphPlan to represent the states and actions of a planning problem efficiently.

3. What is hierarchical planning?

- A. Hierarchical planning is a method where a complex problem is broken down into smaller subproblems using hierarchical task networks (HTN).

4. What is the primary difference between forward and backward state-space search?

- A. Forward search starts from the initial state and moves toward the goal, while backward search starts from the goal state and works backward to the initial state.

5. What does Bayes' Rule help compute in probabilistic reasoning?

- A. Bayes' Rule helps compute the posterior probability of an event based on prior knowledge and new evidence. It updates our beliefs by incorporating observed data, making it essential for probabilistic reasoning and decision-making under uncertainty.

6. Define a Bayesian Network.

- A. A Bayesian Network is a probabilistic model using a Directed Acyclic Graph (DAG) where nodes represent variables and edges show conditional dependencies.

7. What is the primary goal of approximate inference in Bayesian Networks?

- A. Approximate inference in Bayesian Networks estimates probabilities when exact inference is too complex, using methods like Monte Carlo sampling and variational techniques.

8. What is the primary difference between deterministic and probabilistic reasoning?

- A. The main difference between deterministic reasoning and probabilistic reasoning is that deterministic reasoning provides definite conclusions based on given premises, whereas probabilistic reasoning accounts for uncertainty and expresses outcomes in terms of likelihoods.

9. Evaluate the given sentence “All Pomprians were Romans” write a well-formed formula in predicate logic.

- A. $\forall x: \text{Pomprians}(x) \rightarrow \text{Romans}(x)$

Here, $\text{Pomprians}(x) \rightarrow \text{Romans}(x)$ = If x is a Pomprians then x is Romans and x can be anyone(all)

10. What is unification?

- A. Unification in AI aims to develop models and systems that can handle multiple tasks across various cognitive domains. Instead of designing specialised AI systems for narrowly defined tasks (like chatbots for conversation or algorithms for image recognition), the goal is to integrate these systems into a unified framework capable of functioning cohesively.

SET – 2

1. What does STRIPS stand for?

A. STRIPS Stands for 'Stanford Research Institute Problem Solver'.

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9. Define wumpus world?

B. Wumpus World is a grid-based environment used in AI where an agent explores to find gold while avoiding pits and a monster called the Wumpus, using logical reasoning to navigate safely.

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