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FAI Assignment - 3

Q.1. What is KR brief with example.

- - knowledge representation in AI describes the representation of knowledge. Basically it is the study of how the beliefs, intentions & judgements of an intelligent agent can be expressed suitably for automated reasoning.
- One of the primary purpose of knowledge representation includes modeling intelligent behavior for an agent.
- knowledge representation & reasoning represents information from the real world for a computer to understand & then utilize this knowledge to solve complex real life problems like communicating with humans beings in natural languages.
- Example.
 - a) Representing knowledge about the weather using propositional logic.

Q.2. How can you define Knowledge representation & it's Kinds.

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- 1) Knowledge representation in AI describes the representation of Knowledge.
 - 2) It is the study of how the beliefs intentions & judgements of an artificial intelligent agent can be expressed suitably for automated reasoning
 - 3) It's purpose include modelling intelligent behavior of an agent.
 - 4) It represents info from real world for a computer to understand & then utilize this to solve complex real life problems.
 - 5) It allows machine to learn from that Knowledge & behave like human being.
 - 6) Kinds of Knowledge :
 - a) declarative : Includes concepts, facts, and objects and are expressed in a declarative sentence.
 - b) structural Knowledge : Basic problem knowledge that describes the relationship b/w concepts & objects.

c) meta-knowledge about other types of knowledge

d) Heuristic: Represents some expert knowledge in the field or subject.

Heuristic knowledge is a type of knowledge that is used to solve problems. It is often represented as a set of rules or a decision tree. Heuristic knowledge is used to guide the search for a solution. It is often used in artificial intelligence systems. Heuristic knowledge is often used to solve problems that are difficult to solve using other types of knowledge. Heuristic knowledge is often used to solve problems that are difficult to solve using other types of knowledge. Heuristic knowledge is often used to solve problems that are difficult to solve using other types of knowledge.

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Q.8. Discuss & list out types of knowledge.

→ Types of knowledge are :

- 1) Declarative knowledge
- 2) Structural knowledge
- 3) procedural knowledge
- 4) Meta knowledge
- 5) Heuristic knowledge.

1) Declarative : IS about knowing what it deals with facts, concepts & principles. It's the knowledge of information & ideas without necessarily knowing how to apply them.

2) Structural : It is basic problem solving knowledge that describes the relationship b/w concepts & objects.

3) Procedural : This type of knowledge focuses on knowing how to do something. It involves the steps, process & techniques required to perform a specific task.

4) meta : Defines knowledge about other types of knowledge.

5) Heuristic : This represents some expert knowledge in the field or subject.



Q.4]



What are the components of cycle of KR?

1. Acquisition - This stage where system gathers information from external sources.
2. Representation - Once knowledge is acquired, it needs to be structured & represented in a form that the intelligent system can understand & manipulate.
3. Reasoning - In this phase, the intelligent system uses the represented knowledge to draw inference, make decision, or solve problems.
4. Storage - The system needs a mechanism to store the acquired & represented knowledge efficiently.
5. Retrieval - It involves accessing the stored knowledge when needed.
6. Update & Maintenance - Knowledge is not static and the intelligent system should be able to update its knowledge base to accommodate new information in environment.
7. Communication - Intelligent system often need to communicate with other system or entities.

Q.5] Explain in brief about the wumpus world.

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- The Wumpus World is a classic artificial intelligence (AI) problem used for testing intelligent agents and reasoning systems.
- Introduced in 1981 by Peter Hart, Nilg Nilsson, & Bertram Raphael, the Wumpus World is a simple grid-based environment inhabited by a mythical creature called the 'Wumpus'.

• Key elements of the Wumpus World →

1. Grid Environment - Represented as a two-dimensional grid.
2. Percept - Receives information about surrounding through perceptual feedback.
3. Agent Action - Can perform action such as moving to adjacent cell, turning to change orientation, grabbing gold, etc.
4. Objectives - The main objective is for the agent to navigate the world, avoid hazard, collect gold, safely exit the world.
5. Hazard - The wumpus is a dangerous creature that can kill the agent if entered.
6. Game Rules - The game is turn-based and agent make decision on their current perception.