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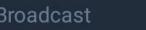


















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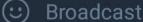
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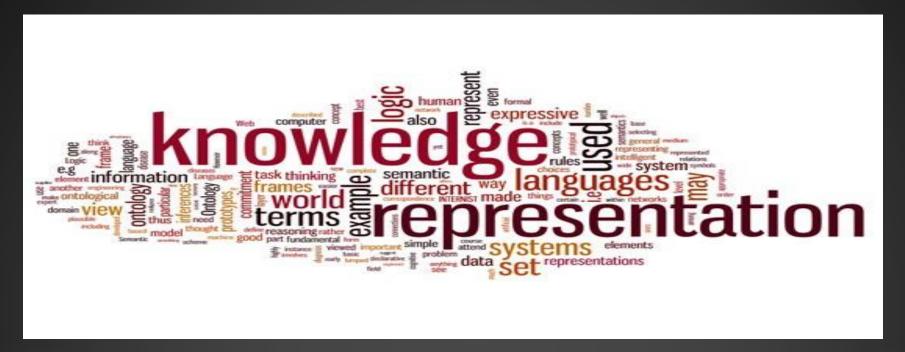
Content:

- 1. knowledge representation
- 2. Types of knowledge
- 3. AI knowledge cycle



What is knowledge representation?

Humans are best at understanding, reasoning, and interpreting knowledge. Human knows things, which is knowledge and as per their knowledge they perform various actions in the real world. But how machines do all these things comes under knowledge representation and reasoning. Hence we can describe Knowledge representation as following:



❖It is responsible for representing information about the real world so that a computer can understand and can utilize this knowledge to solve the complex real world problems such as diagnosis a medical condition or communicating with humans in natural language.

What to Represent:

Following are the kind of knowledge which needs to be represented in AI systems:

- Object: All the facts about objects in our world domain. E.g., Guitars contains strings, trumpets are brass instruments.
- Events: Events are the actions which occur in our world.
- Performance: It describe behavior which involves knowledge about how to do things.
- Meta-knowledge: It is knowledge about what we know.
- Facts: Facts are the truths about the real world and what we represent.
- Knowledge-Base: The central component of the knowledge-based agents is the knowledge base. It is represented as KB. The Knowledgebase is a group of the Sentences (Here, sentences are used as a technical term and not identical with the English language).



Types of knowledge



1. Procedural Knowledge

- It is also known as imperative knowledge.
- Procedural knowledge is a type of knowledge which is responsible for knowing how to do something.
- It can be directly applied to any task.
- It includes rules, strategies, procedures, etc.
- ❖ Procedural knowledge depends on the task on which it can be applied.

2. DECLARATIVE KNOWLEDGE:

- Declarative knowledge is to know about something.
- It includes concepts, facts, and objects.
- It is also called descriptive knowledge and expressed . in declarative sentences
- It is simpler than procedural language.

3. Meta-knowledge:

Knowledge about the other types of knowledge is called Meta-knowledge.

4. Heuristic knowledge:

- Heuristic knowledge is representing knowledge of some experts in a filed or subject.
- Heuristic knowledge is rules of thumb based on previous experiences, awareness of approaches, and which are good to work but not guaranteed.

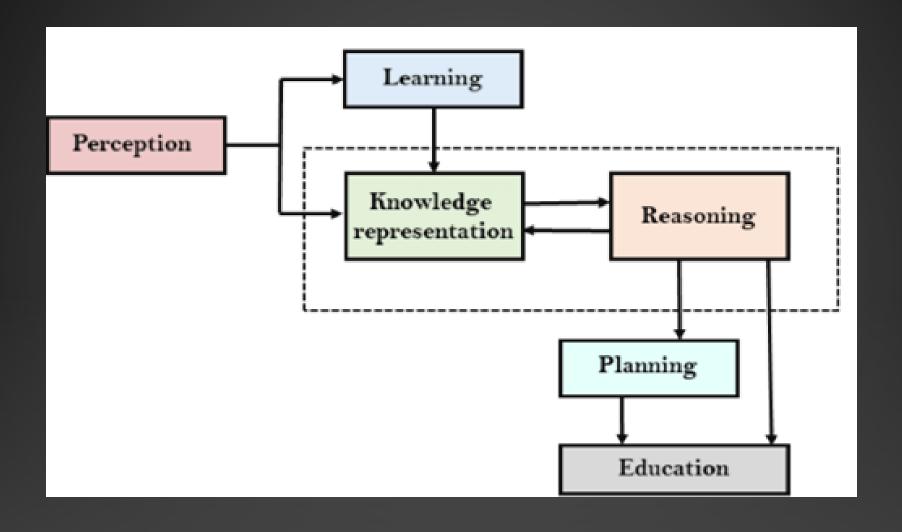
5. Structural knowledge:

- Structural knowledge is basic knowledge to problemsolving.
- It describes relationships between various concepts such as kind of, part of, and grouping of something.
- It describes the relationship that exists between concepts or objects.

AI knowledge cycle:

An Artificial intelligence system has the following components for displaying intelligent behavior:

- ☐ Perception
- ☐ Learning
- ☐ Knowledge Representation and Reasoning
- ☐ Planning
- ☐ Execution



- <u>Perception</u>- Al system has Perception component by which it retrieves information from its environment.
- It can be visual, audio or another form of sensory input.
- <u>Learning-</u> The learning component is responsible for learning from data captured by Perception compartment.

- Knowledge Representation and Reasoning- In the complete cycle, the main components are knowledge representation and Reasoning.
- These two components are involved in showing the intelligence in machine-like humans.
- These two components are independent with each other but also coupled together.
- Planning& Execution-The planning and execution depend on analysis of Knowledge representation and reasoning.



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