Institute of Engineering, Jiwaji University

UNIT 1

Subject: Soft Computing

Subject Code: CS 801

Semester: 8 Semester

Submitted by:

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Monotonic Reasoning

- In monotonic reasoning, once the conclusion is taken, then it will remain the same even if we add some other information to existing information in our knowledge base.
- In monotonic reasoning, adding information does not change the set of prepositions that can be derived.
- Example:

  Earth revolves around the Sun.
- It is a true fact, and it cannot be changed even if we add another sentence like, "The moon revolves around the earth“.

➢ Advantages of Monotonic Reasoning:

- In monotonic reasoning, every previous information will always remain valid.
- If we deduce some information from available facts, then it will always remain valid.

➢ Disadvantages of Monotonic Reasoning:

- Not applicable in real world scenarios.
- Hypothesis knowledge cannot be expressed with monotonic reasoning.
- New knowledge from the real world cannot be added.

Non-Monotonic Reasoning

- In Non-monotonic reasoning, some conclusions may be invalidated if we add some more information to our previous information.
- Non-monotonic reasoning deals with incomplete and uncertain models.
- Example:

  Birds can fly

  Penguins cannot fly

  Patty is a bird
- So from the above sentences, we can conclude that Patty can fly.

Non-Monotonic Reasoning

- The derivation of plausible conclusions from a previous information viewed abstractly as a set of formulas in a suitable logic.
- Any such conclusion is understood to be tentative; it may have to be retracted after new information has been added to the previous information.

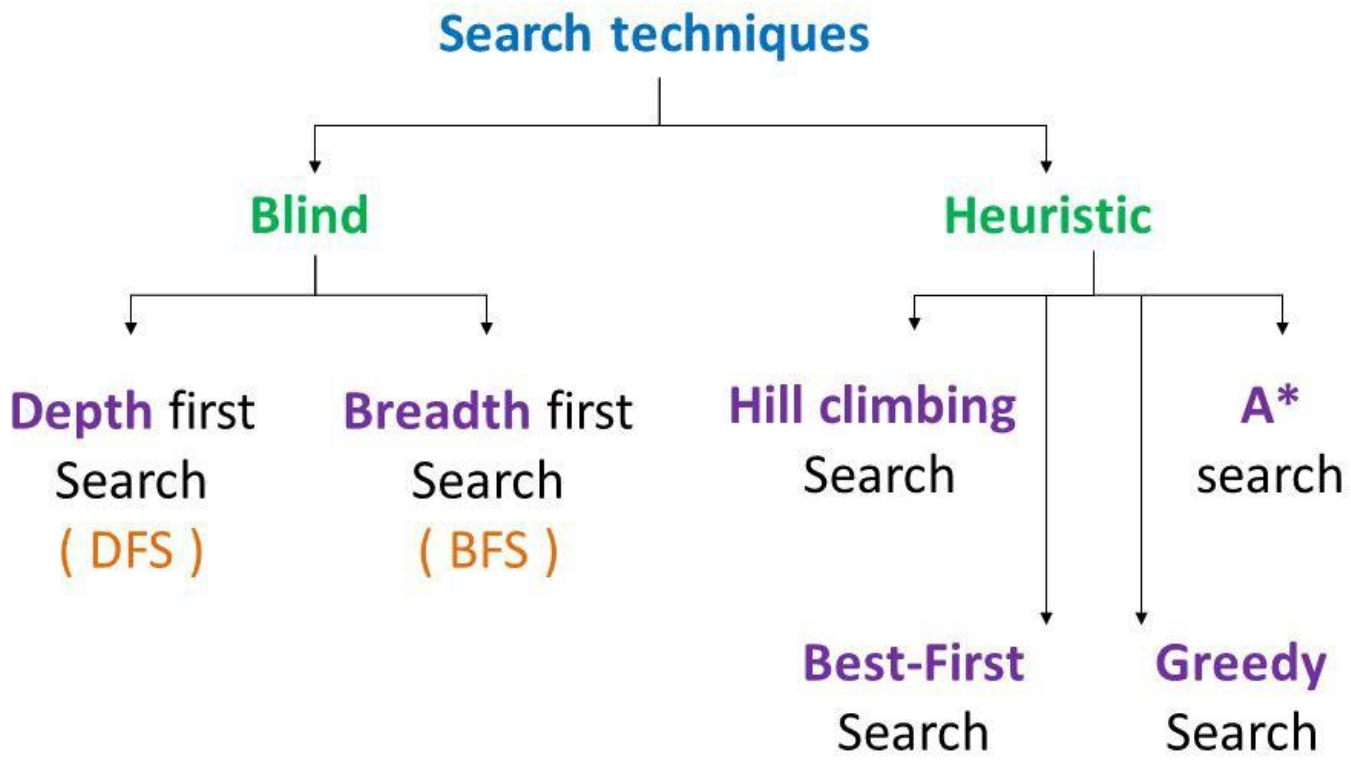
➢ Advantages of Non-monotonic reasoning:

- For real-world systems such as Robot navigation, we can use non-monotonic reasoning.
- In Non-monotonic reasoning, we can choose probabilistic facts or can make assumptions.

➢ Disadvantages of Non-monotonic Reasoning:

- In non-monotonic reasoning, the old facts may be invalidated by adding new sentences.
- It cannot be used for theorem proving.

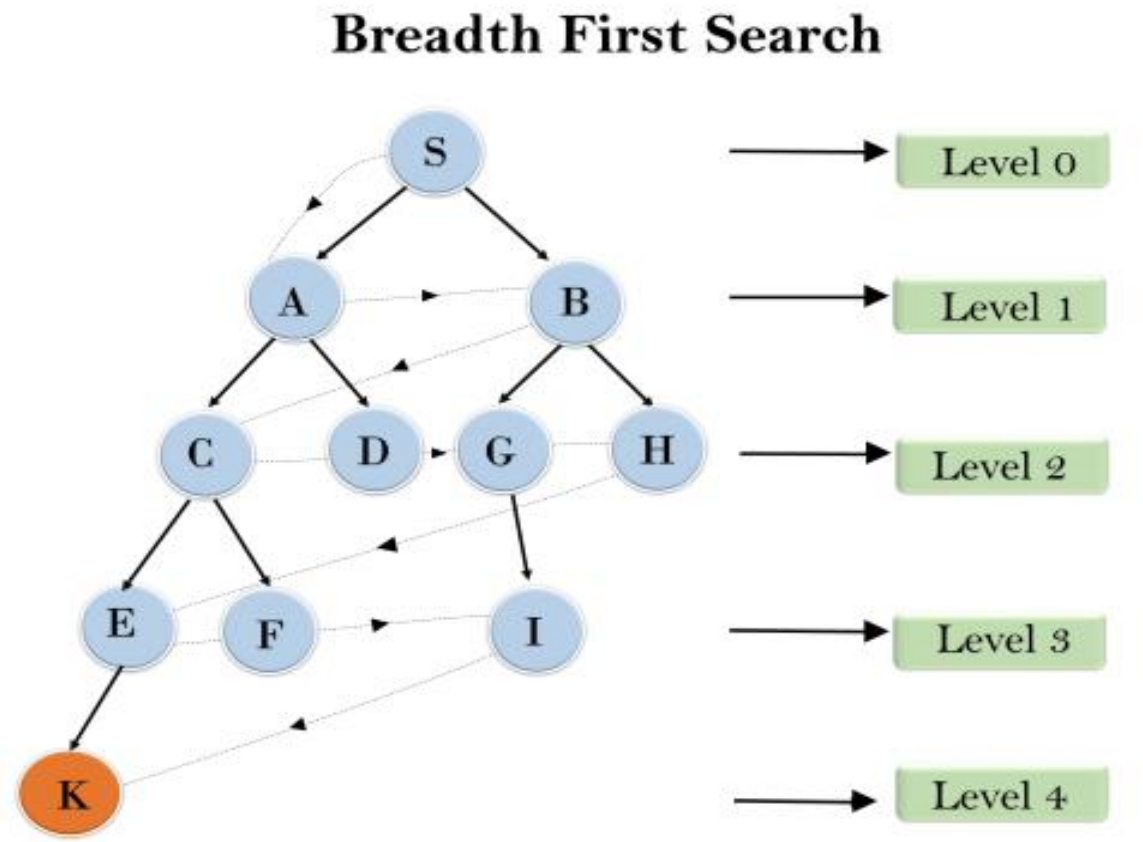
SEARCH TECHNIQUES



Breadth First Search

- Breadth First Search is a vertex based technique for finding a shortest path in graph.
- In Breadth First Search(BFS), the root node of the graph is expanded first, then all the successor nodes are expanded in same level and so on i.e. the nodes are expanded level wise starting at root level.
- It starts at the tree root and explores all of the neighbor nodes at the present depth prior to moving on to the nodes at the next depth level.

Breadth First Search



Depth First Search(DFS)

- **DFS** stands for **Depth First Search** is a edge based technique.
- In Depth First Search(DFS), the deepest node is expanded in the current unexplored node of the search tree. The search goes into depth until there is no more successor nodes.

Depth First Search(DFS)