

Uncertain Knowledge and Reasoning.

* Explain Belief Network.

or

Explain Bayesian Network.

=> Belief Network is also known as Bayesian Network or Probabilistic Graphical Models.

They are used to represent and reason about uncertain knowledge.

Belief Network used to represent Uncertainty in knowledge representation.

Belief Network represent a set of Variables and their probabilistic dependencies.

Belief Network is represent knowledge using the directed acyclic graph.

=> Belief Network DAG:

There are main three component in DAG.

(a) Nodes

(b) Edges

(c) Conditional Probability Tables.

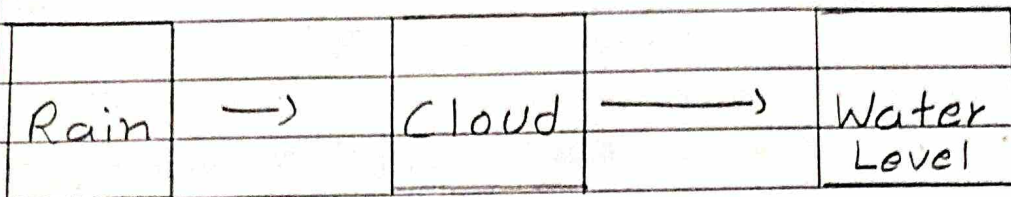
(a) Nodes: Represent variables in the system.

(b) Edges: Represent probabilistic dependencies between variables.

(c) Conditional Probability Tables: Specify the conditional probabilities of nodes given their parent nodes.

Each node in the graph is associated with a conditional probability distribution.

=> Example:



1 Nodes:

Rain → Variable indicating whether it's raining or not

Cloud → Variable indicating whether it's cloudy or not

Water Level → Variable indicating the level of water on ground

2 Edges:

If it's raining, it's more likely to be cloudy.

3 Conditional Probability Tables:

$P(\text{Cloud} | \text{Rain})$: Probability of Cloud given Rain.

* Explain Difference Between Procedural and Declarative knowledge.

| Procedural Knowledge | Declarative Knowledge |
|---|--|
| 1 Also known as Interpretive Knowledge. | Also known as Descriptive Knowledge. |
| 2 Procedural knowledge is not more popular | Declarative knowledge is more popular |
| 3 It can't be easily communicate. | It can be easily communicate. |
| 4 It is process oriented in the nature | It is data oriented in the nature |
| 5 In this, debugging and validation is not easy. | In this debugging and validation is easy. |
| 6 It is less effective in competitive programming | It is more effective in competitive programming. |