

Expert system

Expert systems are computer applications developed to solve complex problems in a particular domain.

→ Complete knowledge about that domain
(Extra-ordinary human intelligence + Expertise)

Characteristics of ES :-

1) High Performance

2) Understandable { Capable of understanding human language using NLP }
i.e. Natural language processing

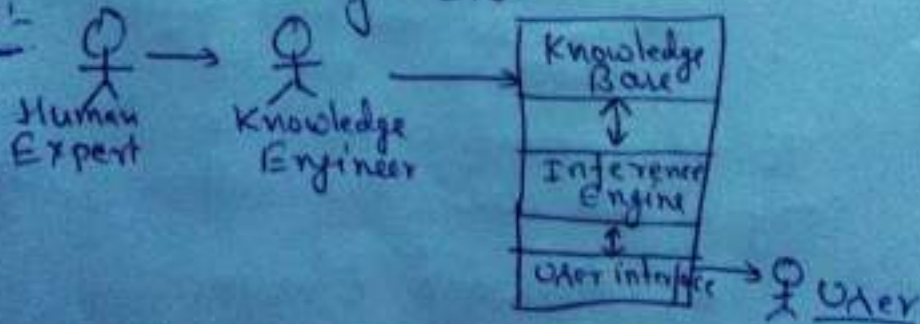
3) Reliable

4) High Responsive

Capabilities of ES :-

- Advising
- Assisting in decision making
- Diagnosing
- Explaining
- Predicting Results
- Deriving a solution.
- Problem Solving etc.

Component:-



Component of Expert System

1. Knowledge Base: It contains domain specific and high quality knowledge. Knowledge is required to exhibit intelligence.

Knowledge :- Collection of facts
(Data, Information and Past Experience)

Component of Knowledge Base

Factual Knowledge
(based on widely accepted facts)

Heuristic Knowledge
(Based on practice, accurate judgement, guessing etc.)

• Knowledge Representation method is used to organize and formalize the Knowledge base (KB). It is the form of IF-THEN-ELSE Rules.

2. Inference Engine :- Use of efficient procedures and rules by the inference engine is essential in deducting a correct, flawless solution.

- Knowledge Base ES
- Rule-Based ES

* In case of Knowledge Base ES, the Inference Engine acquires and manipulates the knowledge base to arrive at a particular solution.

* In case of Rule Based ES:-

- Applies rules repeatedly to the facts, which are obtained from earlier rule application
- Add new knowledge in KB if required.
- In case multiple rules are applicable choose the best one.

To recommend a solution, the inference engine uses the following strategies:-

- a) Forward Chaining
- b) Backward Chaining

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a) Forward chaining:- "What can happen next?"
i.e. from fact to conclusion

b) Backward chaining:- "Why this happened?"
This strategy is followed for finding out
Cause or reason.

3) User Interface:- It provides interaction between
User of ES and ES itself.
It explains how the ES has carried out the
input and arrived at a particular recommendation.
