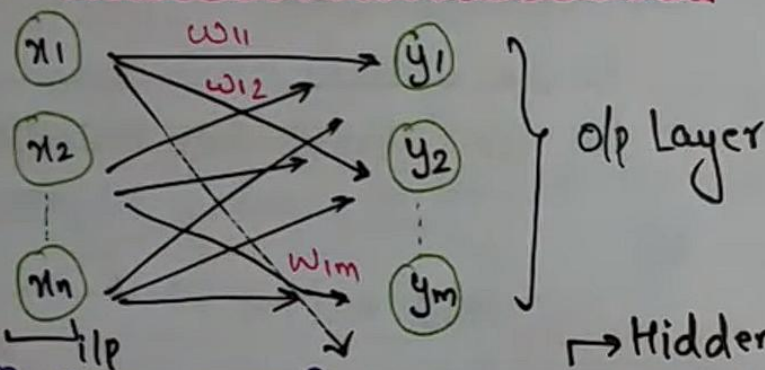
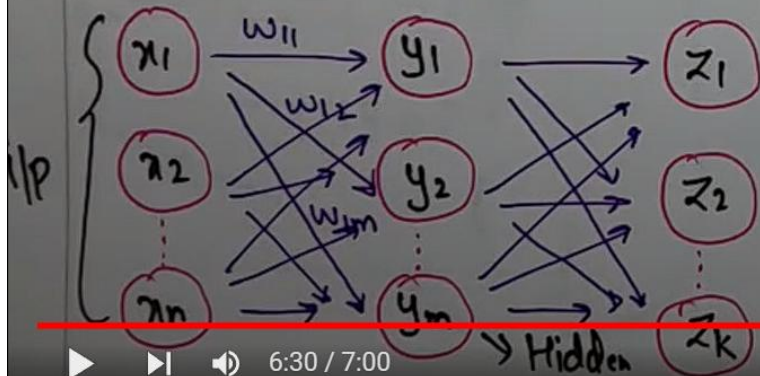


Ques:- Explain types of Artificial Neural Network architectures.

① SINGLE LAYER FEED FORWARD NN:

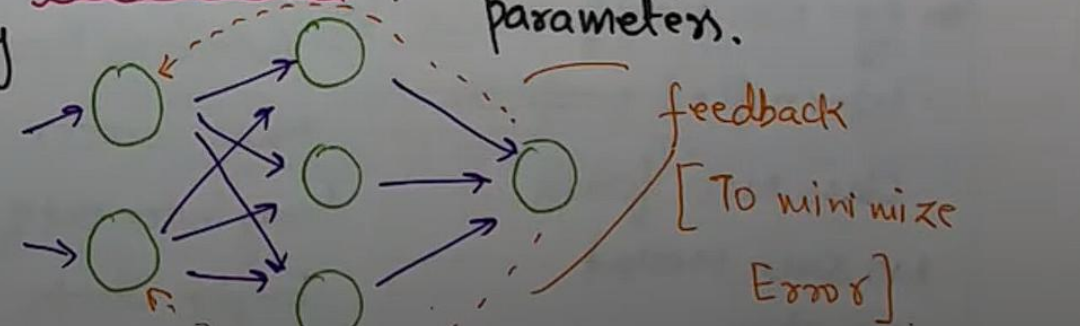


② MULTI LAYER FEED FORWARD NN:



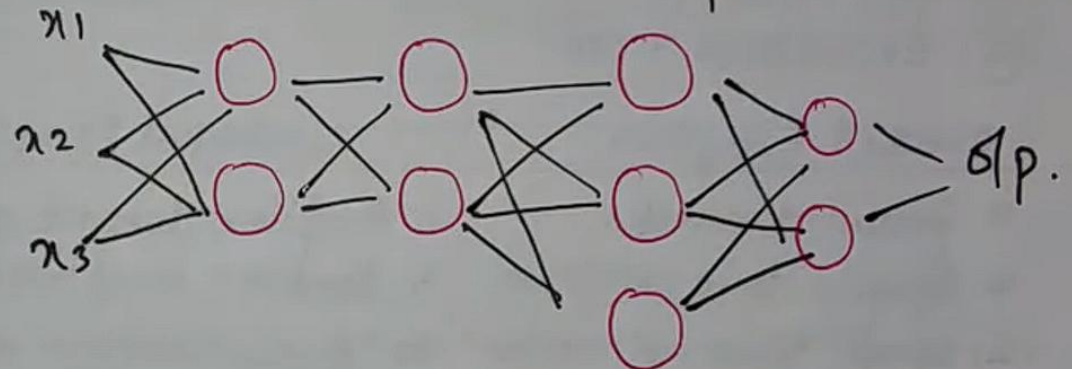
Computationally more Stronger.

④ FEEDBACK ANN:

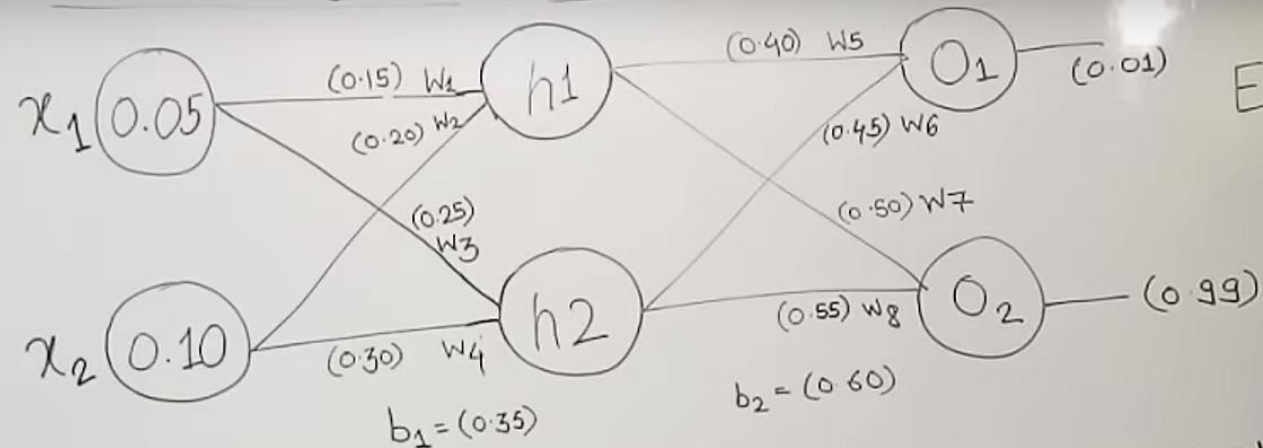


feedback is provided to adjust parameters.

③ MULTILAYER PERCEPTRON:



Fully connected non-linear Act. Fun
3 or more layers are used to classify non-linearly separable data.



$$E_{\text{total}} = E_{O_1} + E_{O_2} = 0.2983$$

$$h_1(\text{in}) = W_1 \times x_1 + W_2 \times x_2 + b_1 = (0.15 \times 0.05 + 0.20 \times 0.1 + 0.35) = 0.377$$

$$h_1(\text{out}) = \frac{1}{1 + e^{-h_1(\text{in})}} = 0.5932$$

$$h_2(\text{out}) = 0.5968$$

$$O_1(\text{in}) = W_5 \times h_1(\text{out}) + W_6 \times h_2(\text{out}) + b_2 = (0.4 \times 0.593 + 0.45 \times 0.596 + 0.6) = 1.105$$

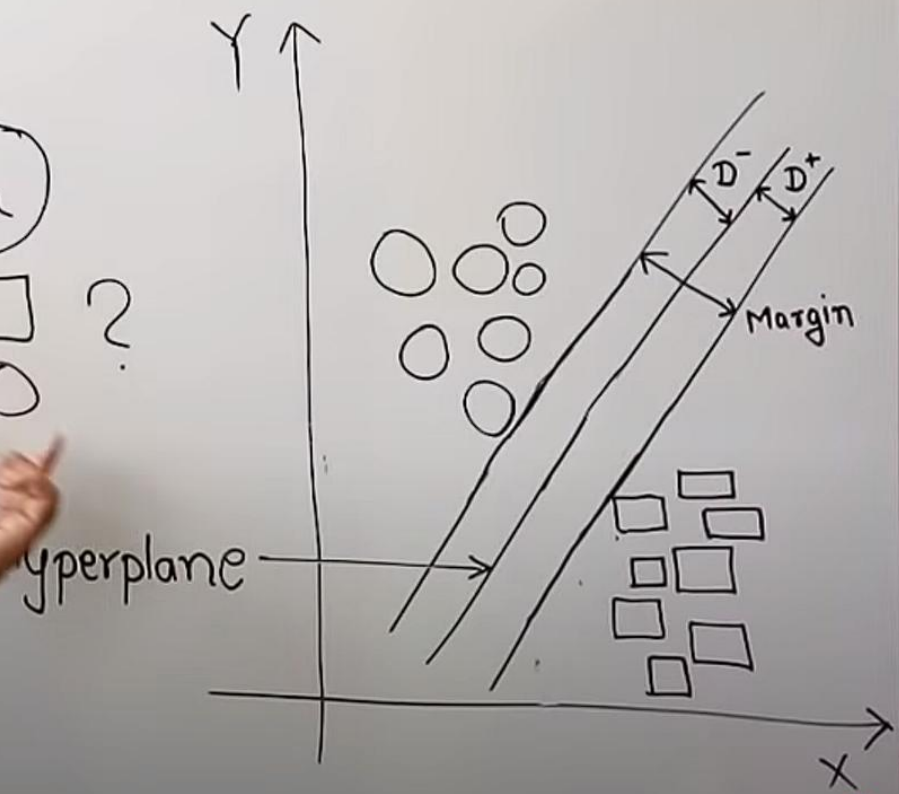
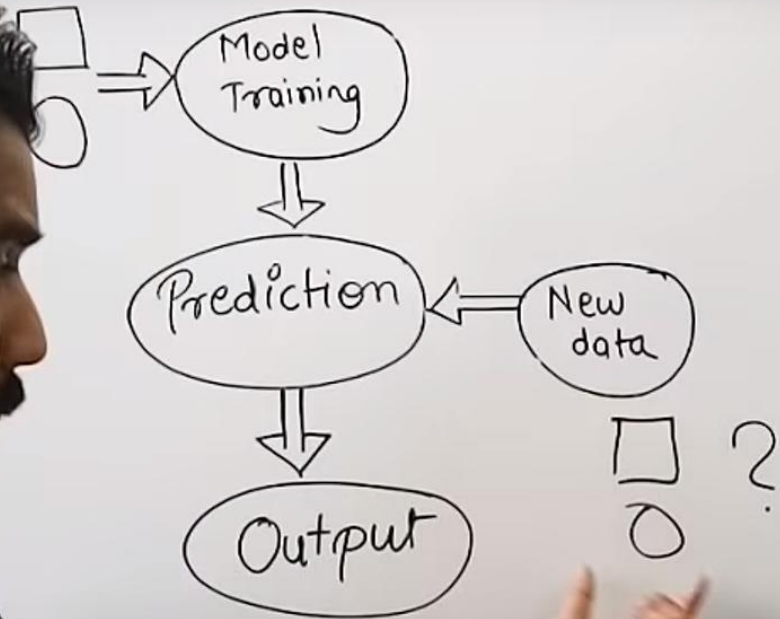
$$O_1(\text{out}) = \frac{1}{1 + e^{-O_1(\text{in})}} = 0.7513$$

$$O_2(\text{out}) = 0.7729$$

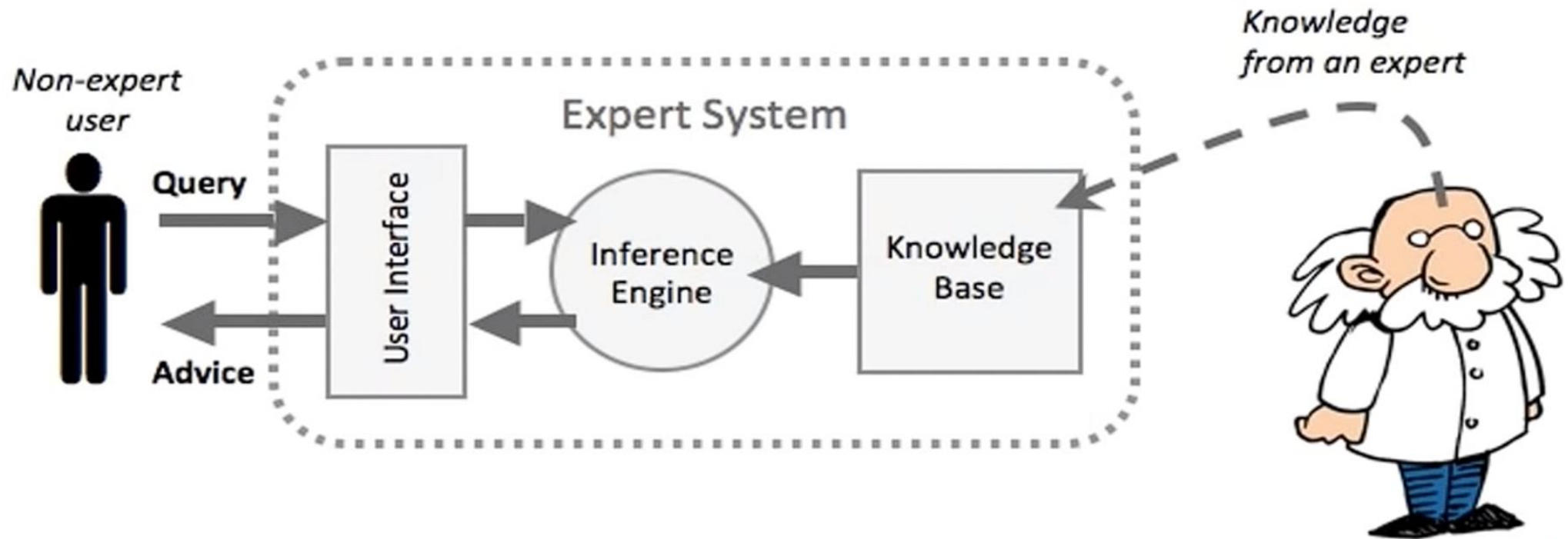
$$E_{\text{Total}} = \sum \frac{1}{2} (\text{target} - \text{out})^2$$

$$E_{O_1} = 0.274 \quad E_{O_2} = 0.0235$$

Support Vector Machine

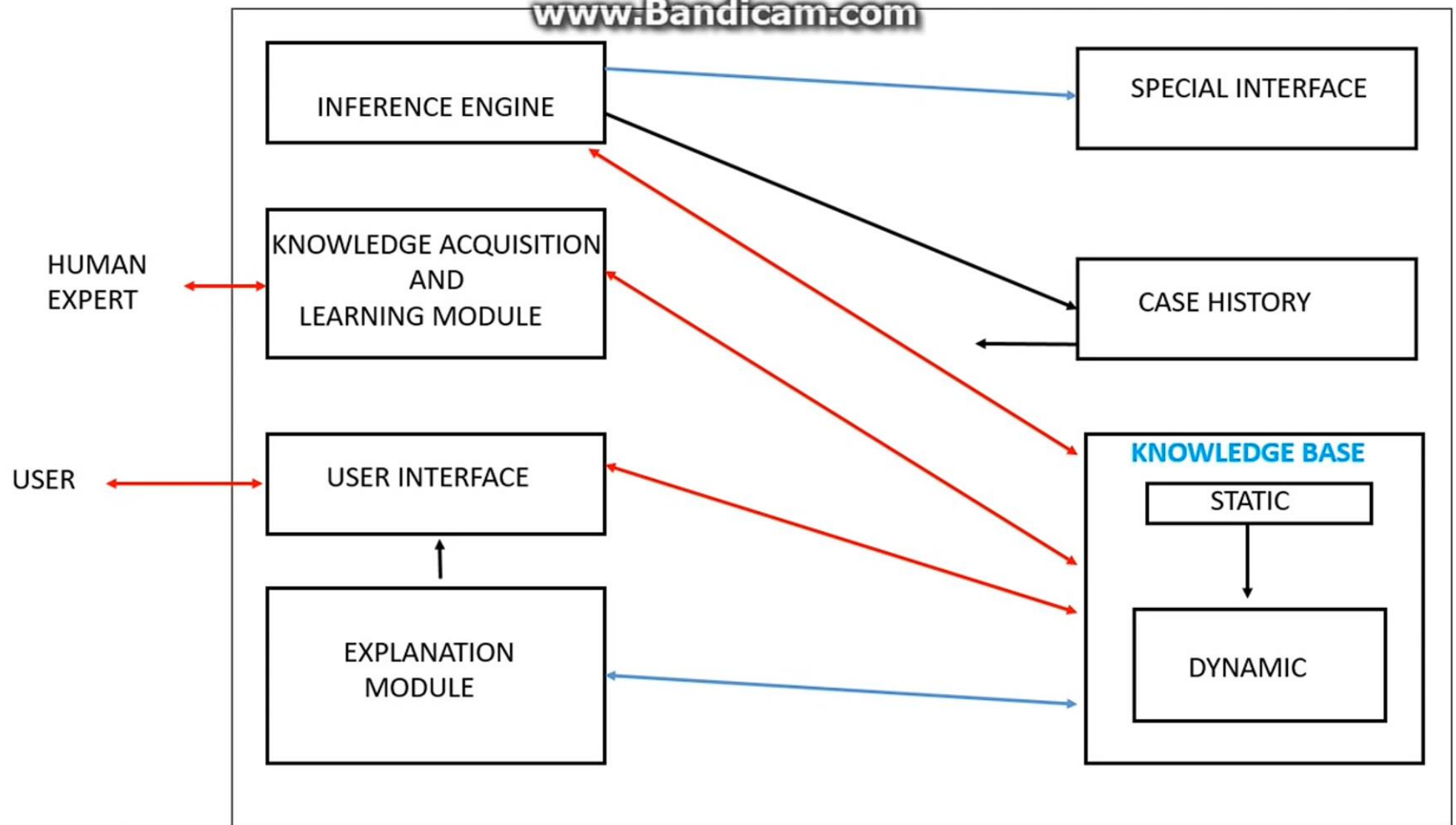


EXPERT SYSTEM IN HINDI



DEFINATION

A piece of software which uses databases of expert knowledge to offer advice or make decisions in such areas as medical diagnosis, account,coding,games,etc





INFERENCE ENGINE:

The term inference refers to a process of searching through knowledgebase and drive new knowledge it uses various algorithm for this and it is also called artificial intelligence

In case of knowledge-based ES, the Inference Engine acquires and manipulates the knowledge from the knowledge base to arrive at a particular solution.

To recommend a solution, the Inference Engine uses the following strategies –

- Forward Chaining
- Backward Chaining

(inference engine computer ka deemag hai jo user ne kuch bhi pucha hai usko knowledge base me dhundke user ko solution deta hai ya advice deta hai)

KNOWLEDGE BASE:

Knowledge base of an expert system consist of knowledge regarding to the problem

In the form of static and dynamic database

Static knowledge consist of rules and facts

Dynamic knowledge consist of details information where many question are asked to the human expert related to problem and all the accurate solution are put in the dynamic database

(for example ek function kisi hall me aur watchman apna expert system hai toh

Agar token hai toh andar aane dena warna mat aane dena yeh knowledge static knowledge hai jo rules bata raha hai

Ab maximum kitne logo ko aane देने ka and funcation kab

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Ab maximum kitne logo ko aane dene ka and funcation kab tak chalenga bacho ka bhi token rahenga kya etc yeh sab question puchke apne database me store karne wala dynamic database hai)

KNOWLEDGE ACQUISITION AND LEARNING MODULE:

Knowledge present in an expert system may be obtained from various sources such as text book, human expert, reports, ppt, videos, internet etc

This module allows the system to acquire more and more knowledge regarding the particular problem and store it in the knowledge base

USER INTERFACE

The user interface of an expert system allows the user to communicate in an interactive manner and helps the system to create knowledge for the problem that has to be solved.

EXPLANATION MODULE:

regarding to the particular problem and store in knowledge base

USER INTERFACE

The user interface of an expert system allow the user to communicate in an interactive manner an help system to create knowledge for the problem that has to be solved.

EXPLANATION MODULE:

The explanation module allow the user to query the expert system about how you got the solution and why this solution is better

SPECIAL INTERFACE:

This module is used for performing activity such as handling uncertainty in knowledge it handles uncertain data and uncertain knowledge (koi bhi alag type ka data aagaya toh special interface handle karta hai)

Ques:- Compare Expert System with Conventional Computers.

Conventional Computer System

Expert System

- ① Control Solⁿ Process = Data is used
- ② Data is stored alongwith control program.
- ③ How and explanation modules are not present.
- ④ Data Forms
 - Numeric
 - Alphabetic
 - Audio
 - Video...
- ⑤ Metadata may or may not be present.
 - data about data.

Knowledge is used
 Knowledge is stored Separately in encoded form.
 Capable of explaining how a decision/ conclusion is drawn.
 Knowledge

- Rules
- Networks
- Trees.

 Meta Knowledge ✓

Applications of Expert System:

- i) Medical Diagnosis
- ii) Help Desk Management
- iii) Loan analysis
- iv) Virus detection
- v) Stock Market Trading
- vi) Warehouse optimization

Advantages of Expert System:

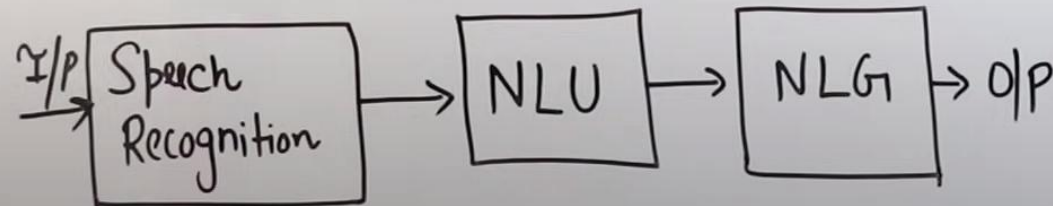
- i) Helps in Increasing the expert Knowledge availability.
- ii) Can be used for training future experts.
- iii) Helps in dealing with uncertainty
 - Cost effective.
- iv) Helps in giving consistent answer
 - Based on Rules.
- v) Can Review all transactions.
 - while Human Can review Sample of transactions.

Disadvantages of Expert System:

- i) Lack of Common Sense, inflexible.
 - modification is difficult.
- ii) Can be used in limited areas.
 - Domain is restricted
- iii) Can't be relied in Areas like medical diagnosis, treatment.
- iv) Can't be used where input is Sensory in nature.
- v) Can't respond Creatively to unusual Situation.

Natural Language Processing (NLP)

- How Human Communicate with each other
- Computer should replicate the same thing
- Applications of NLP
 - * Speech Recognition
 - * Sentimental Analysis
 - * Machine Translations
 - * Chat bots etc.



NLU ⇒ What do the users say?
their intent? Meaning?

Challenges:

- Lexical Ambiguity
- Syntactic Ambiguity
- Semantic "
- Pragmatic "

- The tank was full of water.
- Old men and women were taken to safe place.
- The Car hit the pole while it was moving.
- The police are coming.

NLG → What should we say to User?

- it should be Intelligent and Conversational.
- Deal with structured data.
- Text / Sentence Planning

Levels/Stages in NLP

- ① Speech Analysis
- ② Lexical Analysis (lexicons/words)
- ③ Syntactic Analysis (Relationship among words)
- ④ Semantic Analysis (meaningfulness, "hot ice-cream")
- ⑤ Discourse Integration (Before & after sentences)
- ⑥ Pragmatic Analysis (Context matters)
(meaning of sentence in various situation)



0:27 / 5:51



Press Esc to exit full screen

Application of NLP

- chat box
- Speech recognition
- machine translation
- Spell checking
- Keyword searching
- Advertisement matching