SECOND SESSIONAL EXAM

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Q1 (a) Horizon Effect problem involves an extremely long sequence of moves that clearly lead to a strong advantage of one player, but where the sequence of moves. Although potentially obvious to a human player, takes more moves than is allowed by the bounded search. This bounded minimax search problem is Horizon Effect.

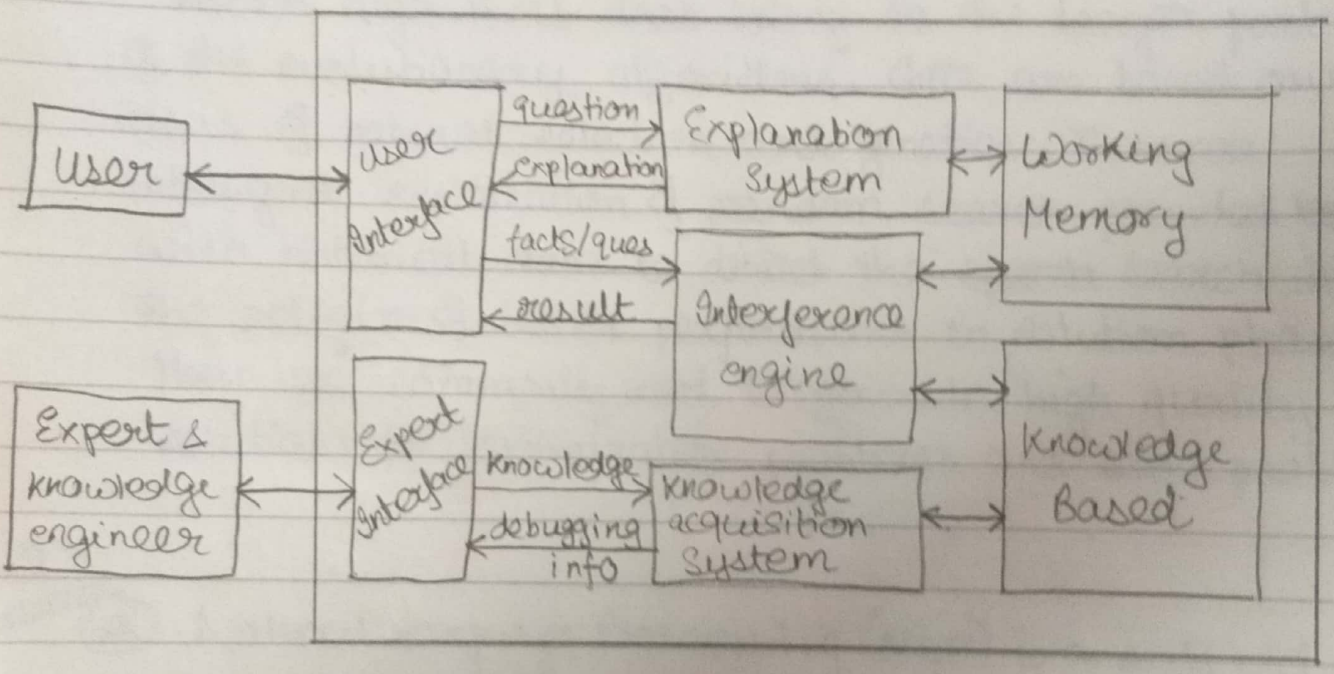
The principle behind is that the search tree is only examined to a particular depth. All nodes of this depth are considered to be leaf nodes which are evaluated using a static evaluation function.

(b) Vision Processing

Computer vision involves acquiring & interpreting the rich visual world around us. There is a TCS D faculty members & more than 20 across all of SCS, whose research spans various aspects of computer vision, including one core vision capabilities, castography, and photo interpretation, biology motivated vision, people image analysis & the converge of computer vision & graphics.

(c) Expert System are a specialized type of knowledge based system because they have the knowledge (that) comes directly from those who have worked for years within the domain). It is a knowledge gained from learning.

Eg:- MYCIN, DENDRAL, RI/XCON, PXDES, Cadot, Dxplain.



Components;
1. Knowledge based
2. Working memory
3. Interference engine
4. Explanation system
5. User Interface
6. knowledge engineer
7. System engineer
8. users.

(d) Applications in Robotics;
Self driving and Internet cars. It is also used in humanoid robots which can sense their environment quite well and interact with their surroundings.

(e) Genetic learning (GA's) are adaptive heuristic search algorithms that belong to the larger part of the evolutionary algorithms. GA's are based on the ideas of natural selection and genetics. These are intelligent exploitation of random search provided with historical data to direct the search into the religion of better performance in solution phase. They are commonly used to generate high quality solutions for optimization problems and search problems.

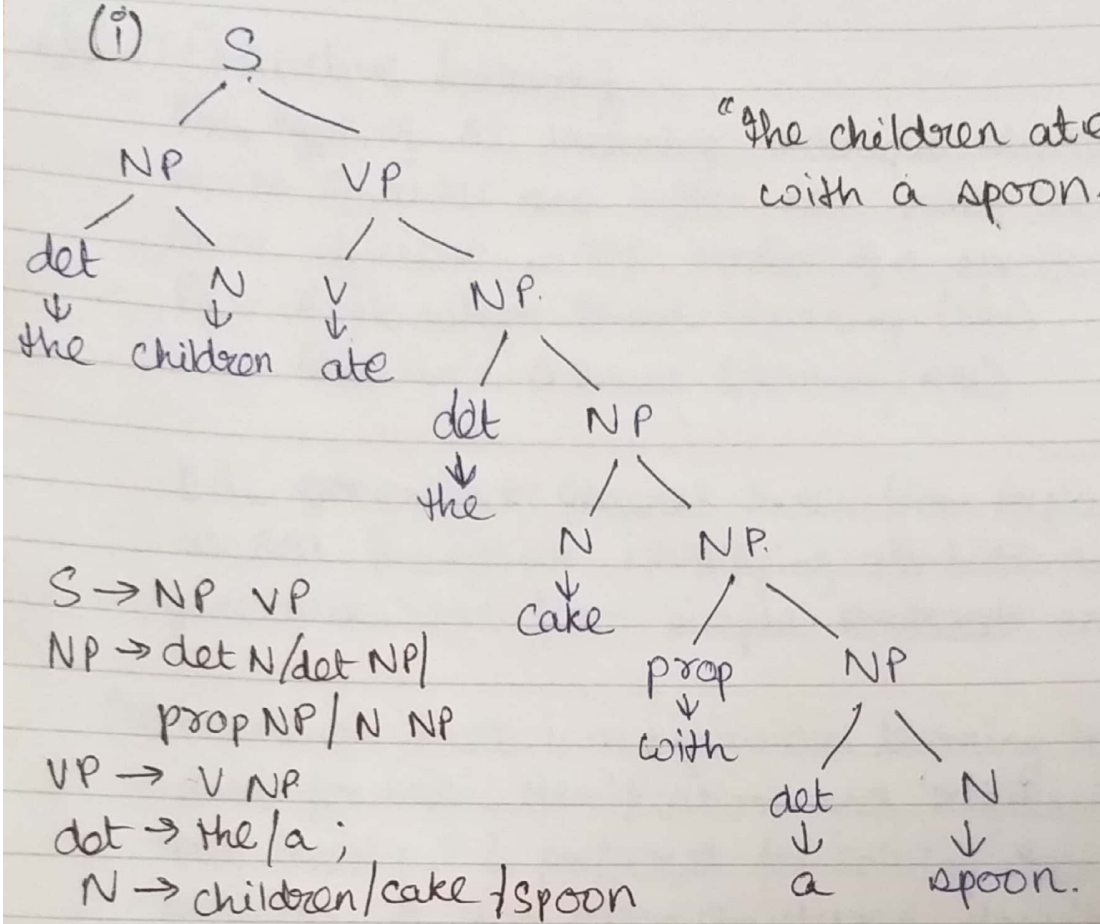
Q3.

(a) Natural language Processing (NLP) is a subfield of AI which deals with the methods of communicating with the computers in on's own natural language.

Phases of NLP

Lexical	Syntactic	Semantic	Discourage integration	Progmatic.
Ambiguity of a single word.	Occurs when a sentence is passed in diff. ways.	Occurs when the meaning of the words themselves can be misinterpreted	Arises due to the use of anaphora entities.	Situation where a context of a phrase gives it multiple interpretations

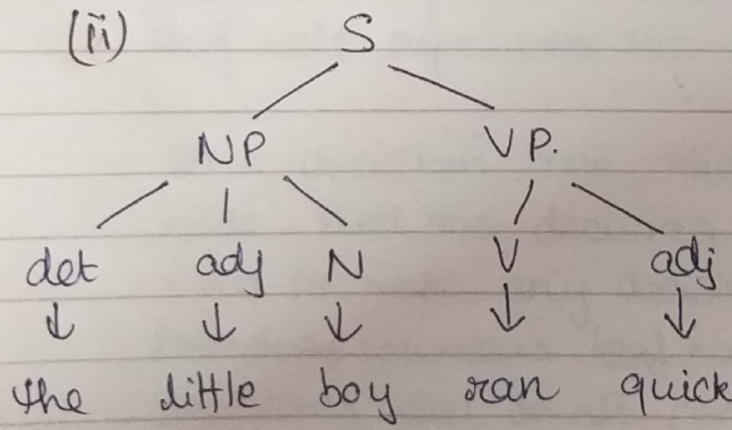
(i)



"The children ate the cake with a spoon."

S → NP VP
NP → det N / det NP / prop NP / N NP
VP → V NP
det → the / a ;
N → children / cake / spoon
prop → with
V → ate.

(ii)



"The little boy ran quickly".

S → NP VP
NP → det adj N
VP → V adj
det → The
N → boy
V → ran
adj → little / quickly.

(b) (i) Deductive learning.

This type of AI learning technique starts with the series of rules and infers new rules that are more efficient in the context of a specific AI algorithm.

Eg:- Explanation Based Learning (EBL)
Relevance-O Based Learning (RBL)

EBL extracts general rules from explanation where as RBL focuses on identifying attributes and deductive generalizations from simple example.

(ii) Decision Tree is a supervised learning technique used for both classification and regression problems but mostly it is prefferad for solving classification problems. It is a tree-structured classifier, where internal nodes represent the features of a dataset, branches represent the decision rules and each leaf node represents the outcome.

In a decision tree, there are 2 nodes:- the leaf node and the decision node. Decision node is used to make any decision and have multiple branches, whereas leaf nodes are the output of those decisions and do not contain any further branches.

Decision tree is a graphical representation for getting all the possible solutions to a problem/ decision based on given conditions.