Assignment No :- 1B

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sem :- VII / I.T

subject :- A I

DOP	DOA	Marks	Sign

Q.1. Explain PEAs descriptor for WUMPUS world

→ i) performance measure :-
  - +100 for grabbing goal & comming back to start.
  - --200 if player is killed
  - -1 per action
  - -10 for using arrow

ii) Enviroment
  - Empty rooms
  - Room with wumpus
  - Room neighbouring to wompus which are swells.
  - Rooms with gold which is glitery.
  - Arrow to shoot wompus

iii) sensor (assuming Robotic agent)
  - Camera to get the view
  - odour sensor to smell
  - Audio sensor to listen to screen bump

iv) Erector (assuming robotic agent)

  - Motor to move left right
  - Robot machanism to shoot arrow.
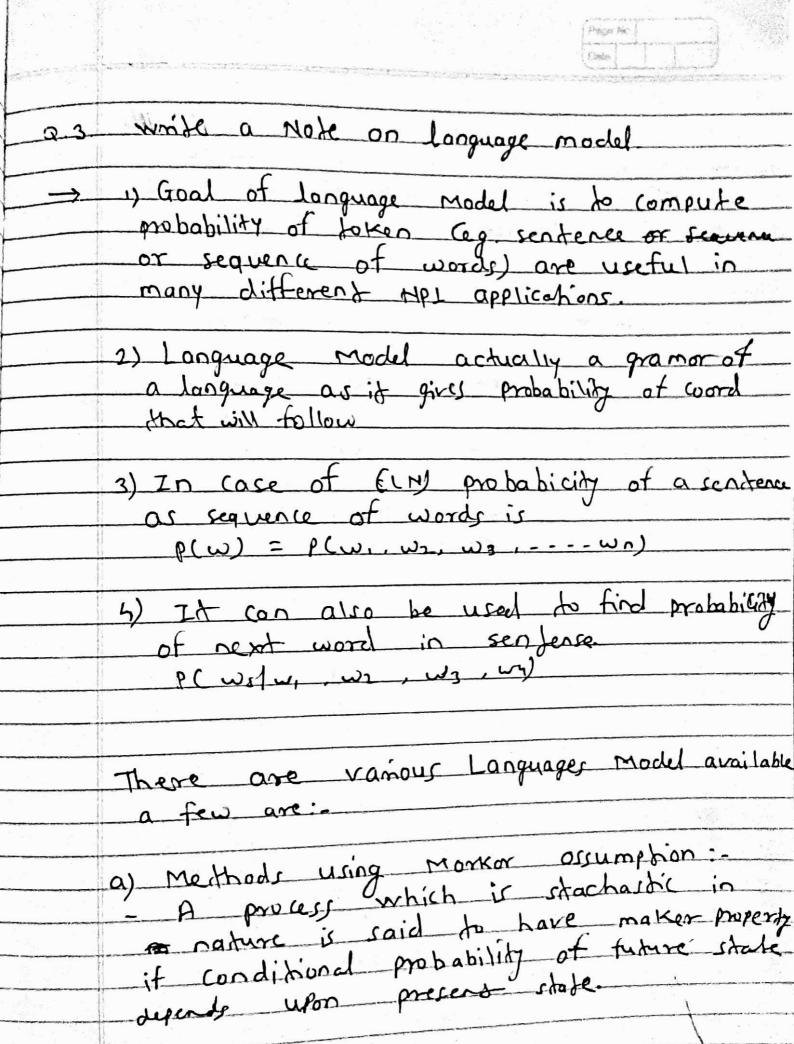
WUMPUS world agent has following characters :-

a) fully observable
b) Deterministics
c) static
d) Discrete
e) single agent

Q.2 Explain various elements of cognitive system

→ 1) Cognitive computing is new type of computing with goal of more occurate model of how human brain / mind senses, responds to stimulus.

2) Generally, term cognitve computing is used to refer to new hardware and/or software that uinic following functioning of human brain there by improving human decision making cognitive computing applic-ation links data Analysis of Adaptive page i.e. user interface to adjust content for perticular type of Audience.

- Following are elements of cognitive systems.

a) Interactive :-
   - They may interact esily with user so. those users can define their needs comfortably.

b) Adaptive :-

   - They may be engineered to feed on dynamic data is real time. They may learn as information, changes & as goods & requirments evolve.

c) contexual :-
- They may understand, identify or extract contexual elements such as syntax, location, appropriate domain etc

d) Interactive of state :-
- They may used in defining a problem by asking questions or finding additional source i/p if problems statement is in complete.

Q.3 Write a Note on language model

→ 1) Goal of language Model is to compute probability of token (eg. sentence or sequence or sequence of words) are useful in many different NPL applications.

2) Language Model actually a gramor of a language as it gives probability at word that will follow

3) In case of (LN) probabicity of a sentence as sequence of words is
$$P(w) = P(w_1, w_2, w_3, ---- w_n)$$

4) It can also be used to find probabicity of next word in sentence.
$$P(w_5 | w_1, w_2, w_3, w_4)$$

There are various Languages Model available a few are:-

a) Methods using Morkor assumption :-
   - A process which is stachastic in nature is said to have maker property if conditional probability of future state depends upon present state.

b) N - Gram Models :-

- from Marker assumptions we can formally
define models wher $K = n-1$ as following

$$p(w_i | w_1 w_2 \ldots w_{i-1})$$

c) unigran model $(K-1)$

$$p(w_1, w_2 \ldots w_n) = \Pi \, p(w_i)$$

d) Bigran model $(K=2)$:-

$$p(w_i | w_1 w_2 \ldots w_{i-1}) = p(w_i | w_{i-1})$$

$$(w_i | w_{i-1}) = \frac{count \, (w_{i-1} \ldots w)}{count \, (w_i - w)}$$

Q4. write a note on machine Translation!

→ 1) machine Translation is classic test of Language understand. It consist of both language analysis and generation. many machine translation system have huge commercial use following are few of eg:-

- Google Translate goes through 100 billion words per day.

- eBay uses machine translation the techique to enable cross-border trade & connect buyers / sellers ground grade.

- Facebook uses machine Translation to translate text into posts and comments automatically in order to break language barriers.

- system because 1st software provider to launch a machine Translation engine in more than 30 longues in 2016.

- microsoft brings AI powered translation to end users and developers on Android, I os and Amazon whether or not they have access to internet.

Q5 Explain Following terms :-

→ a) Phonology :-

It is study of organizing sounds systems adicaly in an NLP & system.

b) Morphology :-

It is study of construction of words from primitive meanig ful units.

c) Lexical Analysis :-

Lexical is words and phrase in langa uage Lexical Analysis deals with recogni- tion and identification of structure of sentences. It divides programs in sentences phrases and words.

d) Syntatic Analysis :-

In this sentences are parsed as noun verbs adjective and other parts of sentences zn this phase grammer of sentence is analyze in order to get relationship among diff words in sentences.

e] word sense disambiguation :-

- while using words that have more than one meaning we have to select meaning which makes most sense in context.

for eg :- we are typically given list of words sense. eg. from dictionary or from an online resource such as wordnet.