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Subject :- A.I

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Assignment No:-1B

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Q.1 Explain PEAS descriptions for wumpus world

- i) Performance measure
- +100 for grabbing the goal and coming back to start.
- -200 if the player is killed
- -1 per action
- -10 for using the arrow.

ii) Environment
- empty Rooms.
- Rooms neighbouring the coumpus which are smelly
- Rooms with bottomless pits.
- Rooms neighbouring with bottomless pits which are brery
- Rooms with gold which is glitery
- Arrow to shout the m. wumpus.

iii) seniors cossuming a robotic agerects
- camera to get the view
- odour sensor to press the stench ~~smell~~
- Audio sensor to listen to the screen and bump.

iv) ERRectors (assuming a robotic agent)
- motor to move left right
- Robot arm to grub the gold
- Robot mechanism to shout the arrow.

The wumpus world agent has following characters:-

a) Fully observable   b) netermingtics   c) episodic

d) Statlc   e) Discorete   f) single agent

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Q-2 Explain various elements of cognitive system.

— cognitive computing is a new type of computing with the goal of more accurate models of how the human brain/mind senses, reasons, and responds to stimulus generally, the term cognitive computing is used to refer to new hardware and/or software that mimic the following functioning of the human brain there by improving human desision making, congnitive computing applications links data amalysis and adaptive page diga ie Adaptive user interfaces to adjust content for a particular type of audience.

— following an elements of cognitive system :-

a) Interactive :- They many interact easily with users so that those users can define their needs comfortably. They may also interact with other processors, devices and cloud services as well as with people.

b) Adaptive :- They may be engineered to feed on dynamic data in real time. they may learn as information changes and as goals and requirements evolve. They may resolve ambiguity and tolerate uppredictability behavioures.

c) Contexual :- They may understand, idenity and extract contexual elements such as meaning syntax, location appropriate domain etc.

d) Iterative and stateful :- They may aid in defining a problem by asking questions on finding additional sources input if a problem statement is incomplete.

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Q.3 write note on Language model

- The goal of a language model is to compute a probability of token e.y a sentence on sequence of words and are we feed many different NPC applications.

- Language model (LM) actually a grammar of a language as it gives me probability of word that will follow.

- In case of (LM) the probability of a sentence as sequence of words is :- $P(w) = P(w_1, w_2, w_3, \ldots w_n)$

- It can also be used to find the probability of the next word in sentence $P(ws|w_1, w_2, w_3, wt)$

- A model that compacted either of them is language model

- There are various language model available, a few are :-

a) Methwoods using Markov assuption :-

- A process which is stochatic in nature, is said to have the Markov property if the conditional probability of future states depends upon present state.

b) N-gram models :-

- from the markov Assumptions, we can following defined model where $k = n-1$ as following.

$$p(w_1/w_1 w_2 \ldots wi-1)$$

c) Unigrum model (k=1) :-

$$p(w_1 w_2 \ldots wn) = \prod_i p(wi)$$

d) Bigrum Model (k=2) :-

$$p(w_1/w_1 w_2 \ldots wi-1) = p(wi|wi-1)$$

$$(w_1/wi-1) = \frac{count(wi-1 \ldots w)}{count(wi-1)}$$

Q-4 write a note on machine Translation:-

- Machine Translation is classic test of language understand It consists of both language analysis and generation. Many machine translations system have huge commerical use. following are few of the examples:-

• Google Translate goes through 100 billion words per day

• eBay uses machine translation techniques to enable cross-border trade and connect buyers / sellers around globe

• Facebook uses (MT) to translate text in post and comments automatically in order to break language barriers.

• Systram be come the first software provider to launch a Neural Machine Translation engine in more than 30 languages in 2016

• Microsoft brings AI - powered translation to end user and developers on Android, ios, and Amazon fire, whether or not they have access to the Internet.

- In a traditional machine Translation system, parallel corpus a collection of trees is used to each of width is translated into one or more other language than the original. for example given the source language e.g. french and the target language eg. English, multiple statistical models needs to be build, including a probabilistic translation using the Bagesian Rule, a translation model P(F|e) trained on parallel corpus, and a language model P(e) trained on the English corpus

- It is obious that, this approach skips hundreds of important details requires a lot of human feature engineering, and is overall complex system.

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Q5) Explain the following terms:-

a) phonology :-
- It is the study of organizing sounds systematically in an NLP (natural, language, processing) system.

b) morphology :-
- It is a study of construction of words from primitive meaningful units.

c) Lexilon Analysis:-
Lexilion is the words and phrases in language, lexial analysis dea with the recognition and identifiation of structure of sentence. It delvides the parugraphs of in servences, phrases and words.

d) Syntactic Analysis :-
- In syntactic Analysis the sentences are parsed as noun verbs, adjective and other parts of sentences. In this phase the grammer of the sentence is analyzed in order to get relationship among differently words in sentences. for example, "mango eat me" will be rejected by analyzer

e) word sense disambiguation :-
- while using words that have more than one meaning we have to select the meaning which makes the most sense in context. for example, we are typically given a list of words associated word serves leg from a distionary or from an online resource such as word net.