1

Assignment No:- 1B

Name:- Priam. R. Tarakar

R. No:- 71

Sem/Branch:- VII/I.T

Batch:- I3

Subject:- A.I

DoP	DoA	marks	Sign

Q.1) Explain PEAS descriptions For Wompys World

→

i) Performance Measure :-
- +100 For grabbing gaal & coming back to start.
- -200 if player is killed
- -1 Per action.
- -10 For using arrow.

ii) Enviroment
- Empty Rooms
- Room with WUMPUS
- Rooms neighbouring to wumpus which are Smelly.
- Rooms with bottomless pits
- Rooms neighbouring with bottomless pits which are breezy
- Room with gaal which is glitery
- Arrow to shoot WUMPUS.

iii) Sensors (assuming Robotic Agent)
- Camera to get the view
- colour Sensor to Smell
- Audio Sensor to listen to scree & bump.

iv) Effectors (assuming robotics agent)
- motor to move left Right
- Robot arm to grab.

- Robot Mechanism to Shoot arrow.

Wumpus world agent has following characters.

a) Fully observable
b) Deterministics
c) Sechic
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 accurate models of how human brain / mind senses, reasons, & responds to stimulus.

(2) Generally, term Cognitive Computing is used Software that mimic following functioning of human brain thereby improving human decision making Cognitive Computing application links Adaptive user interfaces to adjust Content For Particular type of Audience
-Following are elements of cognitive System.

a) Interactive:-
- they may interact easily with users. so that those users can define there needs comfortably they may also interact with other processors devices & cloud services as well as with people.

b) Adaptive:-
- They may be engineered to feed on dynamic data in real time. they may learns information. changes & as goals or requirements envolve. They may resolve ambiguity & tolerate unpredictability behaviours

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

d) Iterative
- they may used in defining a problem by asking questions or finding additional source input if problem statement is incomplete

Q. 3) Write Note on language model.

→

① Goal of language model is to compute Probability of taken (eg. Sentence or Sequence of words) are useful in many different NLP Applications.

② language model actually grammar a language as it gives Probability of word that will follow.

③ In case of (LM) Probability of a sentences as sequence of words is $P(w) = P(w_1, w_2, w_3 \ldots w_n)$

④ It can also be used to find Probability of next word in Sentence $P(w_5 | w_1, w_2, w_3, w_4)$ A model that computes either of these is language model.

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

a) Method using Markov assumption :-

- A Process which is Stochastic in nature is said to have mark Property if Conditional Probability of future States depends upon Present State

b) N-Gram Models :-

- From Markov assumptions we can Formally define models where k=n-1 as following.

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

c) Unigram model ($k=1$):-

$$P(w_1 w_2 \ldots w_n) = \prod_i P(w_i)$$

d) Bigram model ($k=2$):-

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

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

Q4) Write a Note on Machine Translation?

→

① Machine Translation is classic test of language understand It consist of both languages analysis & generation many mehone-translation System have huge Commercial use. following are few of examples :—

- Google translate goes through 10 billion words Re day.
- e Bay use Machine translation techniques to enable Goss-border trade & connect buyers / Sellers around globe.

- Facebook uses machine Translation to translate text in Posts and Comments automatically in order to break language barriers.
- System became 1st Software Provider to launch a machine translation engine in more than 30 language in 2016
- Microsoft brings AI-Powered translation to End User & developers on Android, Ios, & Amazon fire Whether not they have access to Internet
- In traditional machine Translation System, Parallel Corpus Collection of trees is used to each of width is translated into one or more other language than original For eg. given source language eg. French & target language eg. English. multiple Statistical models needs to be build, Including a Probabilistic Formulation using translation model trained on Parallel Corpus & language model P(e) trained on english Corpus.

- It is obvious that this approach skips hundreds of important details requires alot of human feature engineering & overall a Complex System.

Q5) Explain following terms:-

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

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

c) Lexical Analysis:-
- Lexicon is words & phrases in language lexical Analysis deals with recognition & identification of structure of sentences. It divides paragraphs in sentences, phrases & words.

d) Syntatic Analysis:-
- In this sentenses are parsed as noun, verbs, objective & other parts of sentences. In this phase grammer of sentence analyze in order to get relationship among different word in sentences.

e.g 'mango eats me' will be rejected by analyzer

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 can typically given list of words associated word senses e.g for dictionary or from an online Resources such as word net.