

K.G.C.E.
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Assignment No :- 1B

Page No. :

Date :

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Roll no :- 15

Batch :- II

Sem :- 7th - IT

Subject :- A.I

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Q1] Explain PFA's descriptions for WUMPUS world

→ ① Performance measure :-

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

② Environment

- Empty rooms
- ROOM with WUMPUS
- Rooms with bottomless pits
- Rooms neighbouring with bottomless pits which are breezy
- Room with gold which is glittry.
- Arrow to shoot WUMPUS

③ Sensor (assuming Robotic agent)

- Camera to get the view
- Audior sensor to smell
- Audio sensor to listen to screen bump.

④ Effector (assuming robotic 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) Deterministic
- (c) Static
- (d) Discrete
- (e) Single agent

g) 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 and responds to stimulus.
- ② Generally cognitive computing is used to human brain thereby improving human decision making cognitive computing applications links data Analysis of Adampire page i.e Adaptive user interfaces to adjust content for particular type of Audience.
- Following are elements of cognitive system

③ Interactive :-

- They may interact easily with user so those users can define their needs comfortably. They may also interact with other processors devices of cloud services as well as with people.

④ Adaptive :-

- They may be engineered to on dynamic data in real time. They may learn as information changes and as goal and requirements evolve.



② Contextual :-

- They may understand identify or extract contextual elements such as meaning, syntax, location, appropriate domain etc.

③ Interactive of state.

- They may used in defining a problem by asking questions or finding additional source input if problem statement is incomplete

Q3] Write a note on language model.

- ① Goal of language model is to compute probability of token (eg. sentence or sequence of words) are useful in many different NLP applications.

② Language Model actually a grammar of a language as it gives probability of word that will follow.

③ In case of (LM) probability of a sentence as sequence of words is

$$P(w) = P(w_1, w_2, w_3, \dots, w_n)$$

④ It can also be used to find probability of next word in sentence

$$P(w_5 | w_1, w_2, w_3, w_4)$$

⑤ A model that computes either of these is language model.

There are various languages model available a few are:-

- ② Methods using Markov assumption :-
A process which is static in nature
is said to have markov property if conditional
probability of future state depends upon
present state.

- b) N-Gram Models :-**

- From Markov assumption we can formally define Models when $k = n - 1$ as following

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

(c) Trigram model ($k=3$)

$$p(w_1, w_2, \dots, w_n) = \prod p(w_i)$$

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

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

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

Q4] Write a note on machine Translation.

- ① Machine Translation is classic test of language understood. It consists 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 techniques to enable cross-border trade & connect buyers / sellers around globe
 - Facebook uses machine translation to translate text into posts and comments automatically in order to break language barriers.
 - Systran became 1st software provider to launch a machine Translation engine in more than 30 languages in 2016.
 - Microsoft brings AI Powered translation to end users and developers on Android Ios and Amazon whether or not they have access to internet.
 - In tradition machine translation systems parallel collection of rules is used to each of which is translated into one or more other languages than original.
eg:- given source languages eg. french & english.

g5.) Explain following terms:-

→ (a) Phonolog :-

- ④ Phonology :-
— It is study of organizing sounds systematically in an NLP (Natural language Processing) system

⑥ Morphology :-

- It is study of construction of words from primitive meaningful units

② lexical Analysis:-

- Lexical is words and phrase is language
Lexical Analysis deals with recognition and identification of structure of sentence.
It divides programs in sentences phrases and words.

(d) Syntactic Analysis :-

- In this sentence all parts of speech are analysed as noun verbs adjective and other parts of sentences. In this phase grammar of sentence is analyze in order to get relationship among different words in sentences.

eg :- Mango eats me will be register by analyze

(P) Word sense disambiguation:-

- While using words that have more than one meaning we have to select meaning which .

new makes most sense in context

for eg :- We are typically given list of
word sense eg. from dictionary or from
an online Resource such as word net.

