Assignment No. 1B

Name: siddharth. S. Soni

Roll no: 66

Sem/Branch: VII / I.T

Batch: I3

Subject: AI

Q1) Explain PEAS descriptors for Wumpus world

A) i) Performance Measure

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

ii) Environment

- Empty Rooms
- Room with WUMPUS
- Rooms neighbouring with bottomless pits which are breezy
- Rooms with gold which is glittery
- Arrow to shoot WUMPUS

iii) Sensors (assuming Robotic Agent)

- camera to get the view
- odour sense to smell.
- audio sensor to listen to scream burnt

iv) Effectors (assuming robotic agent)

- Motor to move left right
- Robot arm to grab
- Robot mechanism to shoot arrow.

Wumpus World agent has following characteristics

a) Fully observable
b) Deterministic
c) Static
d) Discrete
e) Single agent

Q2) Explain various elements of cognitive system

a) 1) Cognitive computing is new type of computing with goal of more accurate models of how human brain sense, reasons and respond to stimuli

2) Generally cognitive computing is used to refer to new hardware or software that mimic following functioning of human brain thereby improving human decision making cognitive computing application links data analysis and adaptive page to display user interface to adjust content and particular type of audience

Following are elements of cognitive systems :

a) Interactive :
- They may interact easily with user so that those users can define their needs comfortably they must also interact with other processor devices & cloud services as well as with people

b) Adaptive
- They may be engineered to feed on dynamic data in real time

they may learn of information, changes and as goals & requirements

c) Contextual:

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

d) Iterative

- They may be used in defining a problem by asking questions finding additional sources input & problem statements in complex

Q3) Write note on language model

A) 1) Goal of language model is to compute probability of token are useful in many different NPL applications

2) language model actually gaumnar of a language as it gives probability a word that will follow

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

4) if $P(w) = (P(w_1, w_2, w_3, \ldots w_n)$

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

5) A model that computer either a that is language model

6) there are various language
   a) Models are available also
   a) Methods using Markov assumption
   - A process which is stochastic in nature is said to have markov property is conditional probability of future state depend up. present state
   b) N-gram models
   - prom markov assumption we can finaly define models where $k = n-1$ as following

b) N-gram models,
- From Markov assumptions we can formally define models where $n = n-1$ as following

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

c) Unigram model (n-1):

$$P(w_1, w_2 \ldots w_n) = \prod P(w_i)$$

d) Bigram Model (n-2) =

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

Q4) Write a note on Machine Translation?

A) Machine Translation is classic test of language understood it consist a both language analysis and generation many translation sysim have huge commercial use following are few of examples
- Google translate goes through to billion words per day
- eBay us. us machine Translation to translate text to pass and comments automatically in order to break language barriers
- systran become 1st software provider to launch a more than 30 language.
in 2016
- microsoft bring AI. Powered provided to launch a machine Translation Engine more than 30 language
- Microsoft Bing AI Powered translation to end users are developed to on Android, Ios an proze. for which can not the have access to Internet
- In traditional machine translation sysim Parallel Corpus collects

of the... it used to each of width is translated into one or more other languages than original one eg given source language eg French and target language eg English multiple statistical models needs to be build including a probabilistic formulation using translation model on parallel corpus and trained on on english corpus

- It is obvious that the approach skips hundred of important details, required a lot of human efforts. engineering and is overall a complex system

Q5) Explain following terms:

a) Phonology:

- It is study of orginizing sounds systamitically in an NLP system

b) morphology:

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

c) Lexical Analysis:

- lexicon is words and phrases in language lexical Analysis dear with recognization & identification of structure of sentence it divided paragraph in sentence phrase and word

d) syntatic Analysis:

- In this sentences and parse as noun, verbs, adjective and other parts of sentence. In this phase grammar of sentence is analyzed in order to get relationship among different word in sentence

-cu - Many eats me will be
record by analyzed

e) Wonder Sene dicambiution:-
- While using words that have more
than one meaning we have to
select meaning which make
more sense in context. for eg
we an typically given list of
words associated word senses
from dictionary or from an
online Resource such a wordnet