| К.              | G.C.E.       | n –             | 0                       | L B)               | Page No. :   |
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| Karj            | at - Raigad  |                 | Assignment 1> Part      |                    | Date :   |
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| Name            | - 70         | han. K. Muda    | aliyar.                 |                    |  |
| 2.1             |              |                 |                         |                    |  |
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| <i>C</i> )      | - T          | F (7.T          |                         |                    |  |
| Class           | - 6          | ·E· (I·T·       |                         |                    |  |
| Batch           | 7            | -2.             |                         |                    |  |
| שונה            |              | -2.             | MARKET TO BE A STATE OF | e.                 |  |
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|                 |              | 107             |                         | <u> </u>           |  |
|                 |              | 1 2,3           |                         |                    |  |
|                 |              | A.              |                         |                    |  |
| 6)              |              |                 |                         |                    |  |
|                 |              |                 |                         |                    |  |
|                 |              |                 |                         |                    |  |
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K.G.C.E. Karjat - Raigad

AI Assignment 1> Pant B)

Page No.: /

| COLLOCER  | TOTAL CONTROL OF THE PROPERTY |
|-----------|---|
| GCERGCER! | GCEKGCEKGCEKGCEKGCEKGCEKGCEKGCEKGCEKGCEK  |
| Q-1)      | Explain PEAS descriptons for WUMPUS World.  |
| 11 11     | Penformance measure.  |
| (i)       | + 100 for graping the gold and coming back to the   |
|           | Stanting position.  |
| tii       | -200 if the player (agent) is Killed  |
| Gii       | -1 pen action   |
|           | -10 for using the annow   |
| 11 1      | Environment.  |
|           | Empty Rooms   |
| (ii)      | Rooms with wumpus   |
| Ciii)     | Rooms heighborning to Wumpus which one smelly.  |
| Civi      | Real of with hattonless pits.   |
| (v)       | Rooms neighborning to bottomless pitts which one breezy.  |
| (vi)      | Room with gold which is glitteny.   |
| CVID      | Annow to shoot the WUMPUS.  |
| (2)       | Senson (assuming a mobotic agent).  |
| (:)       | Comena to get the view.   |
| (ii)      | Odnun senson to smell the stench.   |
| Giù       | Audio Senson to listen to the Scheam & bump.  |
| a) d      | Effections (assuming a probotic agent).   |
| ci/       | motor to move left night.   |
| cii)      | Robot and to grab the gold  |
| Gii       | Robot mechanism to shoot the annow.   |
|           | The wumpus would agent has following Characteristics  |
|           | Fully observable Single agent.  |
|           | Peter ministic.   |
| -         | Episodic.   |
| -1111     | Static.   |
| 1 -       | Dis meter   |
|           |   |
|           |   |

|                    | Raigad Date:  |
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| H                  |   |
| 6.3                | > Explain vanious elements of congnitive system.            |
| 11.                | 1 0. Interpreting thout                                     |
|                    | A Constitute System needs to answer                         |
|                    | on speciale a result based on an important                  |
|                    | the input might be a Search term, cost privary              |
|                    | a guerry asked in hatural language on it may                |
|                    | be a response to an action of some some                     |
|                    | The first thing a system heeds to do is understand          |
|                    | the context of signal.                                      |
| £.                 | Location, speed of motion.                                  |
| 0                  | such context info will po enable the system to              |
|                    | harrow down the potential responses to those that           |
| 2114 115           | are more appropriate.                                       |
| h)                 | A body of content / Information that supports the decresion |
|                    | The purpose of cognitive system is to help humans           |
|                    | make choices and solve problems. But the system             |
|                    | is & does not make up the answer. Even synthesis            |
|                    | of new Knowledge is based on foundation Knowledge.          |
| s no le v          | IBM watson for example ingests many structured              |
|                    | nepositories of information, dictionaries, news antides     |
|                    | databases taxonomics & a ontologies.                        |
| c)                 | A way of processing the signal against the content /        |
|                    | into conpus   |
|                    | This is where machine learning for eg comes in              |
|                    | play- ml has been applied to categorization &               |
|                    | clossification approaches and advanced text analytics.      |
|                    | The processing might be in form of guerry /matching         |
|                    | algorithm on may involve other mechanisms to                |
|                    | interpret the guerry , transform it, neduce ambiguity,      |
|                    |   |
|                    | II .  |

Page No.: 3

| KGCEKGCEKGCEKG                             | GCEKG    | Date:  |
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|  |          | TEMPOSE NO SENGUENGUENGUENGUENGUENGUENGUENGUENGUENGU               |
|  |          | denive syntax, define word sense deduce logical                    |
|  | - 52     | nelationships on otherwise parse /process the signal               |
| ,  | _        | against the corpus   |
| ,-   |          |  |
|  | .3)      | Write note on Language Model.                                      |
|  |          | The goal of longuage model is to companie compute                  |
|  | , ,      | in many different Natural language processing applications         |
|  | b)       | Lm actually is a gramman of a Languages.                           |
|  | c)       | for Eg - they have been used in Twitten Bots for                   |
|  |          | 'nobots' accounts to form their own sentence.                      |
| 1  |          | Lanavage model Pefinition.   |
|  | a)       | In case of Probablistic language modeling the                      |
|  |          | Inobability of vax sentence was sequence of wonds 15               |
|  |          | Calculated: P(W) = P(W, W2, W3, Wh).                               |
|  | b)       | It can also be used in to find the probility of                    |
|  |          | the next word in the sentence: P(ws IW, Wz, Wz, W4).               |
|  | c)       | A model that computes either of these is called                    |
| li   | 1 -      | a Language model.  |
|  | $\omega$ | a Language model.  There are various Language models in avaible in |
|  |          | practise. Following are few of them.                               |
| 4.   | ا زن     | methods using the Mank ov assumption.                              |
|  |          | The Probability of the next word can be estimated                  |
|  |          | given only the prievious K number of words.                        |
| THE P. | £9 :     | if K=):  |
|  | 0        | P(transparent lits water is so) = P(transparent 1 so)              |
|  |          | on if $K=2$ :  |
|  |          | P(transparent ) its water is so) a P(transparent lis so)           |
|  |          | Following is the general equation for the Mankov                   |
|  |          | Assymption, K=i: P(W: W, W2 Wi-1) = P(W: Wx-K Wi-1).               |
|  |          | 11 23 N IN D / 11 3  |
|  |          |  |

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|-----------------|--------|--|
| 1               | Cii    | N-gram Models  |
| 4 - 1-7 - A     | . 1    | From the markov Assumption, we can formally  |
|                 |        | define N-gram models where K=h-1 as follows:                                       |
|                 |        | P[(Wi) W1 W2 Wi-1] & P[Wi   Wi-(p-1) Wi-1]   |
| -               | _      | The simplest vension of this one defined as Unignam                                |
| - L             |        | model (K=1) of the Bignam model (K=7).   |
| entit sint      | Cili   | Vrignam Model (K=V: P(W, W2 Wn) 2 Tp(W1).  |
|                 | (ivi)  | Rignam Model (K=2): P(Wi) W, W2 Wi-Jap[wi] Wi-1]                                   |
|                 | i      | Following is max Likelihood Estimate model to                                      |
|                 |        | Estimating Bignam Probabilities:   |
| - 3             |        | (wi) Wi-1) = (ount (wi-1 wi)   |
|                 | , i    | (ant (w1)  |
|                 | çg :   | A compus with following 3 sentence, let's find out                                 |
| - n             |        | prohobility that I Stant the sentence. Here 'Ls' ?                                 |
| 7               |        | "/5>" denote the stant and end of sentence nespectively                            |
|                 |        | (s I am Sam /s)  (s Sam I am /s)   |
|                 |        | 15 Jam 1 am /5/  |
|                 |        | Ls I do not like green eggs & ham /s)  |
|                 |        | There fore, we have: $P(I \zeta_5) = (\text{ount }(\zeta_5, I) = 2$                |
|                 |        | (ount (45) 3   |
| 11              | Cin l  | "I" appeared as the first word in two sentence.                                    |
|                 | CV/    | Language Modelling is one of most imp. parts of modern                             |
|                 |        | Natural Language Processing. There are many sort of apps                           |
| 67              |        | for Language modelling like: Spell connection Speech                               |
|                 |        | recognition Muchine Translation Overstion Answering                                |
| 97              | (vi)   | Symmanization Sentiment analysis etc requires use of Lm.                           |
|                 |        | Moneover, language modelling most also consider the co-related ordening of tokens. |
| To good         |        | of tottens   |
|                 |        |  |
|                 |        |  |

Page No.: 5

| KGCEKGCEKGCEKG | CEKGCEK       | GCEKGCEKGCEKGCEKGCEKGCEKGCEKGCEKGCEKGCEK                      |
|----------------|---------------|---|
| RODENGOENGOENG |               | GCENGCENGCENGCENGCENGCENGCENGCENGCENGCEN                      |
|                | Q·4)          | Write Note on Machine Translation.                            |
|                | $\rightarrow$ | Machine translation is the classic test of language           |
|                |               | understanding. It consists of both longuage onalysis 4        |
| )-<br> -       |               | language Constitution muchine language chings                 |
|                |               | language generations many machine translation systems have    |
|                | 11 1          | huge commercial use (ike:                                     |
|                | 222           | Google Translate goes through 100 billion words perday.       |
|                | (1)           | e Bay uses Machine Translation Techniques to enable cross-    |
|                | (             | bonden trade & connect buyens and sellen around the world.    |
|                |               | Facebook uses machine translation to translate text in        |
| -              |               | posts and comments automatically in order to break            |
|                | 1.2           | longvage bonniens de de la la Colon de la                     |
|                | b/            | In a traditional Prachine Translation System parallel         |
| <u> </u>       | 3 .           | conpus a collection of Texts is used each of which,           |
|                |               | is translated into one on more language.                      |
| 1              | (7)           | It is obvious that, this approach neguines a lot              |
| 1              |               | of a lot of human feature engineering consists of             |
| -              | 4             | many different + Independent m1 problems.                     |
| 1              |               | Neunal Machine Translation (NMT).                             |
| 0              | i             | Std NMT is an end-to-end neural network where                 |
|                |               | the source Sentence is encoded by a Reconsient Neural         |
| 1              |               | Network (RNN) called encoder, & the target words              |
| -              | 1             | are predicted using another RNN Known as decoders.            |
| - A 1 - 1      |               | Features of NMT are:  |
| 1-1-           | (i)           | End-to-End training - All parameters in NMT are               |
| 1.41.          |               | Simultaneously optimized to minimize a loss function in %P.   |
| -              | City          | Distributed representation - NAT has a better explanation     |
|                |               | of word & phrase similarities. Hences, its nobest franslator. |
| -              | Ciii          | Betten explonation of content - NMT can use a much bigger     |
|                |               | context for both sounce and puntial tanget tanget text.       |
|                |               | <u> </u>  |
|                |               |   |

| Karjat            | - Raigad ————————————————————————————————————  |
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| касекасекасекасек | GCEKGCEKGCEKGCEKGCEKGCEKGCEKGCEKGCEKGCEK   |
|                   |  |
| G                 | i) More Fluent text generation 1 - Deep Learning text generation   |
| A 1               | is of much bi higher quality than the parallel corpus  |
| · -               | way.   |
|                   |  |
|                   | - long Short Term Memory (LSTM).   |
|                   | 15TM works as a solution to vonishing gradient   |
|                   | problem by introducing gates and an explicitly defined   |
| 7 . 1             | memony cell. Each heuron has memony cell and three   |
| . In              | gates: Input, Output 4 Forget. The function of these   |
|                   | gates is to safeguard into by stopping on allowing   |
|                   | the flow of it.  |
|                   | The state of the s |
| i                 |  |
|                   | from the previous layer get stored in cell.  |
|                   | (ii) The output layer takes the job on the other end 4   |
|                   | determines how much of next layer get to Know about  |
|                   | the ctate of this (ell.  |
| Ci                | iii) The Fonget gate Seema like an odd inclusion at finst  |
| }                 | but cometime its good to forget If its Learning  |
|                   | a book and a new chop chapter begins it may be   |
|                   |  |
|                   | necessary for the network to forget some characters  |
| -                 | from the previous chapter.   |
|                   | - Gated Reconnent Units (GRV).   |
| Ji.               | They are slight vaniation on LSTMs and are   |
| 1                 | extensions of Nevral Machine Translation. They have one  |
|                   | less gate 4 are wined slightly differently. GRV has an   |
|                   | worlde ate instead of an Flor Old  |
|                   | update gate instead of an I/P O/P on a forget gate   |
|                   | This update gate determines how much info to be kept   |
| 1 at 1 t 1 t 2    | from the last state 4 how much into to forget  |
| h (1) x (1) .     | From the previous Layer.   |
|                   |  |
| 7                 |  |
|                   |  |

Page No.: 7

| a) Phonology.  The is the study of the speech sounds of a particle language. The origin of the word cun be traced to Gneek language where 'phone' means sound on voice. Phonetics a subdivision of phonology is the study speech sounds of human language from the perspect on their physical properties. IPA (International Phone Alphabet) is a tool that represents human sounds in a regular way while studying phonology.  The is a branch of linguistics that focuses on the way in which words one formed from prophemes - homety to are two types of morphemes hamely lexical morpheme of grammatical morpheme - steming is the simplest form of morphological processing.  C) Lexical analysis deals with the recognition and identifice  | KGCEKGCEKGCEKG | 3CEKGCEK                | GCEKGCEKGCEKGCEKGCEKGCEKGCEKGCEKGCEKGCEK   | VCCEV      |
|--|----------------|-------------------------|--|------------|
| a) Phonology.  The is the study of the speech sounds of a pantic language. The onigin of the wond can be traced to Greek language whene 'phone' means sound on voice. Thenetics, a subdivision of phonology is the study speech sounds of human language from the perspect on their physical properties. TPA (International Phone Alphabet) is a tool that represents human sounds in a regular way while studying phonology.  1) Monphology.  1) Monphology.  1) Monphology.  2) Monphology.  2) Monphology.  3) Monphology.  4) Anaminatical monphemes from prorphemes - hamely the way in which wonds are formed from prorphemes - hamely the green and the way form of monphological processing.  4) Lexical analysis.  4 Lexical analysis deals with the recognition and identifice.  |                | ##                      |  | ENGCEN     |
| a) Phonology.  The is the study of the speech sounds of a pantic language. The onigin of the world can be traced to Greek language whene 'phone' means sound on voice. Thornetics, a subdivision of phonology is the study speech sounds of human language from the perspect on their physical properties. TPA (International Phone Alphabet) is a tool that represents human sounds in a regular way while studying phonology.  b) Monphology.  The is a branch of linguistics that focuses on the way in which worlds are formed from prophemes - hamely to ane two types of momphemes hamely loxical mompheme of grammatical mompheme - steming is the simplest form of momphological processing.  c) Lexical analysis.  Lexical analysis deals with the recognition and identifice.  | 1041           | (\$.5)                  | Explain following terms.   |            |
| It is the study of the speech sounds of a particle language. The onigin of the word can be traced to speech language. Inhere 'phone' means sound on voice. Phonetics, a subdivision of phonology is the study speech sounds of human language from the perspect on their physical properties. IPA (International Phone Alphabet) is a tool that represents human sounds in a regular way while studying phonology.  1) Monphology.  1) Monphology.  1) This a branch of linguistics that focuses on the way in which words are formed from prophemes—hamely to ane two types of murphemes hamely located morpheme of grammatical morpheme. Steming is the simplest form of monphological processing.  2) Lexical analysis.  Lexical analysis deals with the recognition and identifice.  | 0              | 11 11                   | the Miles and the second of th |            |
| It is the Study of the speech sounds of a particle language. The onigin of the word can be traced to Greek language where 'phone' means sound on voice. Phonetics, a Subdivision of phonology is the study speech sounds of human language from the perspect on their physical properties. IPA (International Phone Alphabet) is a tool that represents human sounds in a regular way while studying phonology.  b) Monphology.  The is a branch of linguistics that focuses on the way in which words one formed from prophemes—hamely to ane two types of morphemes hamely lacical morpheme of grammatical morpheme. Steming is the simplest form of morphological processing.  c) Lexical analysis deals with the recognition and identifice  |                | a)                      | Phonology.   |            |
| Greek language where phone means sound on voice phonetics, a subdivision of phonology is the study speech sounds of human language from the perspect on their physical properties. TPA (International Phone Alphabet) is a tool that represents human sounds in a negular way while studying phonology.  It is a branch of linguistics that focuses on the way in which words are formed from prorphemes - hamely the anetwo types of morphemes hamely laxical morpheme of grammatical morpheme - steming is the simplest form of morphological processing.  C) Lexical analysis deals with the recognition and identifice   |                | $\rightarrow$           | It is the study of the coepch counts of a prote  | culan      |
| Phonetics, a Subdivision of phonology is the study  Speech Sounds of human language from the perspects on their physical properties. TPA (International Phone Alphabet) is a tool that represents human sounds in a regular way while studying phonology.  It is a branch of linguistics that focuses on the way in which words are formed from prophemes—hamely to are two types of murphemes homely lexical murpheme 4 grammatical morpheme—steming is the simplest form of monphological processing.  C) Lexical analysis.  Lexical analysis deals with the recognition and identifice  |                | -                       | language. The origin of the word can be traced I   | 6          |
| Speech Sounds of human language from the perspects on their physical properties. TPA (International Phone Alphabet) is a tool that represents human Sounds in a regular way while studying phonology.  The is a branch of linguistics that focuses on the way in which words are formed from promphemes - hamely to ane two types of mumphemes hamely lexical morpheme 4 grammatical morpheme - steming is the simplest form of morphological processing.  C) Lexical analysis.  Lexical analysis deals with the recognition and identifice  |                |                         | Greek language where 'phone' means sound on voice  |            |
| Speech Sounds of human language from the persperts on their physical propenties. TPA (International Phone Alphabet I is a tool that represents human Sounds in a regular way while studying phonology.  It is a branch of linguistics that focuses on the way in which words are formed from promphemes - hamely to are two types of morphemes hamely loxical morpheme 4 grammatical morpheme - steming is the simplest form of morphological processing.  c) Lexical analysis.  Lexical analysis deals with the recognition and identifice  |                |                         | Phonetics a Subdivision of phonology is the study  | · 0        |
| Con their physical properties. TPA (International Phone Alphabet) is a tool that represents human sounds in a regular way while studying phonology.  1) Monphology.  The is a branch of linguistics that focuses on the way in which words are formed from prophemes - hamely to ane two types of monphemes hamely lexical morpheme of grammatical morpheme - steming is the simplest form of monphological processing.  C) Lexical analysis.  Lexical analysis deals with the recognition and identifies  |                | 1                       | speech sounds of hyman language from the personal  | Sive       |
| Alphabet) is a tool that represents human sounds in a negular way while studying phonology.    Description   Descr | )              | 4                       | on their physical properties. TPA (International Phon  | etic       |
| b) Monphology.  It is a branch of linguistics that focuses on the way in which words are formed from promphenes - hamely to are two types of monphenes hamely loxical morphene 4 grammatical monphene - steming is the simplest form of monphological processing.  C) Lexical analysis.  Lexical analysis deals with the recognition and identification.   | 4              |                         | Alphabet ) is a tool that nepresents human sounds in   | a          |
| b) Monphology.  It is a branch of linguistics that focuses on the way in which wonds are formed from promphenes - homely the are two types of monphenes hamely lexical monphene 4 grammatical monphene - steming is the simplest form of monphological processing.  C) Lexical analysis.  Lexical is the wonds and phryses in language.  Lexical analysis deals with the recognition and identifice.   | 1 <u>1</u>     |                         | negular way while studying phonology.  | •          |
| in which words are formed from promphemes - hamely to ane two types of morphemes hamely lexical morpheme dependent of morpheme and processing.  C) Lexical analysis.  Lexical analysis deals with the recognition and identification.  |                |                         |  |            |
| in which words are formed from promphemes - hamely to ane two types of monphemes hamely lexical morpheme degrammatical monpheme - steming is the simplest form of monphological processing.  C) Lexical analysis.  Lexical analysis deals with the recognition and identification.   |                | b)                      | Monphology. 1 . 8 9 9 9 9 9  |            |
| in which words are formed from morphemes - hamely The are two types of morphemes hamely lexical morpheme of grammatical morpheme - steming is the simplest form of morphological processing.  c) Lexical analysis.  Lexical analysis deals with the recognition and identification.  |                |                         | It is a branch of linguistics that focuses on the war  | 4          |
| ane two types of monphemes hamely lexical monpheme  d grammatical monpheme - steming is the simplest  form of monphological processing.  c) Lexical analysis.  Lexical is the words and phryses in language.  Lexical analysis deals with the recognition and identification.  | _              |                         |  |            |
| d gnammatical monpheme - steming is the simplest  form of monphological processing.  c) Lexical analysis.  Lexical is the words and phryses in language.  Lexical analysis deals with the recognition and identification.  |                |                         |  |            |
| form of mon phological processing.  c) Lexical analysis.  Lexical is the words and phryses in language.  Lexical analysis deals with the recognition and identification.   |                |                         |  |            |
| Lexical is the words and phryses in language.  Lexical analysis deals with the recognition and identification.   | -              |                         |  |            |
| Lexical is the words and phryses in language.  Lexical analysis deals with the recognition and identification.   | · @            |                         |  |            |
| Lexical analysis deals with the necognition and identification   | 1              | (c)                     | Lexical analysis.  |            |
|  | 11             |                         |  |            |
| I local Visation of the contences of the   |                |                         |  |            |
|  |                | $\parallel \parallel$   | identification of structure of the sentences. It divide  | <u>e</u> s |
| the panagraphs in sentences, phoses and words.   | ·              | -                       | the panagnaphs in sentences, phoases and words.  |            |
|  | 1              | # #                     |  |            |
| d) Syntatic analysis.  | la .           | d)                      |  |            |
| In Syntactic analysis the Sentence are parised as he   |                | ##                      |  |            |
| Vents, adjectives and other pants of Sentences. In   |                | $\parallel \parallel$   | Venbs, adje adjectives and other pants of Sentences. In  |            |
| this phase the gramman of sentence is analyzed in  |                | $\parallel - \parallel$ | this phase the gramman of sentence is analyzed in  |            |
|  |                |                         |  |            |

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| KCCEKCCEKCCEKCCEK | GCEKGCEKGCEKGCEKGCEKGCEKGCEKGCEKGCEKGCEK   |
|-------------------|--|
| NGCENGCENGCEN     | GCERGCERGCERGCERGCERGCERGCERGCERGCERGCER   |
|                   |  |
|                   | onder to get the relationships among different   |
|                   | wonds in the sentence.   |
| 6                 | g: "mango eats me" will be rejected by Syntactic   |
|                   | and be signed as a |
|                   | analyzen.  |
| 7.5.              |  |
| é                 |  |
|                   | Word sense disambiguation. In natural language   |
| F                 | processing may be defined as the ability to determine  |
|                   | processing may be defined as the ability to determine which meaning of word is activated by the usen use   |
| F 5               | of word is with the  |
|                   | of word in particular context a process which  |
|                   | appears to be langely unconscious in people.   |
|                   |  |
|                   | 10 6 6 6 6 6 6   |
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| · Link            | A CONTRACTOR OF THE PROPERTY O |
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