



JSPM's



**Bhivarabai Sawant Institute of Technology and
Research, Wagholi, Pune-412207.**

Department of Computer Engineering

WORKBOOK

BE COMPUTER SEM I

A.Y. 2019-2020

**SUBJECT: ARTIFICIAL INTELLIGENCE AND
ROBOTICS(AIR)**

UNIT NO: 4

**Natural Language Processing and Artificial
Neural Network**

Completed By:

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Division: BE - B

Syllabus Covered

Unit IV	Natural Language Processing
Natural Language Processing: Introduction, Stages in natural language Processing, Application of NLP in Machine Translation, Information Retrieval and Big Data Information Retrieval. Learning: Supervised, Unsupervised and Reinforcement learning. Artificial Neural Networks(ANNs): Concept, Feed forward and Feedback ANNs, Error Back Propagation, Boltzmann Machine	

1) Define the following :

Natural Language Processing:

Natural Language processing (NLP) is a branch of artificial intelligence that deals with the interaction between computers and humans using the natural language. The ultimate objective of NLP is to read, decipher, understand, and make sense of the human languages in a manner that is valuable. Most NLP techniques rely on machine learning to derive meaning from human languages.

Machine Translation:

Machine translation (MT) refers to fully automated software that can translate source content into target languages. Humans may use MT to help them render text and speech into another language, or the MT software may operate without human intervention.

Information Retrieval:

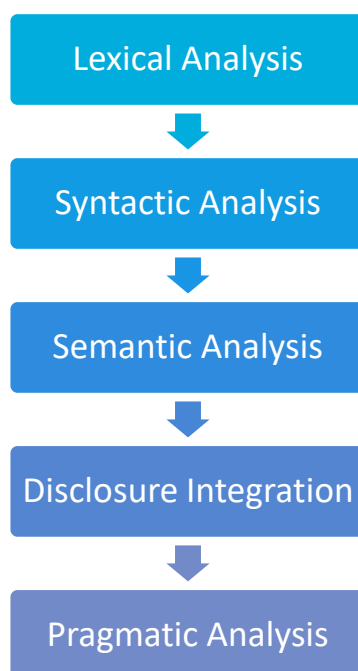
Information Retrieval (IR) can be defined as a software program that deals with the organization, storage, retrieval, and evaluation of information from document repositories, particularly textual information. Information Retrieval is the activity of obtaining material that can usually be documented on an unstructured nature i.e. usually text which satisfies an information need from within large collections which is stored on computers. For example, Information Retrieval can be when a user enters a query into the system.

Reinforcement Learning:

Reinforcement Learning is defined as a Machine Learning method that is concerned with how software agents should take actions in an environment. Reinforcement Learning is a part of the deep learning method that helps you to maximize some portion of the cumulative reward.

Artificial Neural Network:

An artificial neural network is an attempt to simulate the network of neurons that make up a human brain so that the computer will be able to learn things and make decisions in a humanlike manner. ANNs are created by programming regular computers to behave as though they are interconnected brain cells.

2) Write the missing contents in the following image:**3) Write the missing term.**

1. Phonology is the study of organizing the sound systematically.

2. Pragmatics deals with using and understanding sentences in different situations and how the interpretation of the sentence is affected.

3. Discourse deals with how the immediately preceding sentence can affect the interpretation of the next sentence.

4. NLP is a study of construction of words from primitive meaningful units.

5. Semantics is concerned with the meaning of words and how to combine words into meaningful phrases and sentences.

4) Choose the Correct alternative:

1. Which of the following is/are one of the important step(s) to pre-process the text in NLP based projects?

1. Stemming
2. Stop word removal
3. Object Standardization

- a) 1 and 2
- b) 1 and 3
- c) 2 and 3
- d) 1,2 and 3**

2. Machine learning is

- a) The autonomous acquisition of knowledge through the use of computer programs**
- b) The autonomous acquisition of knowledge through the use of manual programs
- c) The selective acquisition of knowledge through the use of computer programs
- d) The selective acquisition of knowledge through the use of manual programs

3. Why do we need biological neural networks?

- a) to solve tasks like machine vision & natural language processing
- b) to apply heuristic search methods to find solutions of problem
- c) to make smart human interactive & user friendly system
- d) all of the mentioned**

4. What's the main point of difference between human & machine intelligence?

a) human perceive everything as a pattern while machine perceive it merely as data

b) human have emotions

c) human have more IQ & intellect

d) human have sense organs

5. In which of the following learning the teacher returns reward and punishment to learner?

a) Active learning

b) Reinforcement learning

c) Supervised learning

d) Unsupervised learning

5) Differentiate between the following:

Sr. No.	Supervised Learning	Unsupervised Learning
1.	Uses Known and Labeled Data as input	Uses Unknown Data as input
2.	Computational Complexity is very complex.	It's less Computational Complexity.
3.	Uses offline analysis.	Uses real time analysis of data.
4.	Number of classes are known.	Number of classes are not known.
5.	Accurate and reliable results.	Moderate accurate and reliable results.

-----EVALUATION SHEET -----

Ques.no	Max.Marks	Marks Obtained	Remark
1	5		
2	2		
3	5		
4	5		
5	3		
TOTAL	20		

SUBJECT INCHARGE

DAC

HOD