

Library

Total Subject - 07



Semester: 2nd
Code: ML, CS-6234
Branch : Mtech-CSE

MID SEMESTER EXAMINATION-2020
School of Computer Engg
Kalinga Institute of Industrial Technology
Deemed to be University, Bhubvaneswar-24
Machine Learning
[CS-6234]

Full Marks: 20

Time: 1:1/2 Hrs

Answer any four questions including question No.1 which is compulsory. The figures in the margin indicate full marks. Candidates are required to give their answers in their own words as far as practicable and all parts of a question should be answered at one place only

Q1. Write short answers

[1X5]

- Define Machine learning and its applications.
- What is the difference between Regression and Classification?
- Differentiate between Global optima and Local optima.
- Why Logistic Regression is used?
- What are the problems for which machine Learning algorithms are suitable to be used?

Q2. a) Explain Supervised and Unsupervised learning techniques with suitable example.

B) Distinguish between Linearly separable and Non-linear separable problems.

[3+2]

Q3. Use **Perceptron Learning rule** to train the network. The set of input training vector are as follows:

$$X1 = \begin{bmatrix} 1 \\ -2 \\ 0 \\ -1 \end{bmatrix} \quad X2 = \begin{bmatrix} 0 \\ 1.5 \\ -0.5 \\ -1 \end{bmatrix} \quad X3 = \begin{bmatrix} -1 \\ 1 \\ 0.5 \\ -1 \end{bmatrix}$$

And the initial weight vector

$$W1 = \begin{bmatrix} 1 \\ -1 \\ 0 \\ 0.5 \end{bmatrix}$$

The learning constant $C = 0.1$. The desired responses are $d_1 = -1$, $d_2 = -1$, $d_3 = 1$.

Calculate the weight after one complete cycle.

Q 4. The values of x and their corresponding values of y are shown in the table below

| | | | | | |
|-----|---|---|---|---|---|
| x | 0 | 1 | 2 | 3 | 4 |
| y | 2 | 3 | 5 | 4 | 6 |

- Find the least square regression line $y = a x + b$.
- Estimate the value of y when $x = 10$.

Q 5. a) What is Back-Propagation learning algorithm, what is the object of the learning? Does the Back Propagation learning algorithm guarantee to find the global optimum solution?

C) Neatly draw an Model of 4-3-2-1 with Bias in each Neuron and label all weights correctly.
[2.5+2.5]