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Question Paper Code: 59051

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2020

Open elective

Civil Engineering

15UGS751 – Elements of Machine Learning for Engineers

(Common to ECE, EEE, EIE, Mechanical, IT, Chemical)

(Regulation 2015)

Usage of Spreadsheet like Excel/Google Sheet or Python Programming Permitted

Duration: 1 hour 15 min

Maximum: 30 Marks

PART A - (5x 2 = 10 Marks)

(Answer any five of the following questions)

1. Compare Parametric algorithm with Non parametric Algorithm? CO1- U
2. Distinguish between Classification and Regression? CO1- U
3. How is Gini index used in CART Algorithm? CO1- U
4. What are the advantages of ensemble algorithm? CO1- U
5. In KNN algorithm, to find out the nearest neighbours _____ distance is used. CO1- U
(a) Polar (b) Spatial (c) Euclidian (d) Nautical
6. If the prediction has two errors out of ten given input data. What is the percentage of accuracy? CO2- A
7. In Learning Vector Quantization, for a given input the distance between code book vectors are 1.32, 5.65, 0.25 & 2.89 respectively. Find out the Best Matching Unit (BMU) CO2- A

PART – B (2 x 5= 10 Marks)

(Answer any two of the following questions)

8. How is CART algorithm used for prediction? CO1-U
9. How does Boost AdaBoost help for perfect prediction? CO1-U
10. How are linear algorithms used for prediction in Machine Learning? CO1-U
11. How is Artificial Neural Network is effectively used in machine learning CO1-U

12. How is gradient descent algorithm used for prediction?

CO1-U

PART – C (1 x 10= 10 Marks)

(Answer any one of the following questions)

13. The following are GMAT score and CGPA by the students and the probability of getting selected to reputed Management Institution in UK is given

CO4- Ana (10)

GMAT Score	CGPA	Selection
780	4	1
750	3.9	1
590	3.3	0
600	3.3	0
730	3.7	1
620	2.7	0
540	2.7	0
580	3.3	0
660	3.3	1
650	3.7	1

- a) Find out the relationship of GMAT Score and CGPA and selection in reputed Management Institution using Logistic Regression Algorithm. Find out the values of bias and coefficients (B_0 and B_1 & B_2), when 100% accuracy is obtained.
- b) Predict the probability getting selected to the reputed Management Institution in UK for John who obtained GMAT Score and CGPA 650 and 3.5 respectively

14. The Robotics Club of Sethu Institute of Technology developed a Robot, 'ROSIT' and the club members wanted to include the gender identification feature for ROSIT. Hence, the members collected the facial data of boys and girls like face height (X_1) and face width (X_2) and the normalized facial dataset is given below.

CO4- Ana (10)

Predict the gender using normalized facial test data, using KNN Algorithm.

X1	X2	CLASS
0.73171	0.74286	Girl
0.75610	0.71429	Girl
0.68293	0.77143	Girl
0.78049	0.80000	Girl
0.70732	0.68571	Girl
0.87805	0.91429	Boy
0.92683	0.88571	Boy
0.90244	0.94286	Boy
1.00000	0.97143	Boy
0.95122	1.00000	Boy

Normalized Facial Test data	
X1	X2
0.8965	0.9265