Code: 20A05602T

R20

B.Tech III Year II Semester (R20) Supplementary Examinations January 2024

MACHINE LEARNING

(Common to CSE (DS) and Computer Science & Engineering)

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

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1		Answer the following: (10 X 02 = 20 Marks)	
	(a)	List and briefly outline the applications of Machine Learning.	2M
	(b)	Define outlier. How to handle it?	2M
	(c)	What is precision and recall?	2M
	(d)	Which operators are commonly used for combining various features?	2M
	(e)	What is prior and posterior probability?	2M
	(f)	What are the merits and demerits of kNN algorithm?	2M
	(g)	What are the conditions for positive and negative slope in linear regression?	2M
	(h)	Differentiate ridge and lasso regression.	2M
	(i)	What is the use of a dendrogram?	2M
	(j)	How apriori principle helps in reducing the calculation overhead for a market basket analysis? Provide an example.	2M

PART – B

(Answer all the questions: 05 X 10 = 50 Marks)

2	(a)	What are the different types of unsupervised learning? Explain them with a sample application in each area.	5M
	(b)	Analyse different ways of exploring categorical data.	5M
		OR	
3	(a)	Can all problems be solved using machine learning? Justify.	5M
	(b)	Explain in detail the different strategies of addressing missing data values.	5M
4	(a)	Discuss the need of bootstrap sampling.	5M
	(b)	Explain about Principle Component Analysis in dimensionality reduction.	5M
		OR	
5	(a)	While predicting malignancy of tumour of a set of patients using a classification model, following are the data recorded: (i) Correct predictions – 15 malignant, 75 benign (ii) Incorrect predictions – 3 malignant, 7 benign Calculate the error rate, Kappa value, sensitivity, precision, and F-measure of the model.	5M
	(b)	Why is cosine similarity a suitable measure in context of text categorization? Find the cosine similarity for the below two rows in a document - term matrix have values - (2, 3, 2, 0, 2, 3, 3, 0, 1) and (2, 1, 0, 0, 3, 2, 1, 3, 1).	5M
6	(a)	What are Bayesian Belief networks? Where are they used?	5M
	(b)	Discuss decision tree classification with suitable example.	5M
		OR	
7		Discuss the random forest model in detail with an example. Explain the features of random forest.	10M

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8	(a)	Write the steps in OLS algorithm. Explain curve linear negative slope and curve linear positive slope in a graph.	5M
	(b)	Illustrate logistic regression in detail with an example.	5M
		OR	
9	(a)	Explain Naïve Bayes classifier with an example of its use in practical life.	5M
	(b)	Explain multiple linear regression with an example.	5M
10	(a)	You are given a set of one-dimensional data points: {5, 10, 15, 20, 25, 30, 35}. Assume that k = 2 and first set of random centroid is selected as {15, 32} and then it is refined with {12, 30}. Create two clusters with each set of centroid mentioned above following the k-means approach.	5M
	(b)	Discuss about the Apriori Principle in frequent item set generation.	5M
		OR	
11		What is density based clustering? Explain the DBSCAN algorithm with an example and write its strength and weakness.	10M

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B.Tech III Year II Semester (R20) Regular Examinations August 2023

MACHINE LEARNING

(Common to CSE & CSE (DS))

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

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1 Answer the following: (10 X 02 = 20 Marks)

(a)	What is Human Learning?	2M
(b)	List out Basic types of data in Machine Learning.	2M
(c)	How to evaluate performance of Model?	2M
(d)	What is feature in Machine Learning?	2M
(e)	Define classification.	2M
(f)	Why Bayesian Methods are Important?	2M
(g)	What is a Linear Regression?	2M
(h)	How many ways to improve the accuracy of the Liner Regression model?	2M
(i)	Write any two applications of unsupervised Learning.	2M
(j)	What are the association rules in learning?	2M

PART – B

(Answer all the questions: 05 X 10 = 50 Marks)

2	What is Machine Learning? Write a applications of Machine Learning.	10M
	OR	
3	Discuss issues in the Machine Learning.	10M
4	Write a note on Model Representation and interpretability.	10M
	OR	
5	What are the basics features of engineering?	10M
6	Prove the Bayes Theorem with the help of suitable example.	10M
	OR	
7	Discuss support vector machines with the help of example.	10M
8	Write an algorithm of simple linear regression.	10M
	OR	
9	Write a note Polynomial Regression Model.	10M
10	What is clustering? Discuss different clustering techniques.	10M
	OR	
11	Write a difference between Unsupervised and supervised learning.	10M

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