9/12
(50)

Sr. No.020503

December 2023

B.Tech(RAI)- V SEMESTER

Machine Learning and Application (PCC-RAI-503-21)

Time: 3 Hours **Max. Marks:75**

Instructions:
1. *It is compulsory to answer all the questions (1.5 marks each) of Part -A in short.*
2. *Answer any four questions from Part -B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

PART -A

Q1 (a) Differentiate between supervised and unsupervised learning. (1.5)

(b) Describe a situation where we should use logistic regression over support vector machines. (1.5)

(c) What is overfitting? How can you avoid it? (1.5)

(d) What is a confusion matrix? (1.5)

(e) What is scalable machine learning? (1.5)

(f) Which do you think is more important in model performance model accuracy?Justify your answer. (1.5)

(g) Define the term bias ? (1.5)

(h) What is meant by Covariance? (1.5)

(i) Explain matrix factorization. (1.5)

(j) What is meant by time-series data? (1.5)

PART -B

Q2 (a) Explain Decision Trees with suitable examples. (10)

(b) Explain regression models in detail and also explain some of the metrics used to evaluate a regression model. (5)

Q3 (a) What is meant by dimensionality reduction? In which situation it is used? Explain PCA with a suitable example. (8)

(b) Explain K-means Clustering in detail with their advantages and disadvantages. (7)

Q4 What is an ensemble model ?In which scenario does an ensemble model work well? Differentiate between bagging and boosting. Explain Random forest classifier in detail with its limitations . (15)

Q5 (a) Define Deep Learning. How is deep learning different from other machine learning algorithms? Give some suitable examples . (5)

(b) What is Perceptron? Explain Multilayer Perceptron with backpropagation algorithm. (10)

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Q6 (a) Explain Naive bayes classifier in detail. (7)

(b) Design a machine learning Problem. What can be the possible solutions for this problem and which is the best solution among possible solutions? Justify your answer in detail. (8)

Q7 Write short note on the following:

(a) Scalable Machine Learning (8)

(b) Bayesian Learning and Inference (7)

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