

Department of Computer Science and Engineering

Indian Institute of Technology Jodhpur

CSL 7620: Machine Learning

Quiz 1

Set A- Answers

Time: 10 minutes

Total marks: 10

Instructions:

- During the exam, invigilators will not address any queries. If you encounter anything unclear or incorrect in a question, make a reasonable assumption and proceed
 - Each question may have multiple correct options. You have to mark all the correct options. Otherwise, no marks will be awarded.
 - Mark the correct choices with a pen on the OMR sheet. No correction is allowed in the marking.
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Answers are marked in bold. [Each question carries 1 mark]

1. Which of the following best defines Machine Learning as per Tom Mitchell's definition?
 - A. Programming computers to follow fixed algorithms
 - B. Giving machines the ability to learn without being explicitly programmed
 - C. A computer program improves performance on a specific task with experience**
 - D. Making machines capable of human-like reasoning
2. Which of the following are characteristics of supervised learning?
 - A. Presence of labeled data**
 - B. Learning through feedback signals
 - C. Predicting outcomes for unseen examples**
 - D. Labels are always categorical
3. Which of the following paradigms falls under unsupervised learning?
 - A. Linear Regression
 - B. Decision Trees
 - C. K-means Clustering**
 - D. None of the others
4. The VC dimension of a model
 - A. Can determine the exact test error rate for a given test dataset
 - B. Gives some indication of the ability of a model**
 - C. Does not depend on the complexity of the model
 - D. None of the others
5. Why is feature scaling used before applying ML algorithms?
 - A. It reduces the number of features
 - B. It ensures that features are at a comparable scale**
 - C. It prevents overfitting

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- D. It improves the interpretability of categorical features
6. Which of the following situations suggests high variance in a machine learning model?
- Similar accuracy on the training and test sets
 - Significantly higher training accuracy compared to test accuracy**
 - Consistently low accuracy on both the training and test sets
 - None of the others
7. Which of the following are assumptions for applying linear regression?
- Linearity of the input-output relationship**
 - Only one feature in the datasets
 - None of the others
 - Normally distributed features
8. Increasing training data
- Will always increase variance
 - Will always decrease variance
 - Will always have no impact on the variance
 - None of the others**
9. If a hypothesis space has a VC dimension of 5, which of the following statements is/are true?
- It can shatter every configuration of 5 points
 - It cannot shatter any configuration of 6 points**
 - It will always classify 5 points correctly
 - None of the others
10. If the prior probability of class w_1 is 0.7 and w_2 is 0.3, and the likelihoods are $p(x|w_1)=0.2$ and $p(x|w_2)=0.4$, then according to the Bayes decision rule, the predicted class will be:
- w1**
 - w2
 - Both are equally likely
 - Cannot be determined without a loss function