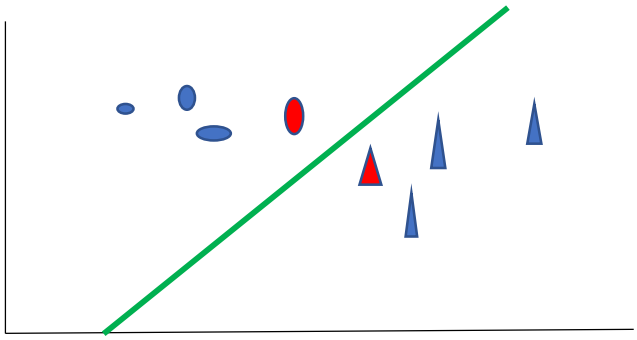
MACHINE LEARNING – WORKSHEET 6

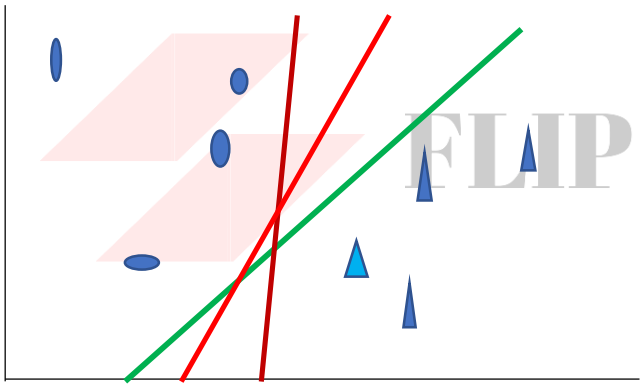
1. Look at the figure given below and answer the following question:



Circles represent class A data points. Triangles represent class B data points. The red circle and triangle represent the support vectors data points. The green line represents the classifier boundary. Now Suppose we remove the red circle data point from the data. Now Will the classifier boundary change after removing the red circle data point?

A) Yes
B) NO
C) Not enough information is given
D) Cannot be determined at all

2. Look at the figure given below and answer the following question:

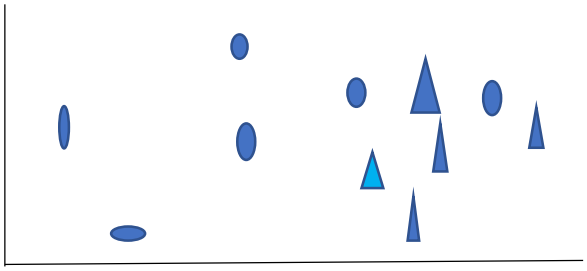


In the above figure, Circles represent class A data point, Triangles represent class B data point. The red, green, maroon lines are three different classifiers. Which of these classifier is most likely best classifier on unseen data?

A) Red
B) Green
C)Maroon
D) All of them are equal.

3. Which of the following are disadvantages of using Hard Margin SVM classifier?
   A) They allow misclassifications, that's why they are not optimal
   B) They cannot be used when the data is not completely linearly separable while allowing no errors
   C) They are not optimal to use in case of outliers
   D) None of the above
4. Which of the following statements are true regarding maximal margin classifier?
   A) It is the most optimal classifier in a completely linearly separable data.
   B) It's the classifier for which the margin length or the distance between the closest data-point on either side of the classifier and the classifier is maximized.
   C) Any possible classifier which can linearly separate the data of two classes is called maximal margin classifier
   D) All of the above

5. Look at the figure given below and answer the following question:



In the above figure, Circles represent class A data point, Triangles represent class B data point. Now looking at the above data, can a hard margin SVM classifier be used for classification?

A) Yes B) No

C) Cannot be determined from the given data

6. Which of the following statements are true regarding soft margin SVM classifier?
   A) They are less sensitive to outliers and can be used even in their presence
   B) They make sure that there is no data point present in the margin area
   C) They allow some degree of errors or misclassification
   D) They can be used in case data is not completely linearly separable
7. Which of the following statements are true regarding SVMs?
   A) They take the data from lower dimensional space to some higher dimensional space in case the data is not likely to be linearly separable
   B) They use the kernel tricks to escape the complex computations required to transform the data
   C) If the data is not linearly separable SVM technique cannot be used
   D) All of the above
8. Which of the following Statements are true regarding the Kernel functions used in SVM?
   A) These functions gives value of the dot product of pairs of data-points in the desired higher dimensional space without even explicitly converting the whole data in to higher dimensional space
   B) We have to first convert the whole data in to the higher dimensional space before applying the kernel function
   C) The data product values given by the kernel functions are used to find the classifier in the higher dimensional space.
   D) None of the above
9. How can SVM be classified?
   A) It is a model trained using unsupervised learning. It can be used for classification and regression.
   B) It is a model trained using unsupervised learning. It can be used for classification but not for regression
   C) It is a model trained using supervised learning. It can be used for classification and regression.
   D) It is a model trained using supervised learning. It can be used for classification not for regression.
10. The quality of an SVM model depends upon:
    A) Selection of Kernel B) Kernel Parameters
    C) Soft Margin Parameter C D) All of the above

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