

## Task KNN

Total points 7/11 ?

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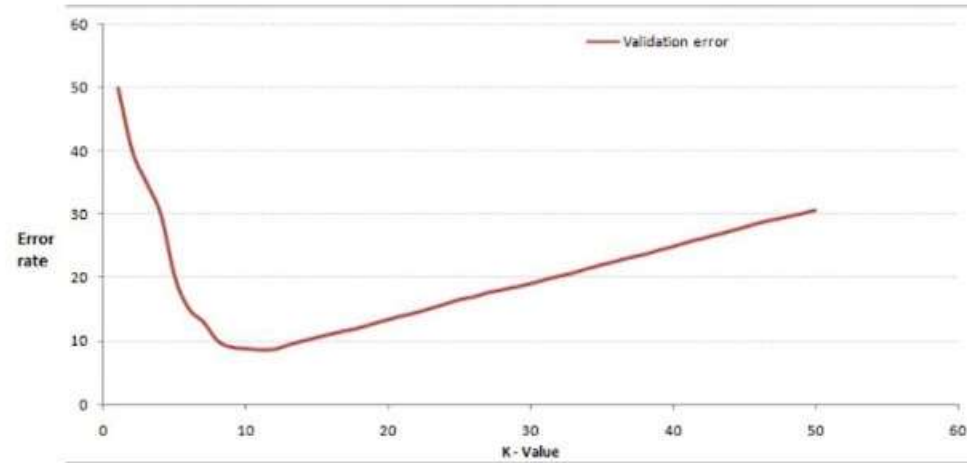
✓ True or False] k-NN algorithm does more computation on test time rather \*1/1  
than train time.

☒ A) TRUE

☐ B) FALSE



✓ In the image below, which would be the best value for k assuming that the algorithm you are using is k-Nearest Neighbor. \*1/1



- ☐ A) 8
- ☒ B) 10
- ☐ C) 20
- ☐ D) 40



✓ Which of the following distance metric can not be used in k-NN? \* 1/1

- ☐ A) Manhattan
- ☐ B) Minkowski
- ☐ C) Tanimoto
- ☐ D) Jaccard
- ☐ E) Mahalanobis
- ☒ F) All can be used



✓ The training phase of the algorithm consists ..... \* 1/1

- ☐ 1- storing the feature vectors only
- ☐ 2- class labels of the data
- ☐ 3- class labels of the training samples
- ☒ 4- storing the feature vectors and class labels of the training samples.



✓ k-NN algorithm can be used for imputing missing value of both categorical and continuous variables

\*1/1

☒ A) True

✓

☐ B) flase

✓ hence higher computation happen when a test point is classified by assigning the label which are most frequent among the k training samples nearest to that query point

\*1/1

☒ A) True

✓

☐ B) Flase

✓ K is a static parameter \*

1/1

☐ A)True

☒ B) Flase

✓



## ✗ When knn is a lazy algorithm..? \*

.../2

K-nearest neighbor (k-NN) is often called a "lazy" learning algorithm because it does not explicitly learn a model from the training data. Instead, the algorithm simply stores the training data and uses it during the prediction phase to find the k nearest neighbors to a given test sample based on some distance metric.

The term "lazy" refers to the fact that the algorithm does not do any work until it is given a new test sample to classify. When a new test sample is given, the algorithm retrieves the k nearest neighbors from the training data and makes a prediction based on the labels or values of those neighbors. This means that the algorithm does not perform any computation or training until it is needed for prediction.

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✗ Bouns question ?

.../2

Explain where can use knn in classification and regression..?

K-nearest neighbor (k-NN) is a versatile machine learning algorithm that can be used for both classification and regression tasks.

In classification, the goal is to predict the class label of a new data point based on its features. K-NN can be used for classification by finding the k nearest neighbors to the new data point in the training data based on some distance metric, and then assigning the class label that occurs most frequently among those neighbors to the new data point. This approach is called the majority voting rule. K-NN is particularly useful for classification problems where the decision boundary is complex and nonlinear, or where the classes are not well separated.

In regression, the goal is to predict a continuous output variable based on the input features. K-NN can be used for regression by finding the k nearest neighbors to the new data point in the training data based on some distance metric, and then averaging their output values to obtain the predicted value for the new data point. This approach is called the mean value rule.

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