





← Go Back to Unsupervised Learning

: ■ Course Content

Weekly Quiz - K-means Clustering

Type : Graded Quiz

Attempts : 1/1
Questions : 10
Time : 30m

Due Date : Feb 19, 1:30 AM CET

Your Marks : 15/15

Instructions

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Kindly go through these guidelines before you attempt the quiz :

- 1. There might be questions requiring you to use Python, keep the Jupyter Notebook open when you start the quiz.
- 2. Ensure there is a proper internet connection while taking up the quiz. Any breakup in the connection will automatically submit your quiz.
- 3. Only attempt the quiz when you are prepared and have enough time on your hands to finish it. Please ensure you attempt the quiz well before the due date. No extension will be provided for any quiz once the deadline is passed.
- 4. The quiz once opened, must be completed within the time frame provided. You CANNOT start the quiz, leave it unattended for an extended period of time and come back later to finish.
- 5. No re-attempts will be provided if the quiz gets submitted for any of the above-mentioned reasons.
- 6. If you face any other technical issues on Olympus, you should share the screenshot with your Program Manager so that the team can understand and resolve it on priority.

Attempt History

Attempt #1

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Correct	Answer

Marks: 2/2

What does the predict() function of the sklearn KMeans class return?

The distance between each data point and the cluster centroids.

The closest cluster to which a data point belongs

You Selected

Gives the position of cluster centroids

Number of clusters

The predict()Links to an external site. function is used to predict the closest cluster to which a data point belongs.

Q No: 2

Correct Answer

Marks: 1/1

For K-means clustering, what will be the cluster centroids for the following 2 clusters?

C1: {(3,5),(5,4), (4,6)}

C2: {(6,0),(8,1), (7,2}

C1: {4,5} C2:{7,1}

You Selected

C1: {60,120} C2: {168,2}

C1: {12, 15} C2: {21, 3}

C1: {5,4} C2: {7,1}

 $C1 = \{(3+5+4)/3, (5+4+6)/3\} = \{4,5\}$

 $C2 = \{(6+8+7)/3, (0+1+2)/3\} = \{7,1\}$

Q No: 3

(Correct Answer)

Marks:	2	12
widing.	_	_

When doing K-means clustering, what will be the Euclidean distance of a point A(4,0) be from the centroid of the cluster which has two data points (3,3) and (5,5)? 2 4 You Selected 3 16 Cluster centroid C1 = $\{((3+5)/2), ((3+5)/2)\} = \{4,4\}$ Distance between the point A{4,0} and centroid C1{4,4} Euclidean distance = $\sqrt{(4-4)^2 + (4-0)^2} = 4$ Q No: 4 Correct Answer Marks: 2/2 Which of the following are considered to be the weakness of K-means clustering? Finding out the ideal value of K is complex and time-consuming Susceptible to the curse of dimensionality Not sensitive to starting positions of the initial centroid Not sensitive to outliers 1 and 2 You Selected 3 and 4 1 and 3 2 and 4 Finding an ideal value of K requires multiple iterations with different values of K to see which

value of K has the lowest within-cluster sum of squared errors.

K-means clustering is considered to be affected by the curse of dimensionality. As the no. of

dimensions increases, the computational complexity of K-means clustering increases.

- . K-means clustering is considered to be sensitive to the starting position as this determines the position of the centroids of the clusters.
- . K-means clustering is sensitive to outliers. Outliers significantly affect the position of the centroid in K-means clustering.

Q No: 5 (Correct Answer)

Marks: 2/2

While using K-means clustering, we scale the variables before we do clustering. This is done primarily to

- make the model less susceptible to outliers
- oconvert the data to same scale hence variables which are of different units are you Selected given equal importance
- avoid multicollinearity among the variables
- treat missing values to make the data more robust for analysis

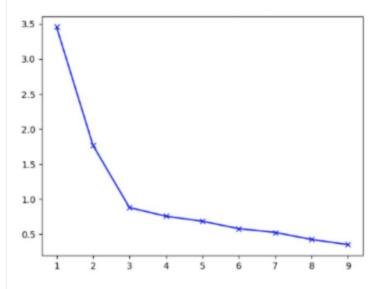
Scaling the data brings all the attributes to similar scale which makes equal importance to all the attributes while performing clustering

Q No: 6

Correct Answer

Marks: 1/1

Consider the following elbow plot:



While performing K-means clustering, what is the ideal value of K to choose based on the above plot?

O 1		
2		
3		You Selected
O 4		
-	creases drastically from 2 to 3 and at cluster point 3, the graph to ered to be the ideal no. of clusters.	akes a sharp
Q No: 7	Correct Answer	
Which of the follow	ring is NOT true in the case of K-means clustering?	Marks: 1/
O It requires the	ne number of clusters to be specified	
	oints that are the farthest from a centroid will create a cluster ound that centroid	You Selected
Choosing di	fferent starting points can result in different clusters	
K-means clucentroid.	usters data by separating data points into group based on distan	ce from cluster
distance betwee	that are the closest to a centroid will create a cluster. If we're us en data points and every centroid, a straight line is drawn betwee cular bisector (boundary line) divides this line into two clusters	· ·
Q No: 8	Correct Answer	
What is the default learn?	value of n_clusters in sklearn.cluster.KMeans, the K-means clustering	Marks: 1/ ng class in Scikit-

	You Selected
O 1	
O 2	
O 6	
takes an integer	KMeansLinks to an external site., the n_clusters is an optional parameter that value specifying the number of clusters to form as well as the number of erate. The default value is 8.
Q No: 9	Correct Answer
	Marks: 2/2
Which of the following	ng are Unsupervised Learning techniques?
Hierarchical Cluster	na
Hierarchical Clusteri Random Forests	ng
Random Forests	ng
	ng
Random Forests K-means Clustering	ng
Random Forests K-means Clustering Logistic Regression	ng
Random Forests K-means Clustering Logistic Regression 1 and 2	ng You Selected
Random Forests K-means Clustering Logistic Regression 1 and 2 3 and 4	

Q No: 10	Correct Answer	
	ring, suppose the number of clusters en what will be the sum of squared e	Marks: 1/1 is equal to the number of data points rrors within each group (or cluster)?
O 1		
O Approaches	s infinity (very large number)	
O 0		You Selected
Cannot be	determined	
the no of cluste squared errors When there is o	rs increase and is equal to the no opecomes zero.	hin group sum of squared errors decreases. As of observations the within group sum of data point itself becomes the centroid.
< Previous		Next >
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