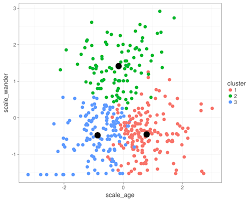
With K-means clustering, it is an unsupervised learning algorithm that creates clusters of data within a data set. For clustering, it refers to a collection of data points aggregated together because of certain similarities. (Garbade, 2018) Before deploying the algorithm, you will have to determine the similarities that you want to connect on but the target number as well. The target number is the number of centroids that will be used in the data set, or the number of clusters. Within these clusters, each data point will be included in some aspect. For the data points, they want to cluster them into which ever centroid is the closet attempting to keep the clusters as small as possible. (Garbade, 2018)

For how the algorithm works as a whole, it will select random centroids and repeat itself to find the best position where it averages out the data or until it reaches its max allowed attempts on the algorithm. K-means clustering compared to other unsupervised algorithms is not typically the best option since one slight variation in the data could lead to high variance. (Garbade, 2018)



K-means Clustering Example

Above is a visual of K-means clustering showing the three back dots at the centroids mentioned above and the data points referencing them as the three different colors.

Author Daniel Foley, brings up an example of how K-means clustering is used when it comes to customer segmentation. By using this algorithm, a company would be able to separate their customers based on the characteristics of them into different kinds of groups. Once they are able to separate them into groups, the company can target these groups for certain discounts and or advertisements. For example, customers that are young consumers interested in electronics compared to consumers who have children that are buying toys. Even though there may be different unsupervised learning techniques for this example, it is a better option than a manual process in determining these groups of customers.

With finding more examples of how K-means clustering is used in certain situations, I came across how this process could be used when it comes to drug-related crimes. The crimes revolve around underage individuals who have a connection to various types of drugs. In this situation, various objectives were created that k-clustering can be used in determining for it. (2019)

-Classify the crimes based on the abuse substance to detect prominent cause

-Classify the crimes based on age groups

-Analyze the data to determine what kinds of de-addiction center is required

-Find out how many de-addiction centers need to be setup to reduce drug related crime rate

As you can see from the two examples that I provided for K-means clustering, it has use for different scenarios across numerous fields that will allow for more insight on similar data points.

Reference:

Foley, D. (2019, February 19). K-Means Clustering. Retrieved April 20, 2020, from <https://towardsdatascience.com/k-means-clustering-8e1e64c1561c>

Garbade, M. J. (2018, September 12). Understanding K-means Clustering in Machine Learning. Retrieved April 20, 2020, from <https://towardsdatascience.com/understanding-k-means-clustering-in-machine-learning-6a6e67336aa1>

Understanding K-means Clustering with Examples. (2019, May 22). Retrieved April 20, 2020, from <https://www.edureka.co/blog/k-means-clustering/>