

Support Vector Machines (SVM)

The support vector machines or svm are the algorithm similar to linear regression but is mainly focused on the task of separating datapoints of two different classes with a help of line called hyperplane

The SVMs are also classified under supervised learning model

We need to know that there are a number of hyperplanes that can be formed on a graph of data sets but we need to find a hyperplane which is optimal

Or a line which has the most distance from the datapoints. The distance between the datapoints and the hyperplane is called as margin .

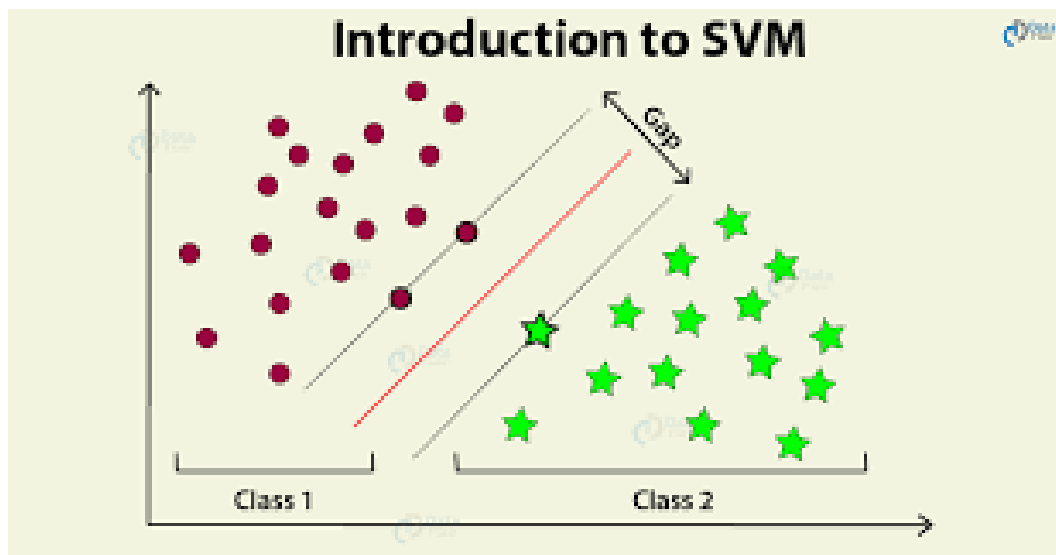
In SVM our goal is to maximize the margin.

The support vectors are the datapoints that are closest to the hyperplane

Any change in the position of the support vectors will also change the hyperplane

Hence support vectors play an important role in this algorithm hence the name follows.

The type of hyperplane purely depends on the support vectors. For example if the datapoints couldn't be separated using a normal 2D line the hyperplane becomes a 3D structure like a 3D plane.



	Clump Thickness	Uniformity of Cell Size	Uniformity of Cell Shape	Marginal Adhesion	Single Epithelial Cell Size	Bare Nuclei	Bland Chromatin	Normal Nucleoli	Mitoses	Class
0	5	1	1	1	2	1	3	1	1	2
1	5	4	4	5	7	10	3	2	1	2
2	3	1	1	1	2	2	3	1	1	2
3	6	8	8	1	3	4	3	7	1	2
4	4	1	1	3	2	1	3	1	1	2
...
694	3	1	1	1	3	2	1	1	1	2
695	2	1	1	1	2	1	1	1	1	2
696	5	10	10	3	7	3	8	10	2	4
697	4	8	6	4	3	4	10	6	1	4
698	4	8	8	5	4	5	10	4	1	4

Sources:

<https://towardsdatascience.com/support-vector-machine-introduction-to-machine-learning-algorithms-934a444fca47>

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