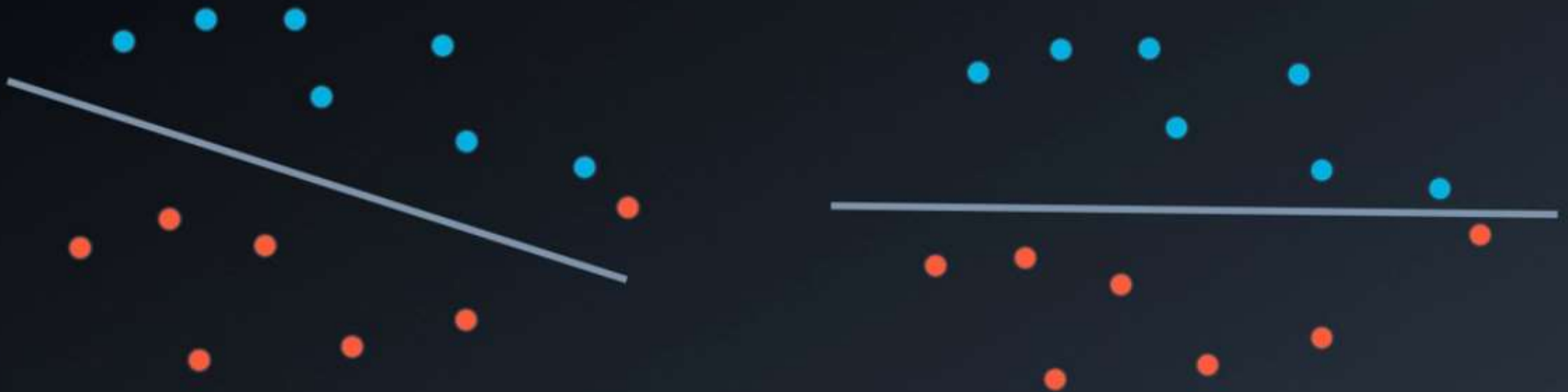# SUPPORT VECTOR MACHINES

# HOW WILL YOU CLASSIFY THIS

CLASSIFICATION IN SVM

HYPERPARAMETERS

When we define the model, we can specify the hyperparameters. As we've seen in this section, the most common ones are

- **C**: The C parameter.
- **kernel**: The kernel. The most common ones are 'linear', 'poly', and 'rbf'.
- **degree**: If the kernel is polynomial, this is the maximum degree of the monomials in the kernel.
- **gamma** : If the kernel is rbf, this is the gamma parameter.

IMPACT OF GAMMA

The gamma parameter defines how far the influence of a single training example reaches, with low values meaning 'far' and high values meaning 'close'. In other words, wit low gamma, points far away from plausible separation line are considered in calculation for the separation line. Where as high gamma means the points close to plausible line are considered in calculation.

High Gamma
Only nearby points are considered.

Low Gamma
Far away points are also considered.
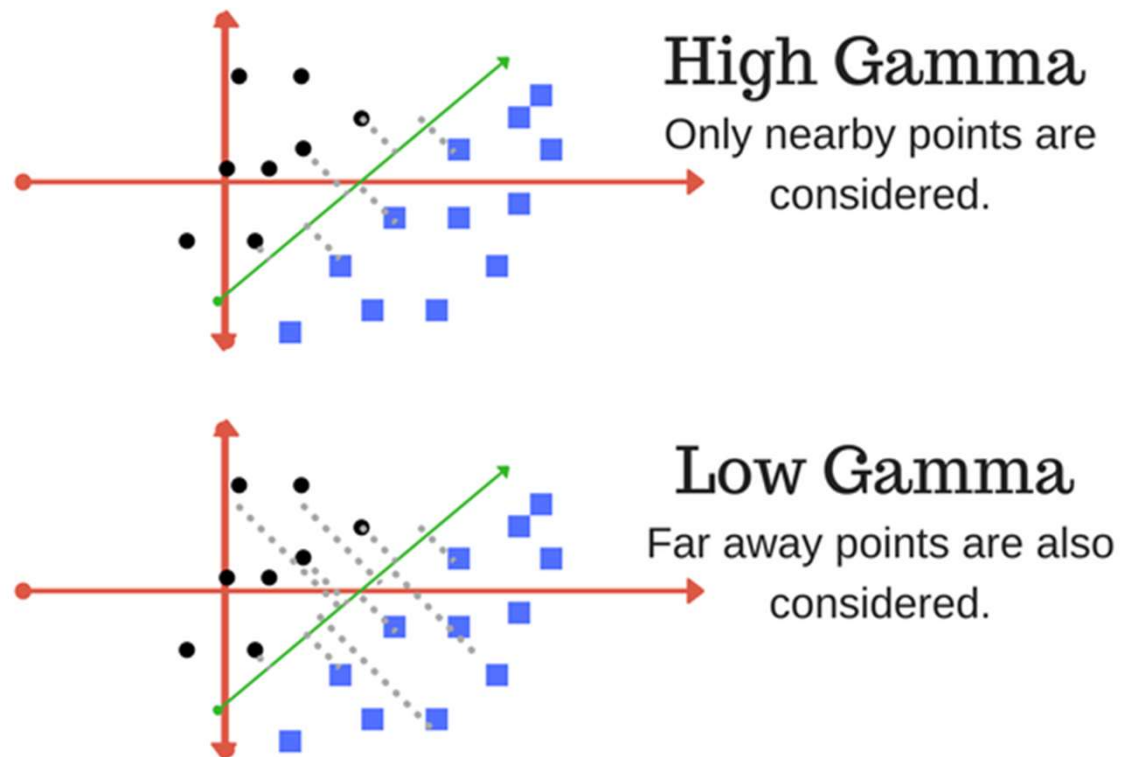
STEPS FOR APPLYING SVM ALGORITHM

1.Build a support vector machine model

- Create a support vector machine classification model using scikit-learn's SVC and assign it to the variablemodel.

2. Fit the model to the data

- If necessary, specify some of the **hyperparameters.** The goal is to obtain an accuracy of 100% in the dataset. Hint: Not every kernel will work well.
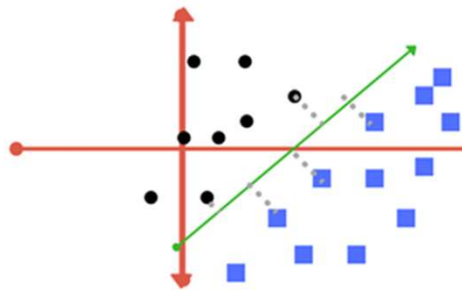
3. Predict using the model

- Predict the labels for the training set, and assign this list to the variable y_pred.
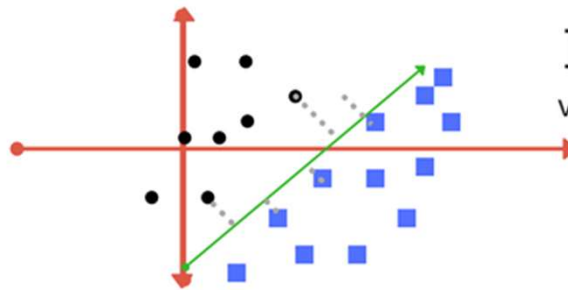
4. Calculate the accuracy of the model

- For this, use the function sklearn function accuracy_score.

- When you hit Test Run, you'll be able to see the boundary region of your model, which will help you tune the correct parameters, in case you need them.

MARGIN

Good margin
equidistant as as far as possible for both side.

Bad margin
very close to blue class.