Start-Tech Academy

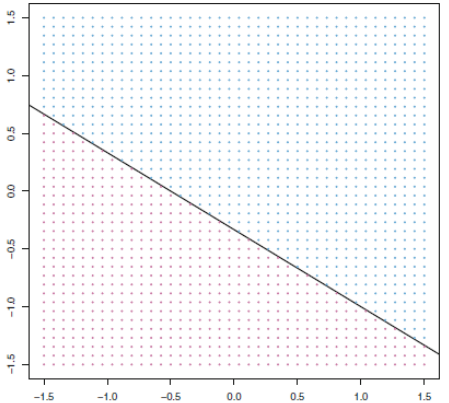
Maximal Margin Classifier

Divides P dimensional space into two parts

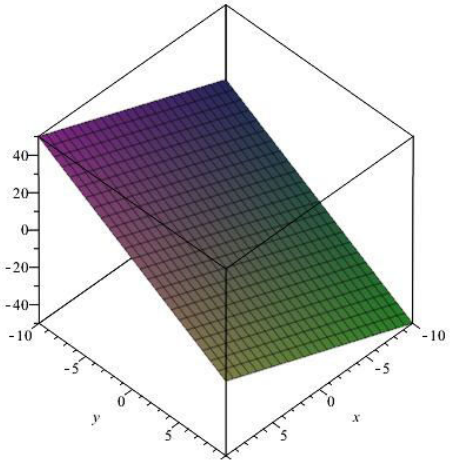
Hyperplane

1. One Dimensional space

2. Two Dimensional space



3. Three Dimensional space
   Will be a 2 Dimensional plane

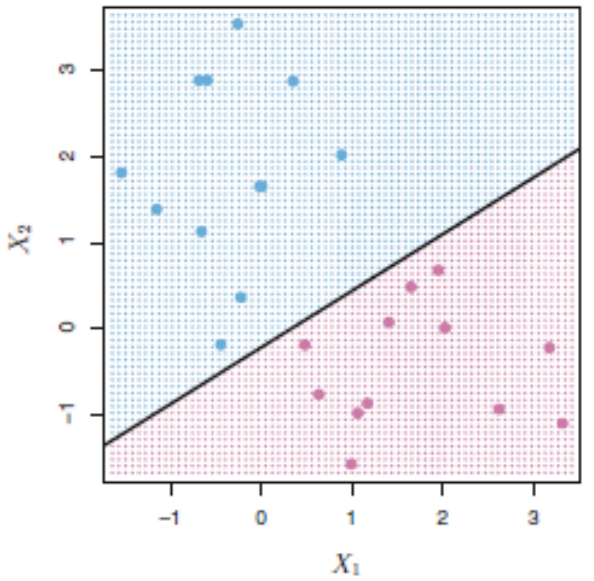


Maximal Margin Classifier

Hyperplane

X1	X2	Category
60	82	Pass
20	42	Fail
…	…	…
91	72	Pass

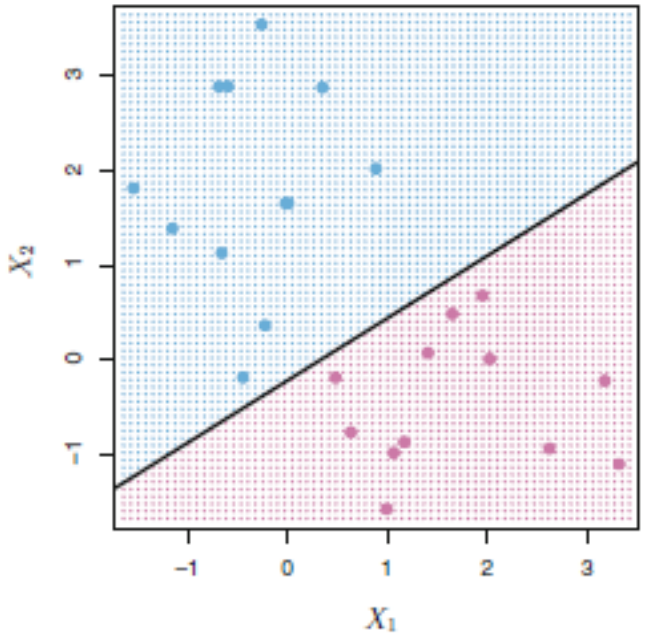
- Two predictor variables ->
  2D predictor space
- We want to find 1D (Line) hyperplane which separates this space into 2 parts

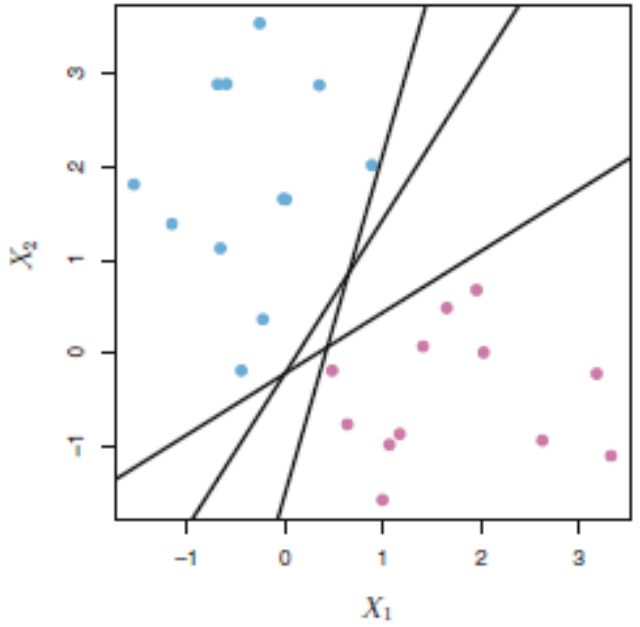


Maximal Margin Classifier

Infinite hyper planes

If data is perfectly separable



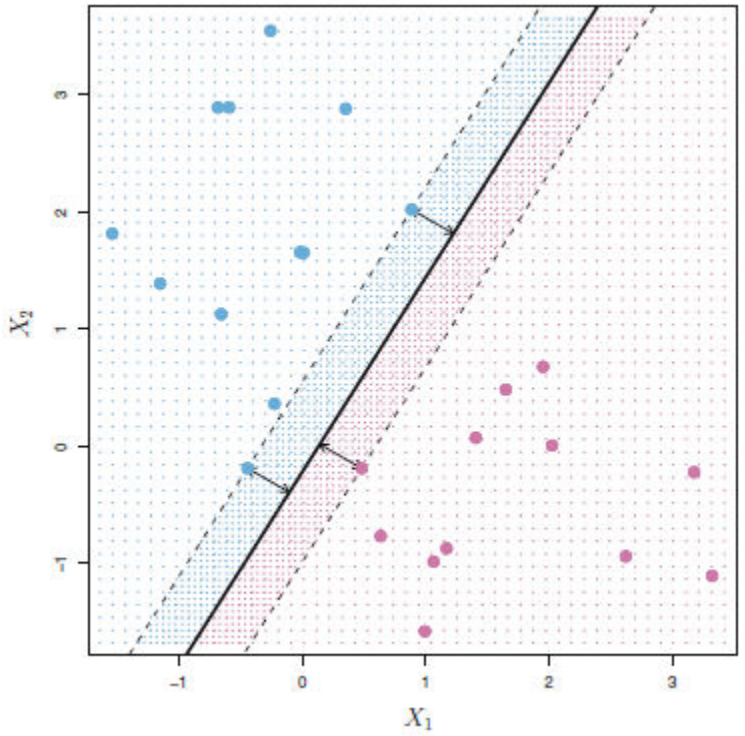


There are infinite hyper plane

Maximal Margin Classifier

Steps

1. Calculate the perpendicular distance of observations from Hyperplane
2. Minimum value of distance is called margin
3. Choose the Hyperplane with maximum value of Margin



Maximal Margin Classifier

Support Vectors

1. The observations which fall on margin are known as **Support Vectors**
2. These classifiers depend on support vectors only
3. That is why this technique is different from conventional ML techniques