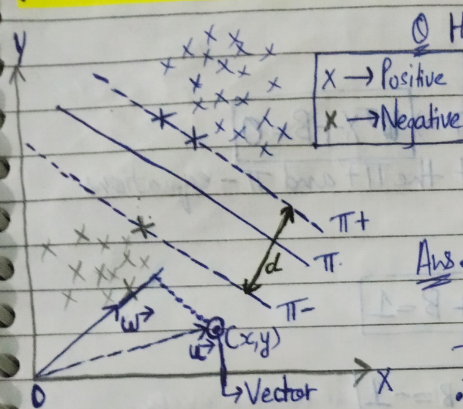


Maths FOR SVMs....



Q How would we classify a new data point - that the point belongs to a Positive data point or a Negative data point? There should be any rule behind it?

Ans. There is a Rule which is used to classify a new input point in correct region [Positive/Negative] that rule is termed as Decision Rule.
• I have created a Vector ' w ' which is \perp Perpendicular to all the Hyper planes.

Decision Rule

- (i) w Vector is \perp to all the Hyperparameters. But don't know it's magnitude. Let's say the magnitude is $= c$.
- (ii) u Vector is a input data for which we have to identify the region, that where will this ' u ' data point fall. [Positive/Negative].

(iii) I just project that data point on ' w ' Vector. it means " $w \cdot u$ "

So $\Rightarrow w \cdot u \geq c \Rightarrow w \cdot u - c \geq 0$ "Replacing ' c ' with intercept term ' b '"

$\Rightarrow w \cdot u + b \geq 0$

If this value is greater than '0' Zero \Rightarrow Positive region data point.

If this Value is lesser than '0' Zero \Rightarrow Negative region data point.

$w \cdot u + b = 0$ "This is Decision Rule"

For example: \rightarrow