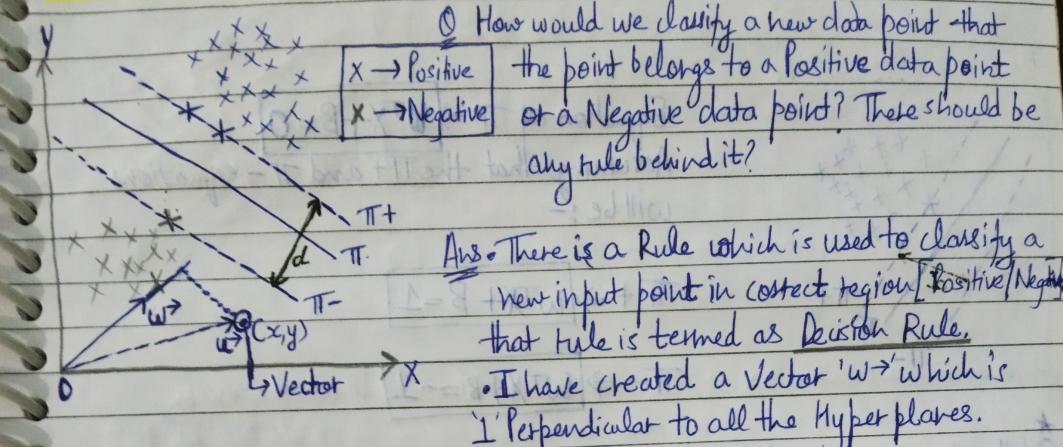


Maths FOR SVMs....



Decision Rule

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

$$\text{So } \Rightarrow w \cdot u \geq c \Rightarrow w \cdot u - c \geq 0 \quad \text{"Replacing } -c \text{ with intercept term "b"}.$$

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

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 :