Start-Tech Academy

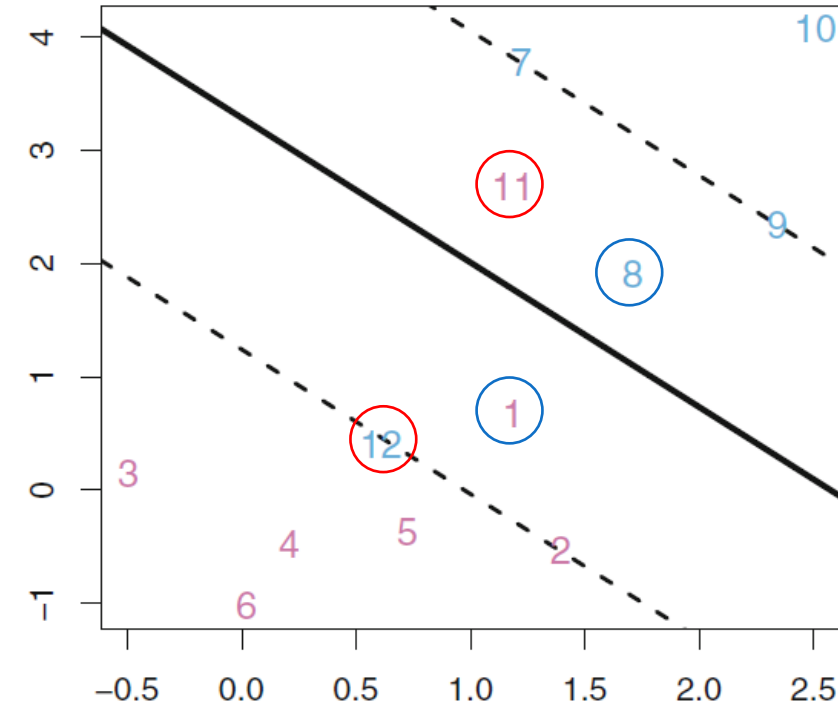# Support Vector Classifier

Why

1. To handle non perfectly separable scenario

2. Greater robustness to individual observations
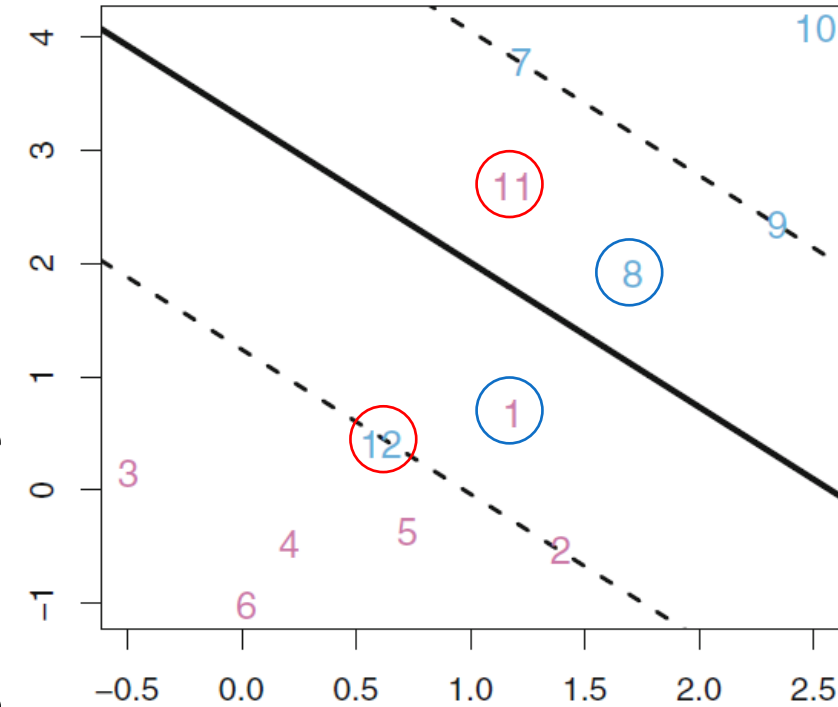
Support Vector Classifier

What

1. Support vector classifier is a **soft margin classifier**

2. We will allow some observations to be incorrectly classify or to be on the wrong side of the margin

Support Vector Classifier

How

1. We create a misclassification budget (B)

2. We limit sum of distances of the points on the wrong side of the margin

$$(x1 + x2 + x3 + x4) < B$$

3. We try to maximize margin while trying to stay within budget

4. Usually in our software packages we use C (Cost - multiplier of the error term) which is inversely related to B

Support Vector Classifier

Impact of C

1. When C is small, margins will be wide and there will be many support vectors and many misclassified observations

2. When C is large , margins will be narrow and there will be fewer support vectors and fewer misclassified values

3. However, low cost value prevents overfitting and may give better test set performance

4. We try to find optimal value of C at which we get best test performance

5. https://cs.stanford.edu/~karpathy/svmjs/demo/