**SVM**

for classification problems , we draw classification Boundary

how to choose Best boundary for classification problem ?

measure the distance between line and nearest data point "support vector " this distance called "margin"

we need the line with high margin.

large margin -> small error

small margin -> large error

margin distance = 2/|w|

Error = C \* ClassificationError + margin error

small C -> large margin

large C -> classifies points well

Minimize Error using gradient descent

what if it hard to draw boundary ?

making transformation on exist featuers to draw deciosion boundary easily "Kernal" by mapping data into a different space

C -> constant to avoid overfitting