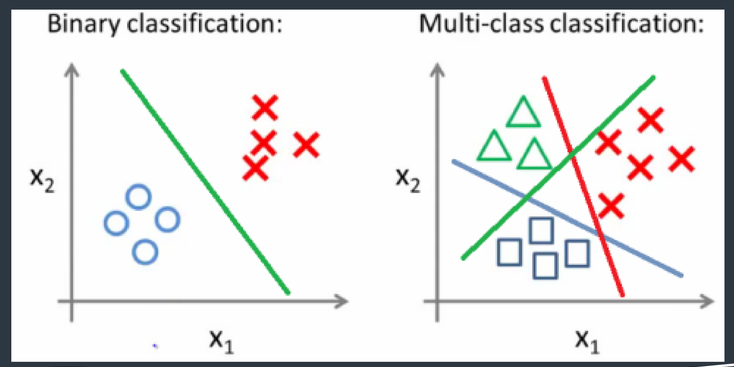
Multiclass Classification



→ One vs One

→ One vs Rest

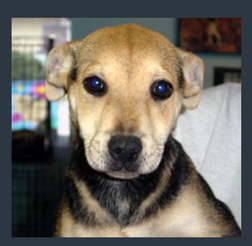
Logistic — $y \in \{0,1\}$ (Binary)

SVM

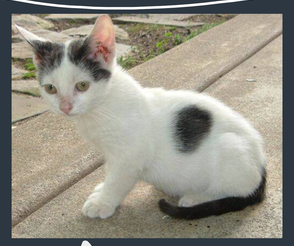
$y \in \{-1,1\}$ (Binary)

$y = \{0,1,2,3\}$ (Multiclass)

Image classification :)



↑ Dog



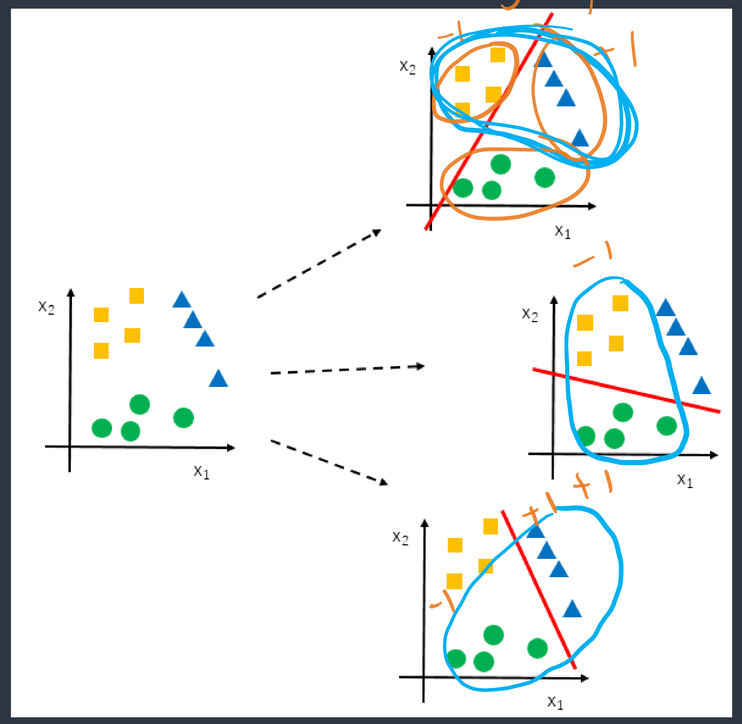
↑ Cat

Horse

Human

One Vs One

data : 0 → 1 → 2 → 3



N Classes

$^{N}C_2$ Classifiers every pair of data

$5_{C_2} = \frac{5 \cdot 4}{2} \times 2 = 10$ classifiers

→ Majority → majority vote from $^{N}C_2$ classifiers

Y-B
-G
B-G

3 classifiers

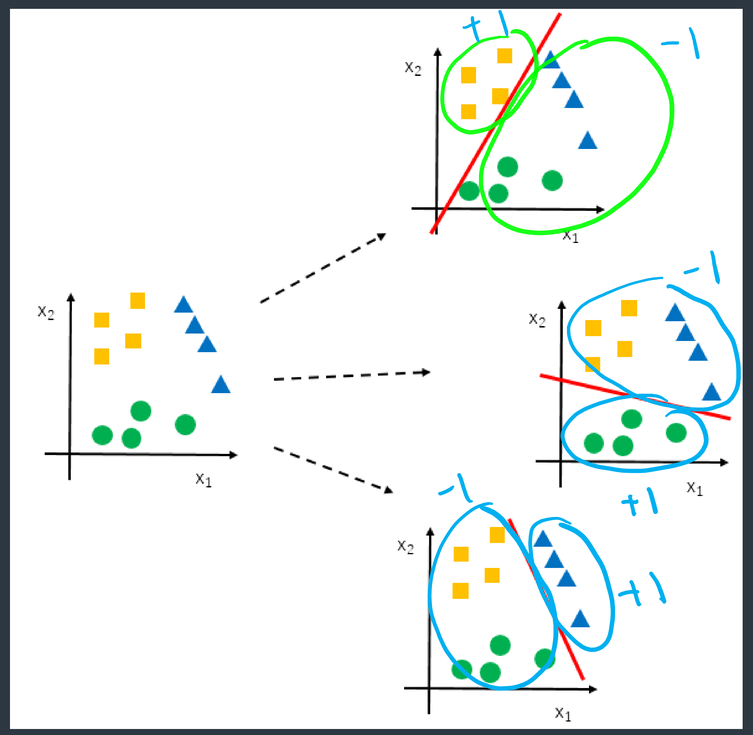
V
yellow

→ $O(N^2)$ time.

Useful: Large dataset one vs one same.

One Vs Rest

Yellow or Not



→ More memory

→ N classifiers
↳ Yes / No $x^{(i)} \in C'$

→ Parallel.

→ less Time $O(N)$

→ Common ⇒ Scikit learn.

→ ['ovr', 'ovo'] ⇒ ↑ documentation