Lecture3

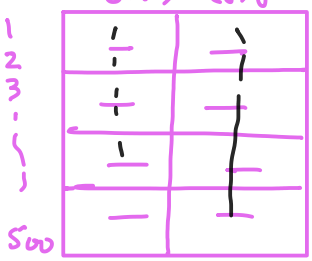
Sunday, 12 January 2020 10:10 AM

mean1 = [3, 6] (x, y)

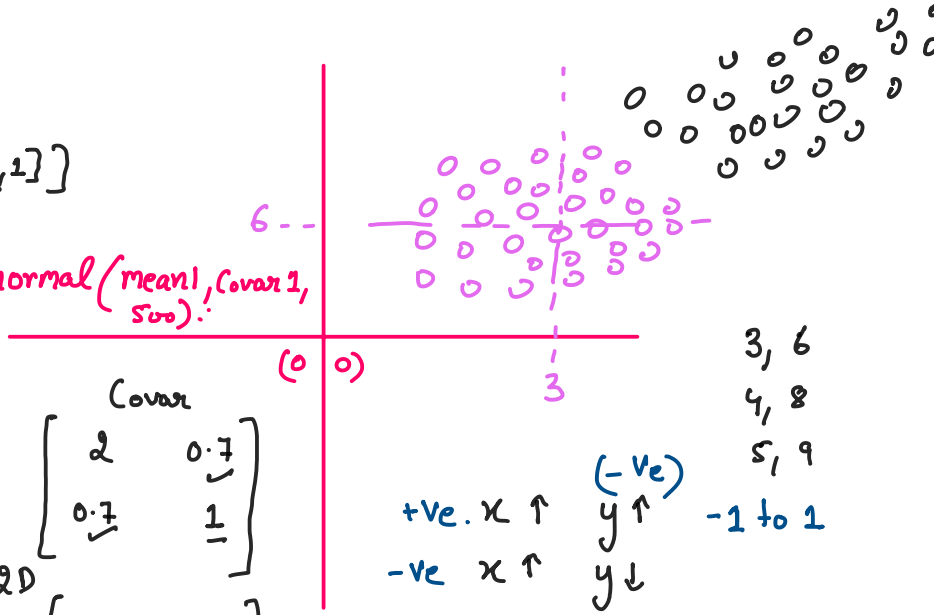
Covar 1 = [[2, 0.7], [0.7, 1]]

d1 = np.random.multivariate_normal(mean1, Covar 1, 500).

(500, 2)



(3) (6)



Covar

$$\begin{bmatrix} 2 & 0.7 \\ 0.7 & 1 \end{bmatrix}$$

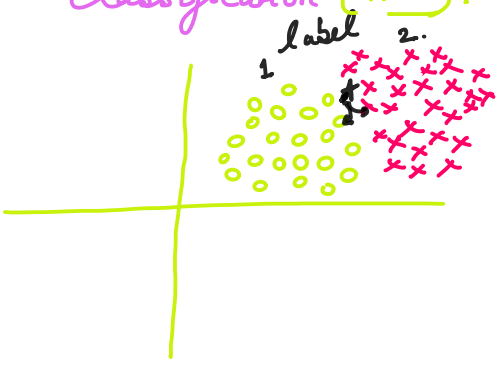
2D

$$2\times 2 \begin{bmatrix} xx & xy \\ yx & yy \end{bmatrix}$$

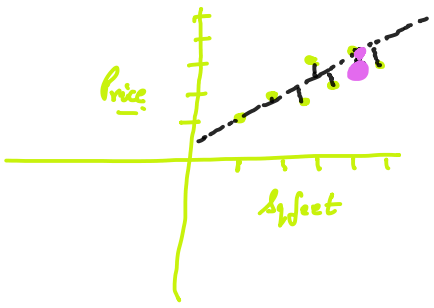
$$\begin{matrix} x \\ y \\ 3 \end{matrix} \begin{bmatrix} xx & xy & x3 \\ yx & yy & y3 \\ 3x & 3y & 33 \end{bmatrix}$$

① Supervised learning.

Classification (KNN).



Regression.



K-Nearest Neighbors.

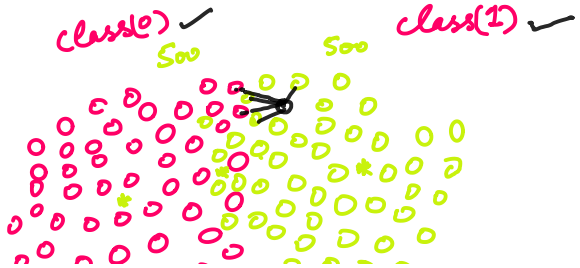
K = 5

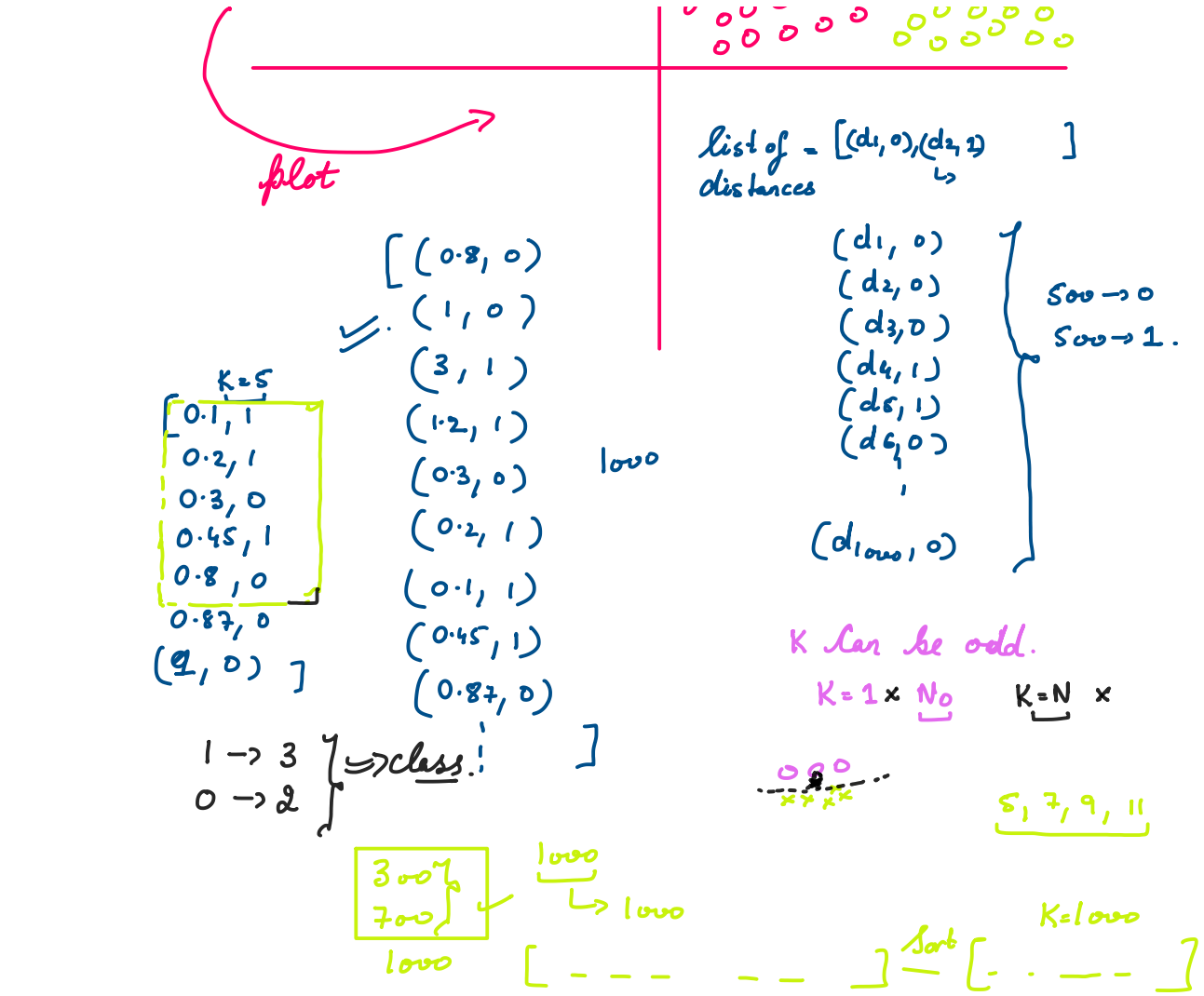
(1000 x 2).

500 x 2 -> class 1 -> 0

500 x 2 -> class 2. -> 1.

1000 x 2




plot
list of distances = [(d1, 0), (d2, 1)]
(d1, 0)
(d2, 0)
(d3, 0)
(d4, 1)
(d5, 1)
(d6, 0)
(d1000, 0)
500 → 0
500 → 1.
[(0.8, 0)
(1, 0)
(3, 1)
(1.2, 1)
(0.3, 0)
(0.2, 1)
(0.1, 1)
(0.45, 1)
(0.87, 0)
1000
K=5
0.1, 1
0.2, 1
0.3, 0
0.45, 1
0.8, 0
0.87, 0
(2, 0)]
1 → 3
0 → 2
⇒ class!
K can be odd.
K = 1 × No
K = N ×
5, 7, 9, 11
3000
7000
1000
1000
1000
K=1000
Sort