K Nearest Neighbour (KNN)

① Classification

② Regression

① Classification

$f2$

1 $0's \rightarrow 2$

$1's \rightarrow 3$

K=5

TRAINING DATA

$f1$
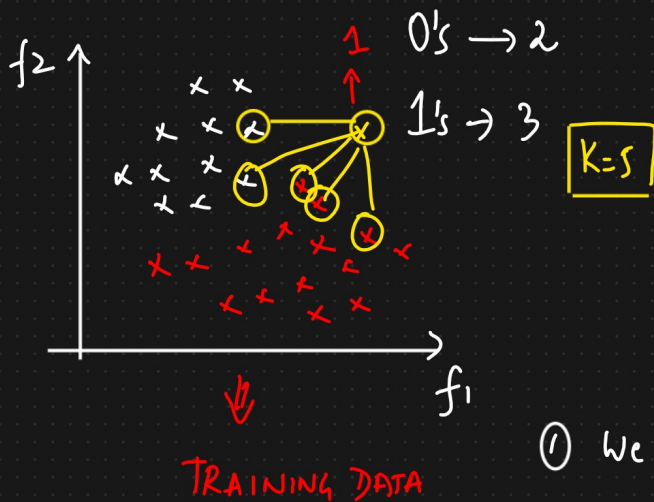
$f1$	$f2$	y {Binary Categorys} {Multi class}.
—	—	0
		1
		1
		0

① We have to initialize the K value

$K \geq 0$

$K = 1, 2, 3, 4, 5, 6 \Rightarrow$ Hyperparameter
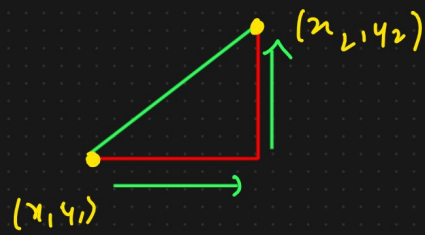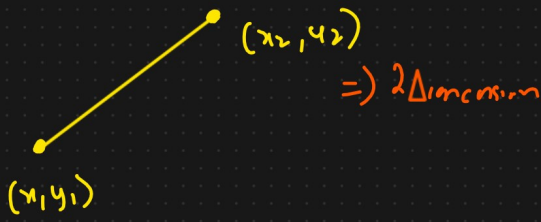
K=5

② Find the K Nearest Neighbour from the Test DATA

③ From those K=5 how many neighbours belongs to 0 category and 1 category.

Distance Metrics

① Euclidian Distance   ② Manhattan Distance

(x_2, y_2)

(x_1, y_1)
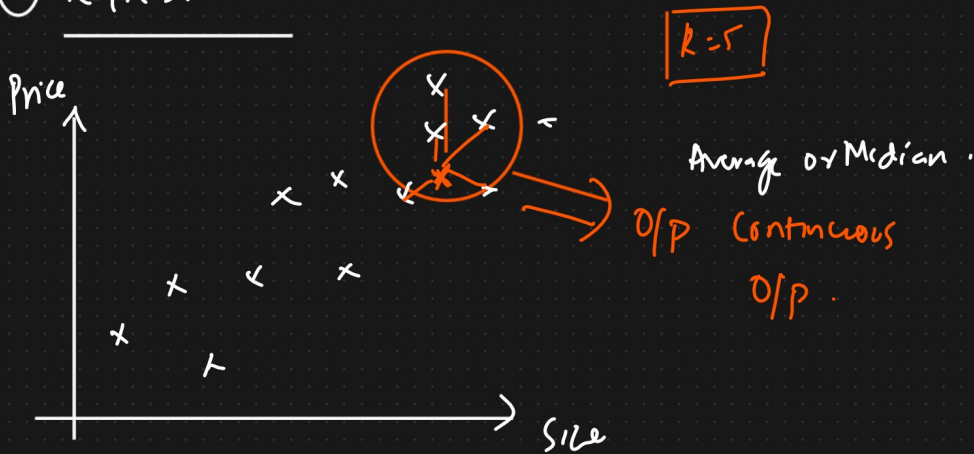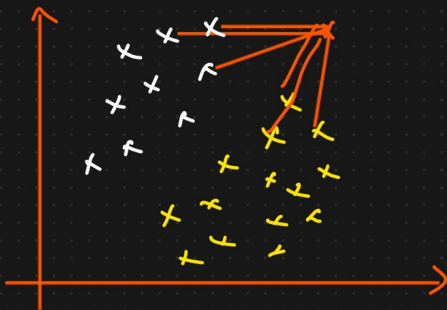
$\Rightarrow$ 2 dimension

(x_2, y_2)

(x_1, y_1)

$$\text{Distance} = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$\text{Distance} = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2 + (z_2 - z_1)^2}$$

② Regression

Price

$k = 5$

Average or Median.

O/P Continuous
O/p.

Size

Variant of KNN

Time Complexity ↑↑↑

$O(n)$

① KD Tree
② Ball Tree
} Binary Tree

⇓

Time complexity ↓↓.