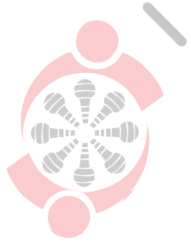
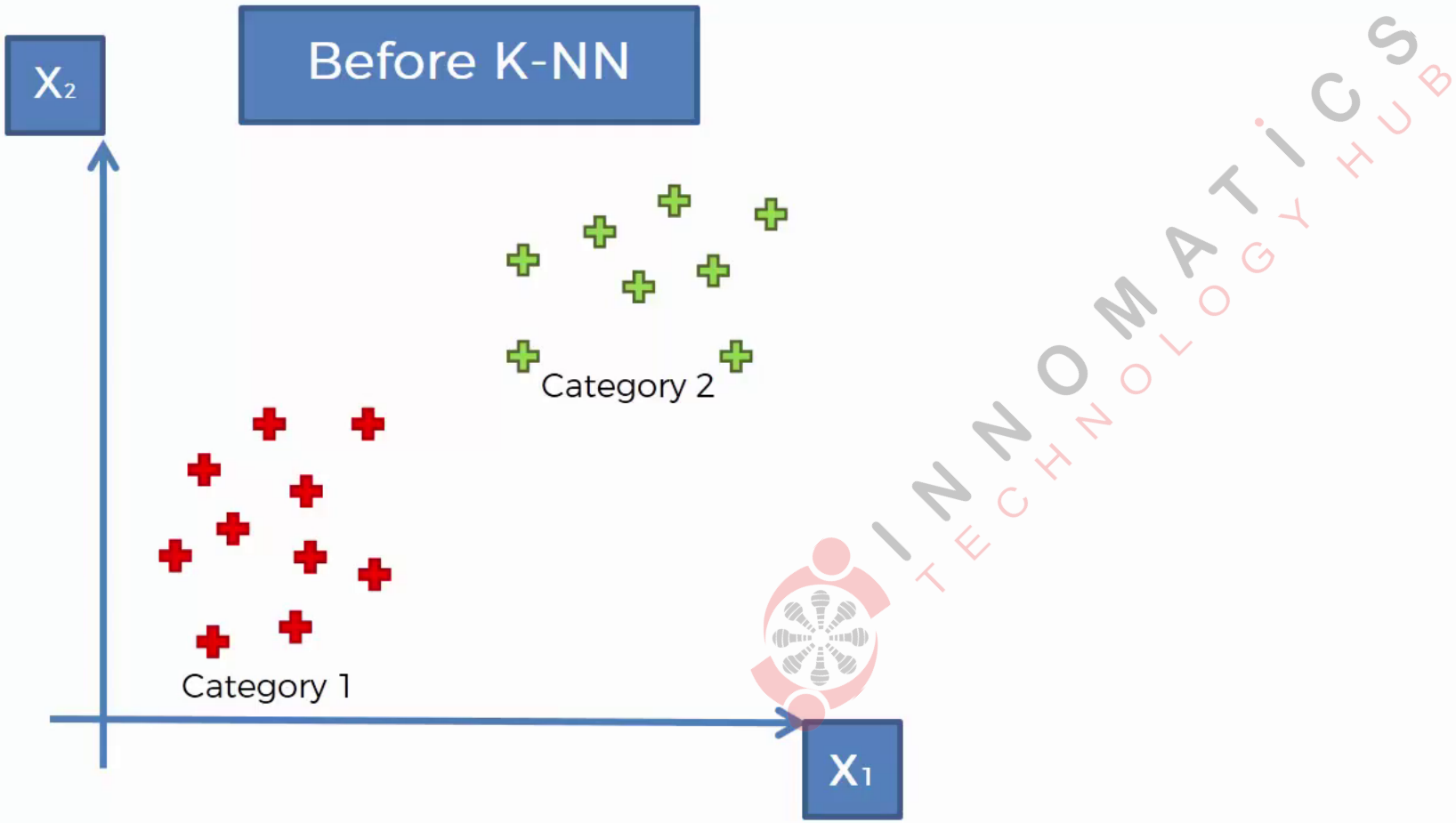
Instance Based Learning

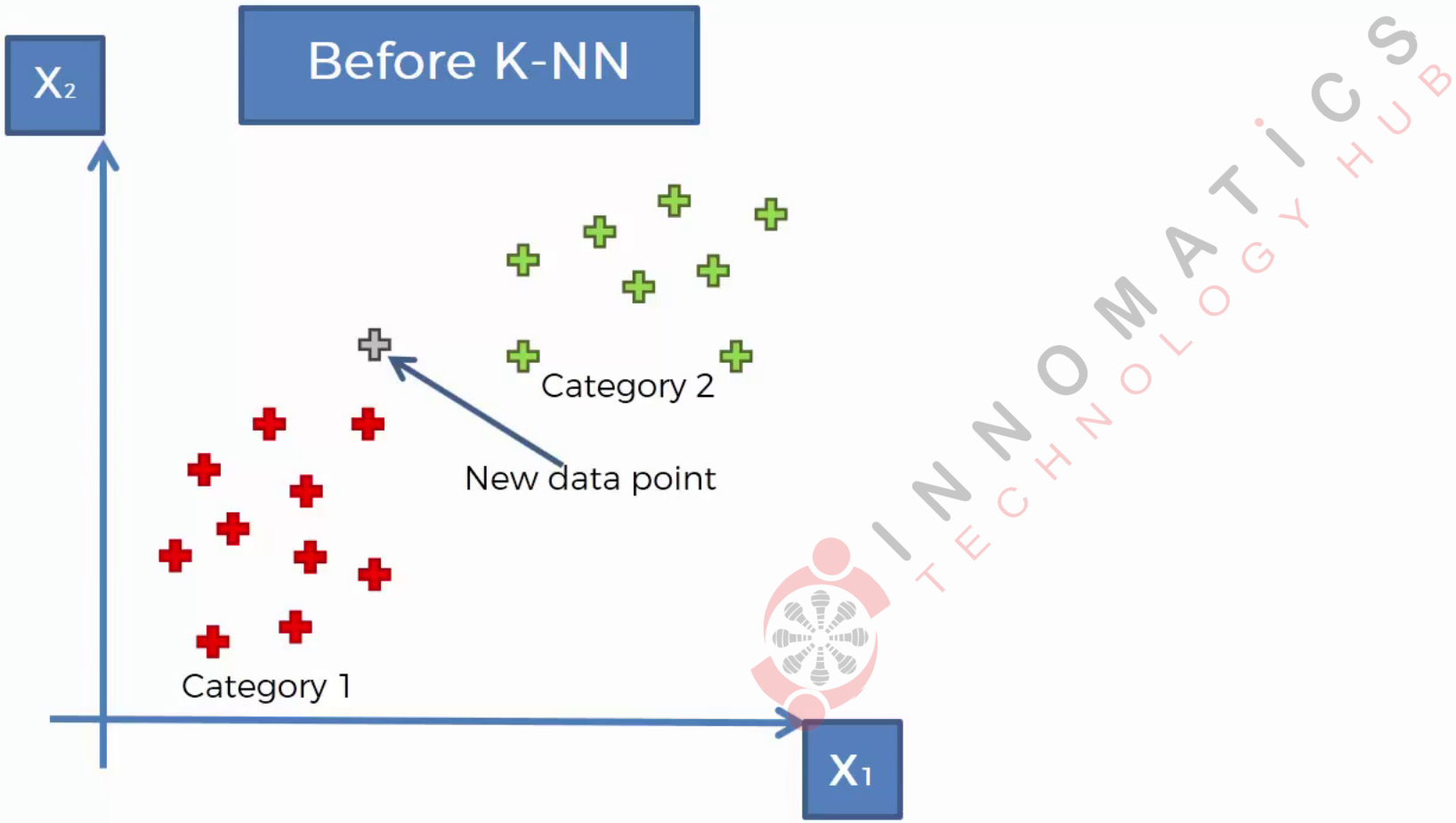


K Nearest Neighbour

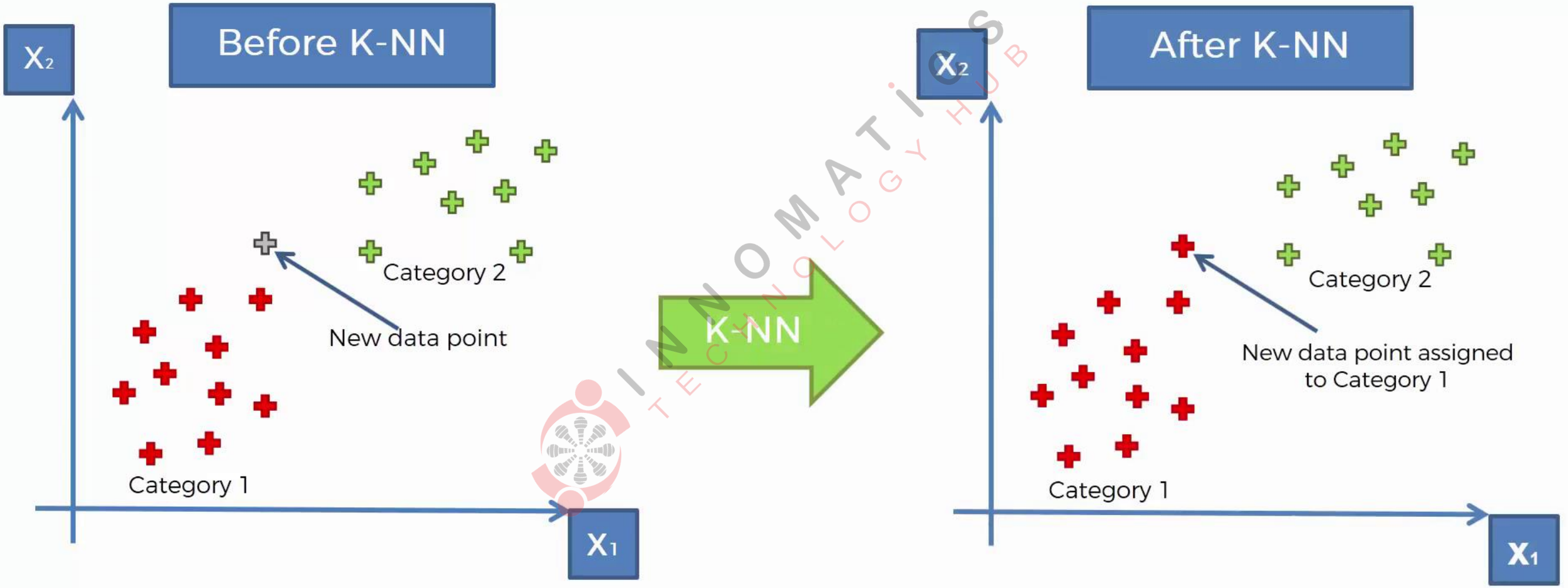
What K-NN does for you



What K-NN does for you



What K-NN does for you



How did it do that ?

STEP 1: Choose the number K of neighbors

STEP 2: Take the K nearest neighbors of the new data point, according to the Euclidean distance

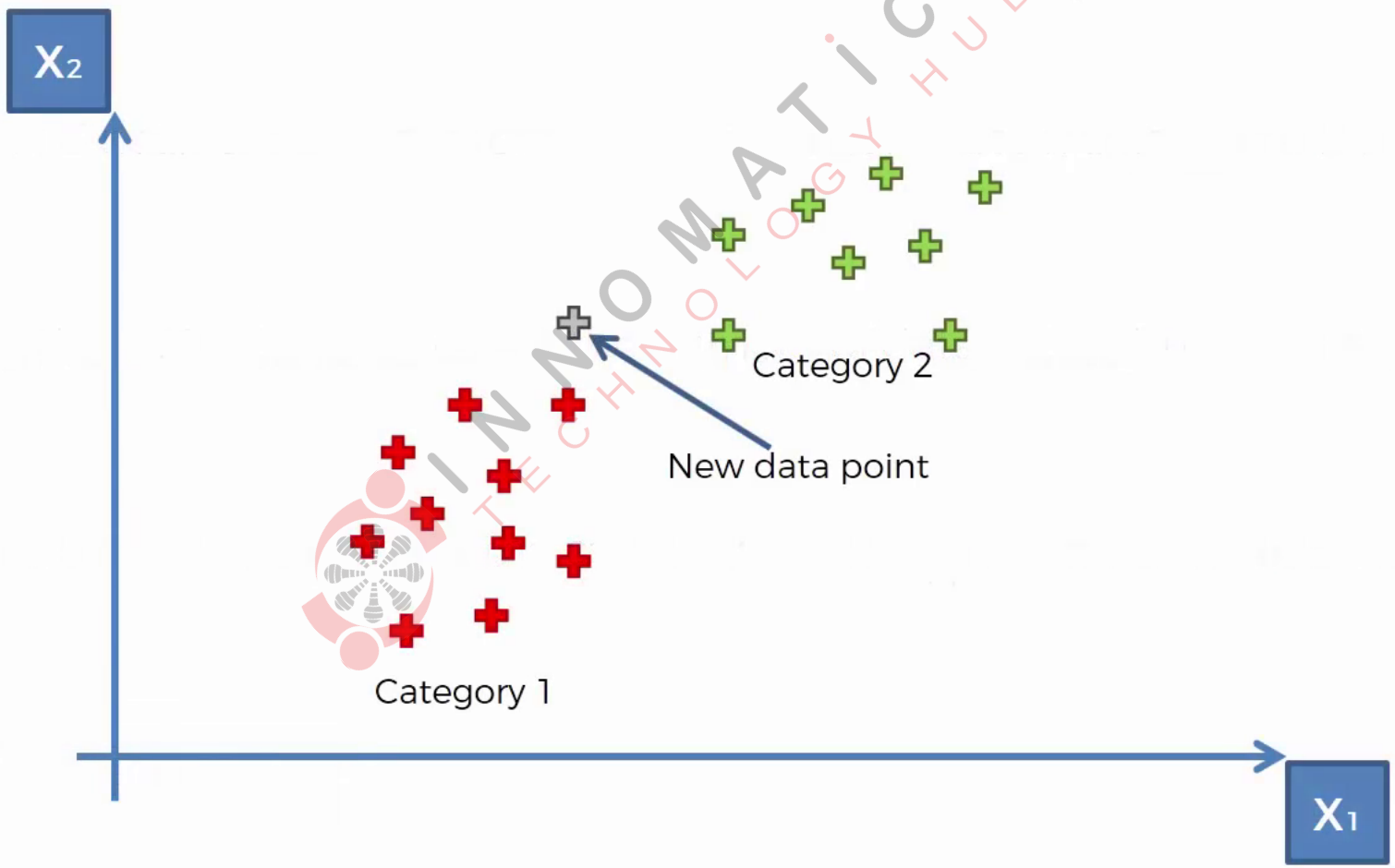
STEP 3: Among these K neighbors, count the number of data points in each category

STEP 4: Assign the new data point to the category where you counted the most neighbors

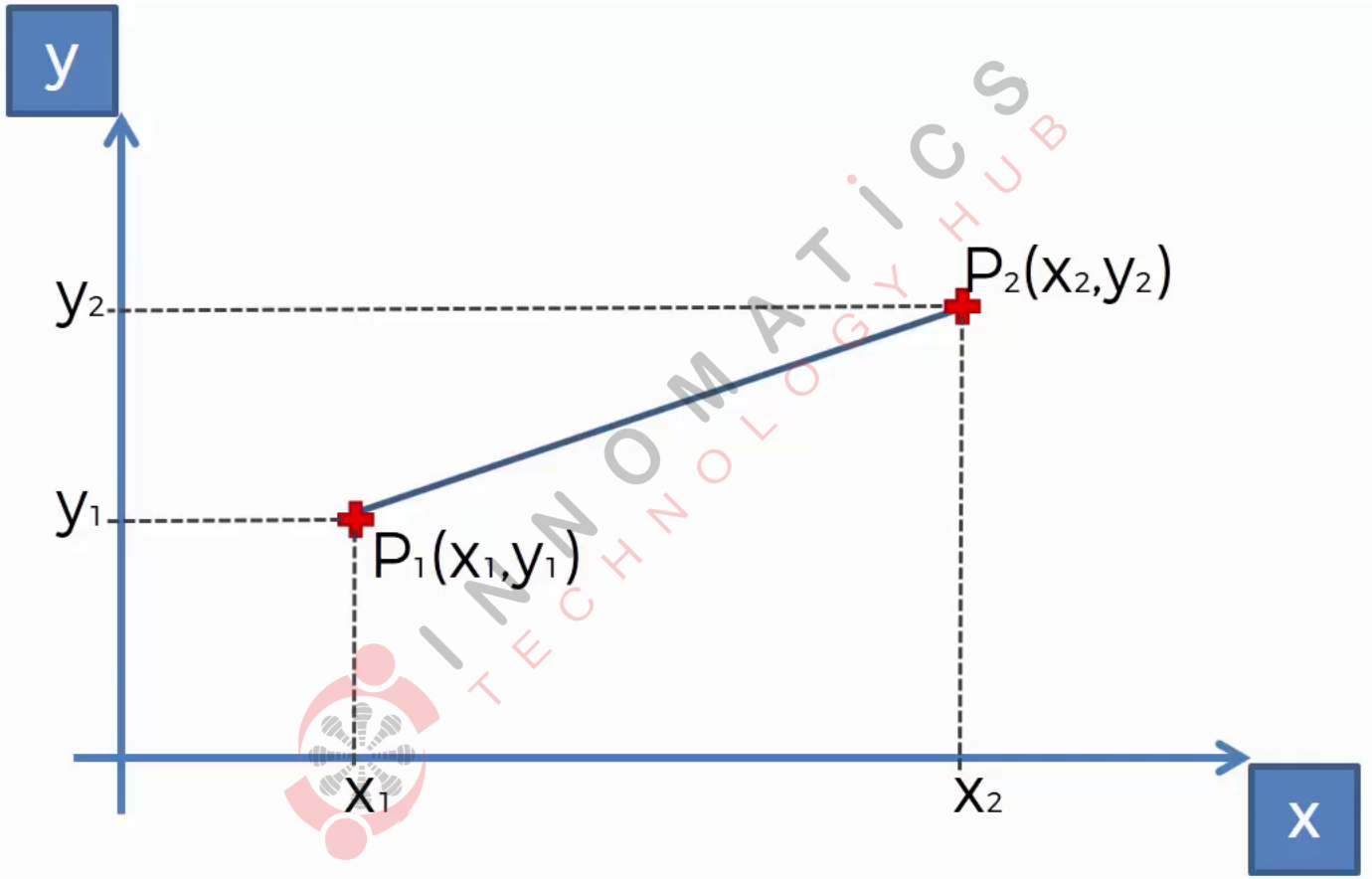
Your Model is Ready

K-NN algorithm

STEP 1: Choose the number K of neighbors: K = 5



Euclidean Distance



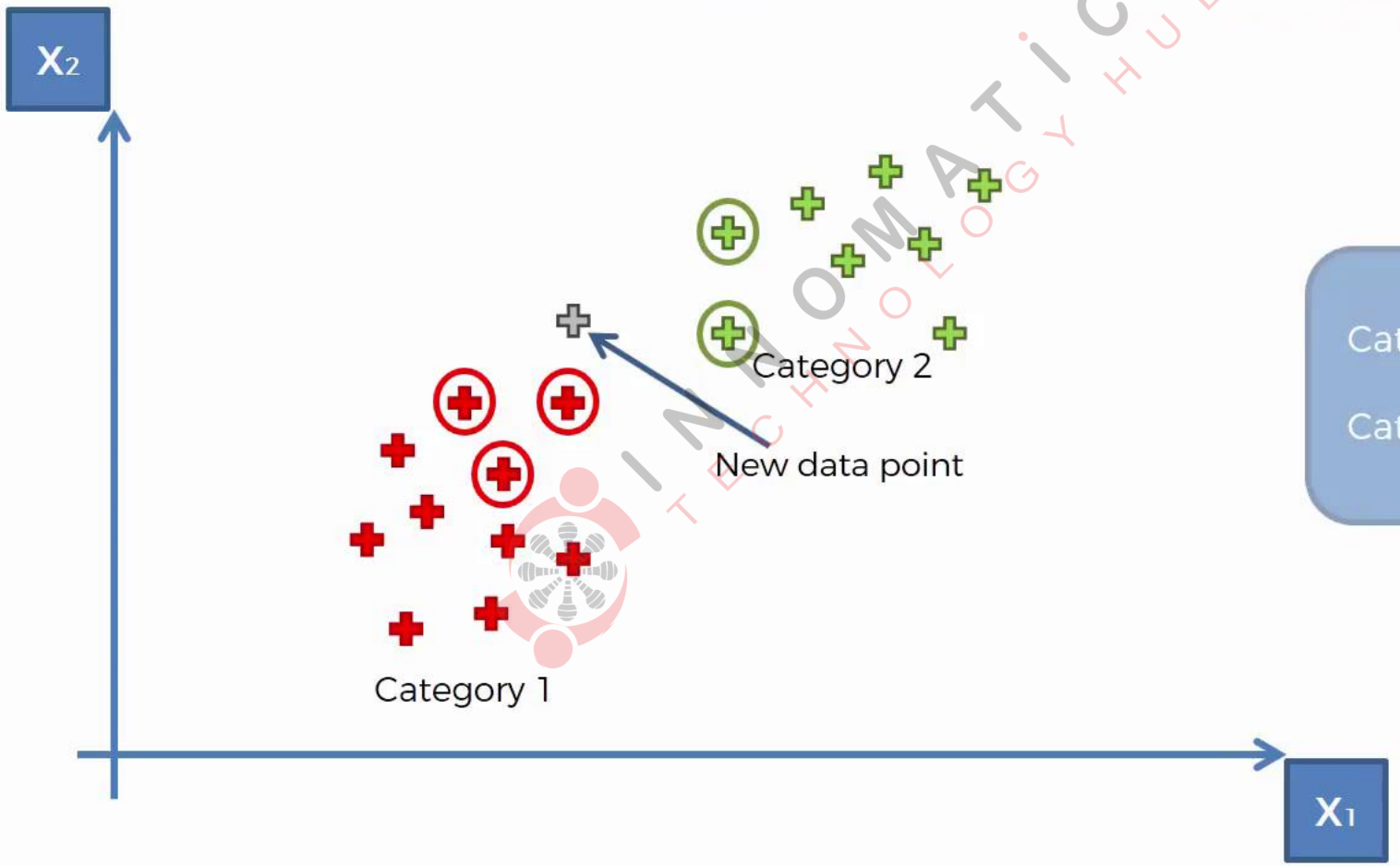
$$\text{Euclidean Distance between } P_1 \text{ and } P_2 = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

K-NN algorithm

STEP 2: Take the K = 5 nearest neighbors of the new data point, according to the Euclidean distance

K-NN algorithm

STEP 3: Among these K neighbors, count the number of data points in each category

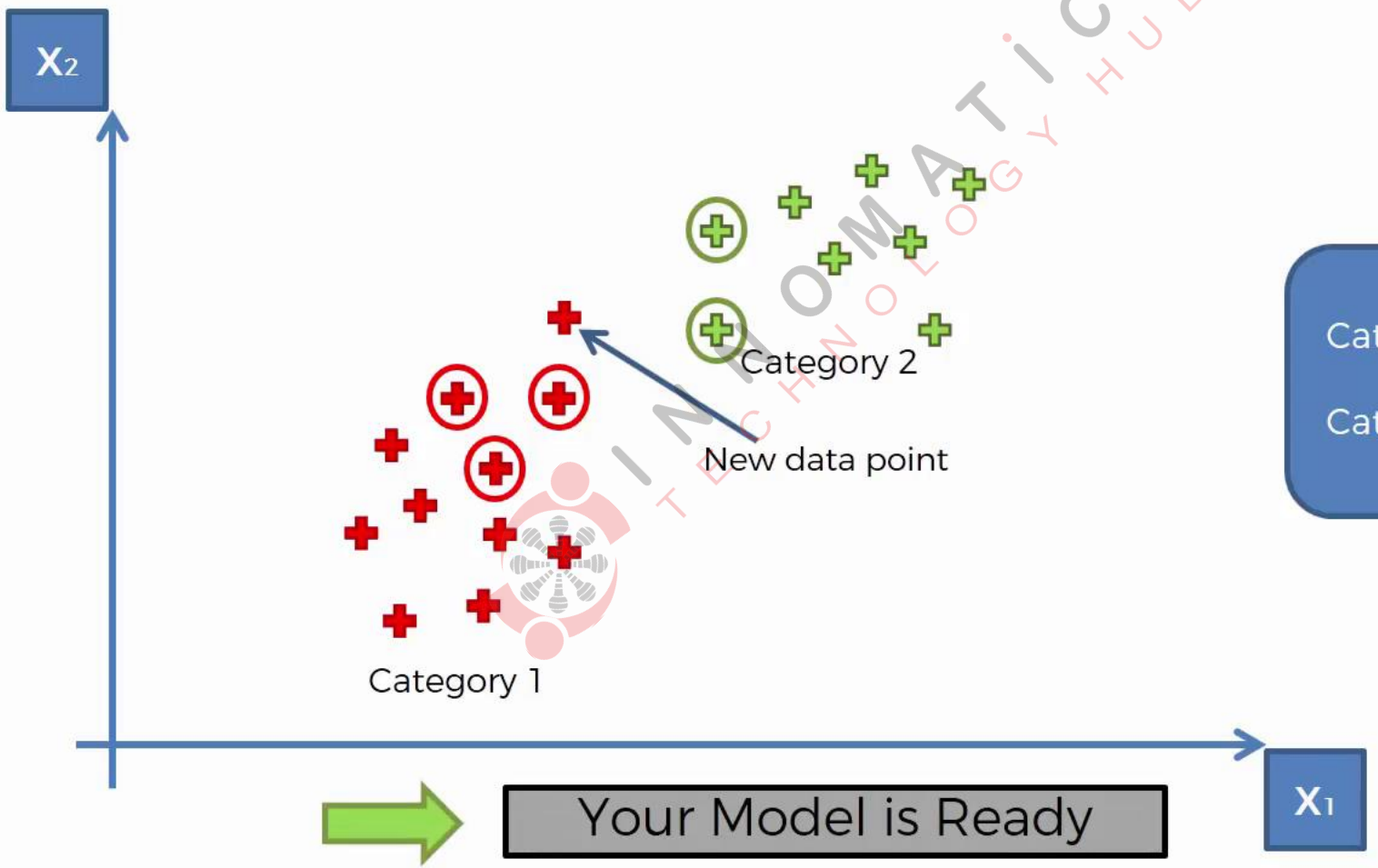


Category 1: 3 neighbors

Category 2: 2 neighbors

K-NN algorithm

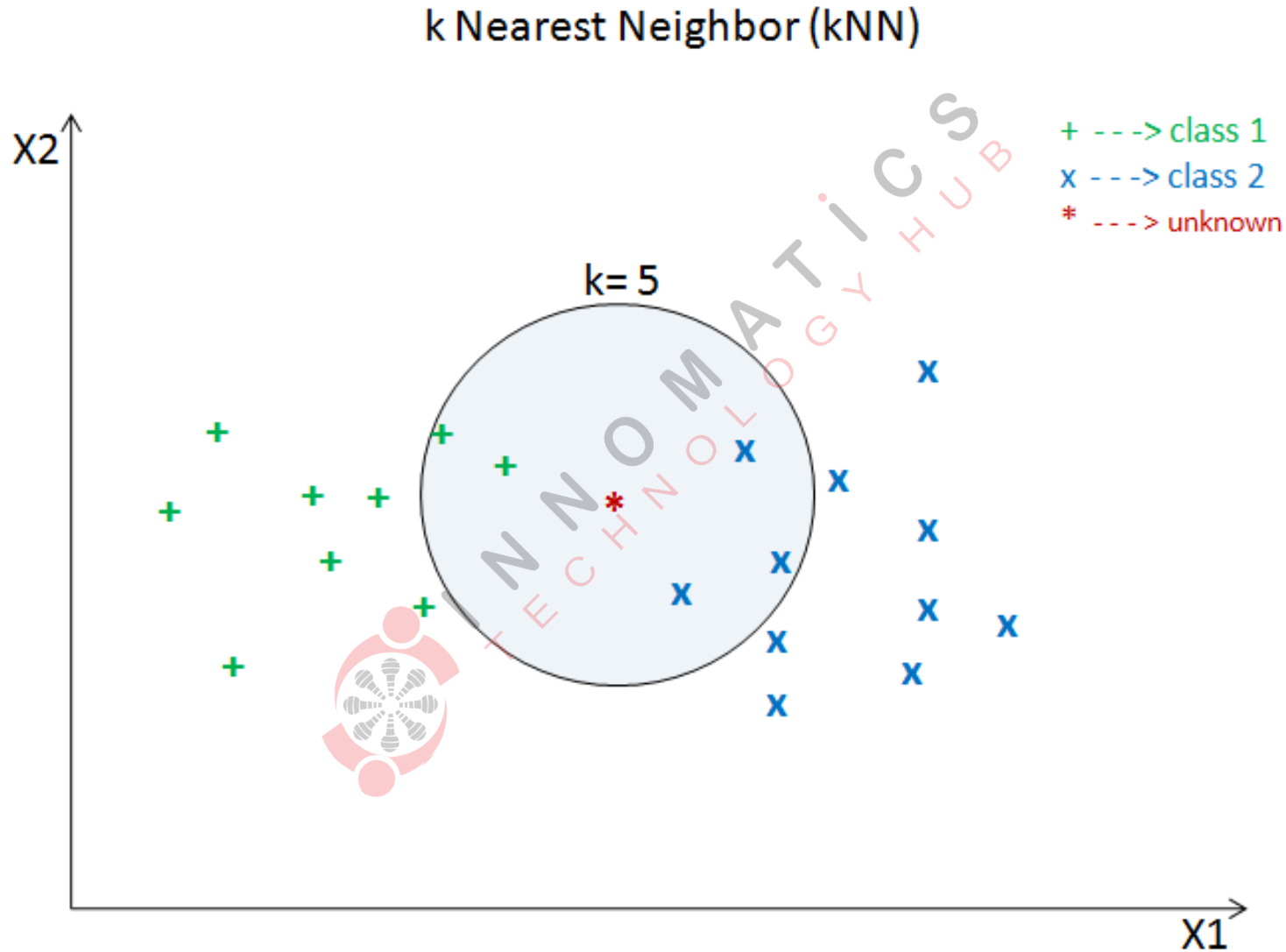
STEP 4: Assign the new data point to the category where you counted the most neighbors



Category 1: 3 neighbors

Category 2: 2 neighbors

Your Model is Ready

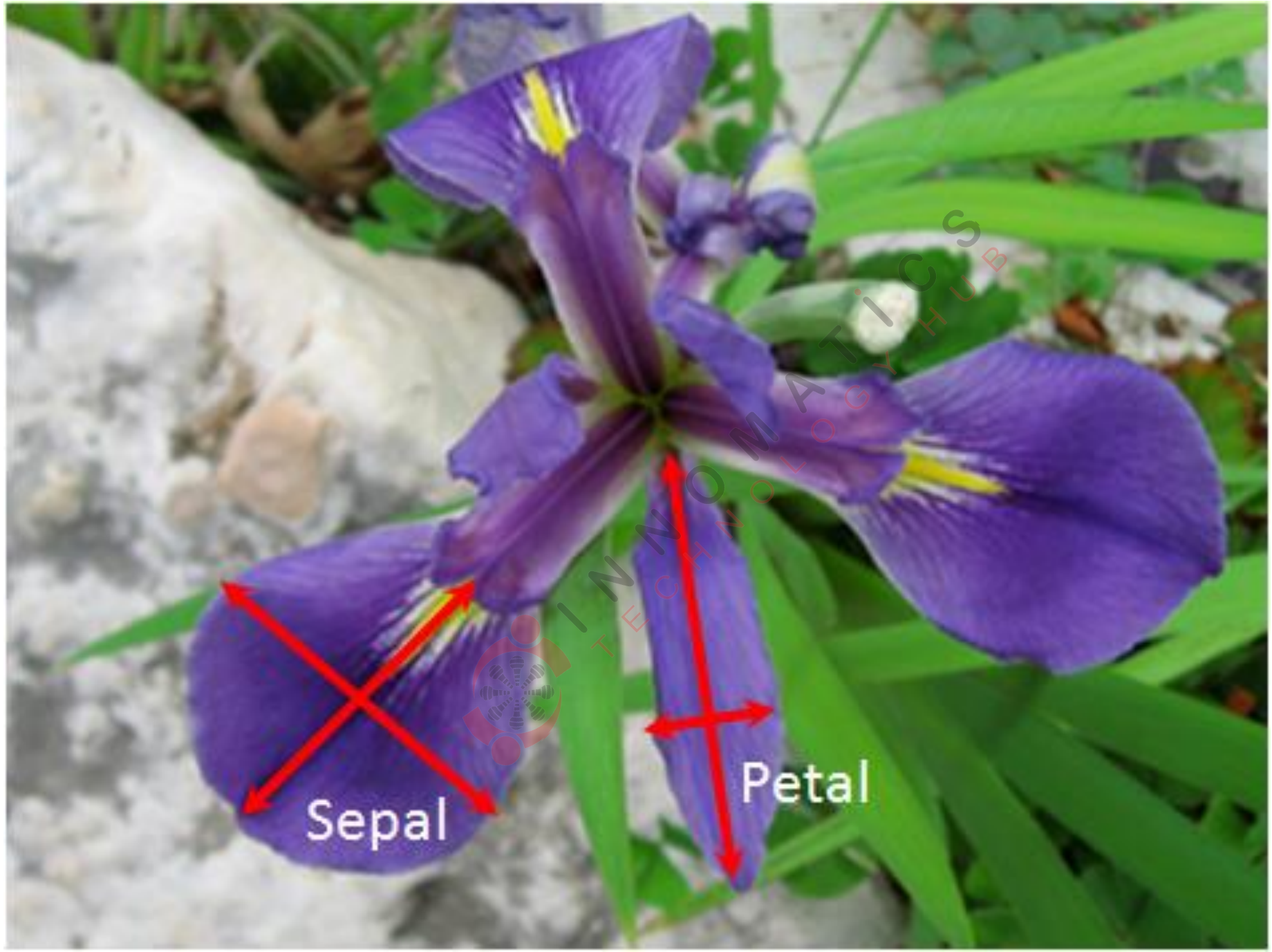

k Nearest Neighbor (kNN)
X2
X1
k= 5
+ - - -> class 1
x - - -> class 2
* - - - > unknown

Hands on Session

setosa

versicolor

virginica


Sepal
Petal