Introduction to Machine Learning. Lec.10 K-Nearest Neighbors

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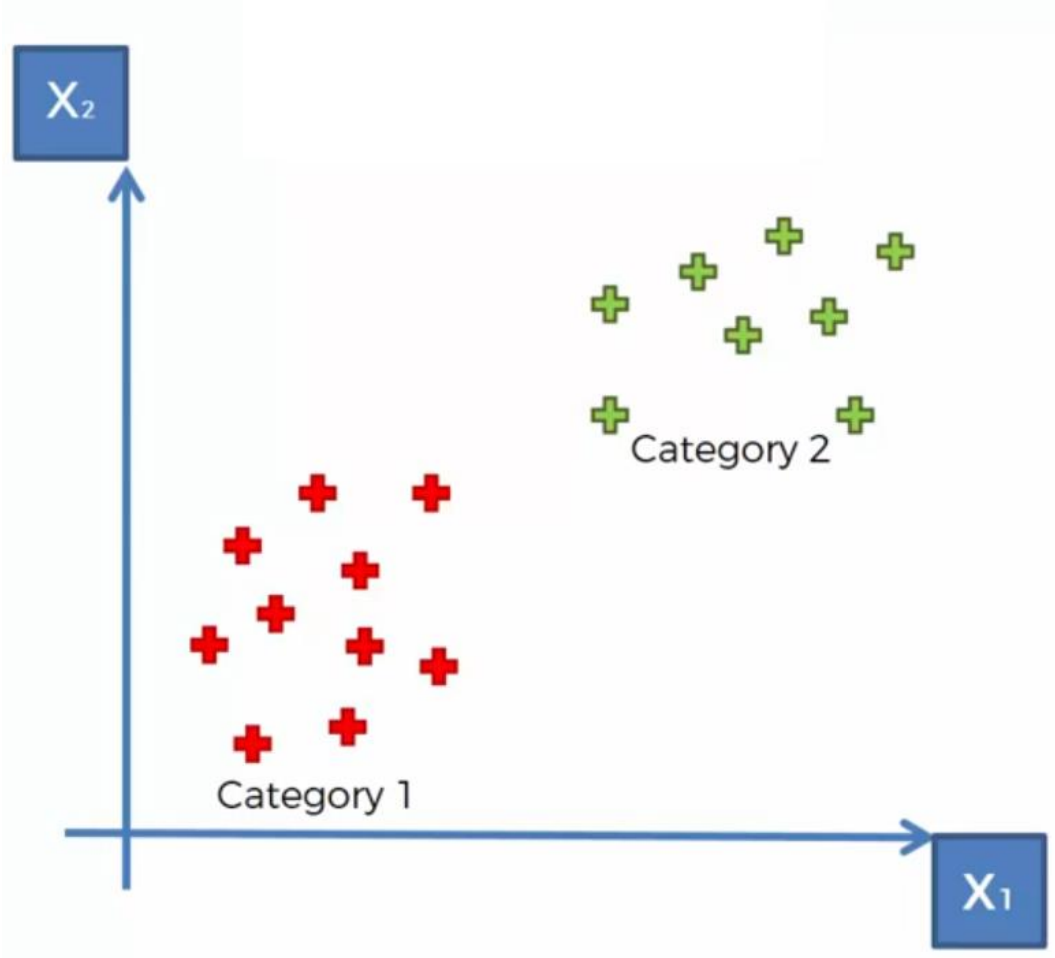
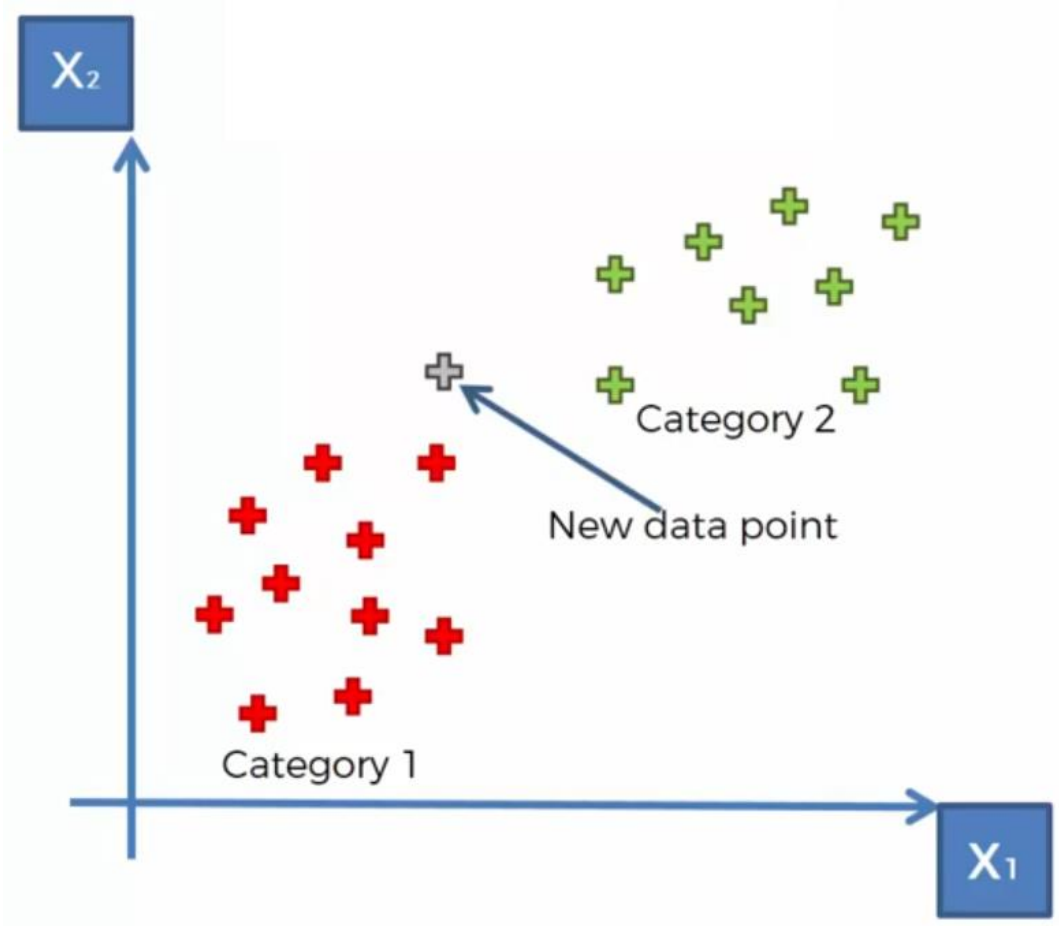
Before k-NN



A new data point



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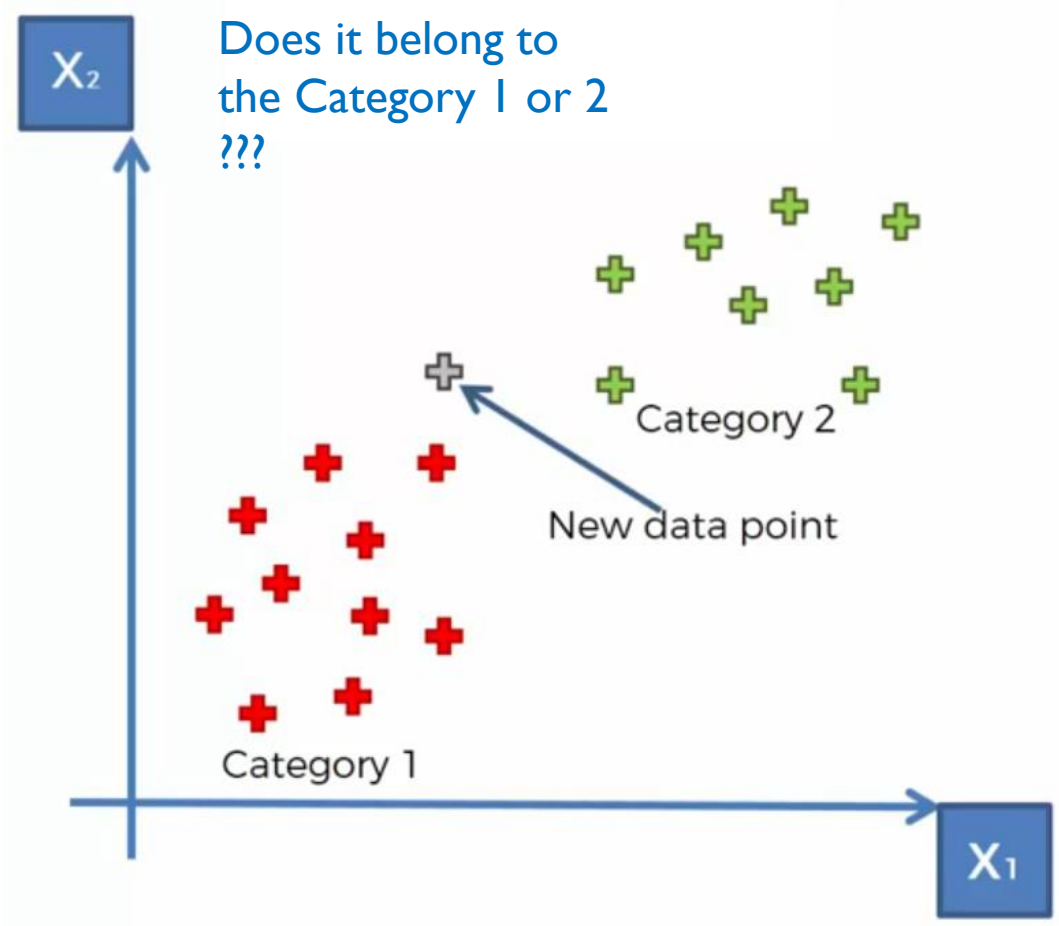

After k-NN applied

k-NN algorithm step-by-step

- STEP 1: Choose the number K of neighbors

k-NN algorithm step-by-step

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  Most commonly k=5 (it's better to choose odd numbers)

k-NN algorithm step-by-step

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you don't strictly have to use Euclidean distance, but it's the most common one

k-NN algorithm step-by-step

- STEP 1: Choose the number K of neighbors
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- STEP 3: Among these k neighbors, count the number of data points in each category

k-NN algorithm step-by-step

- STEP 1: Choose the number K of neighbors
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- 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

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

How to choose k?


K-NEAREST NEIGHBORS
K = 3
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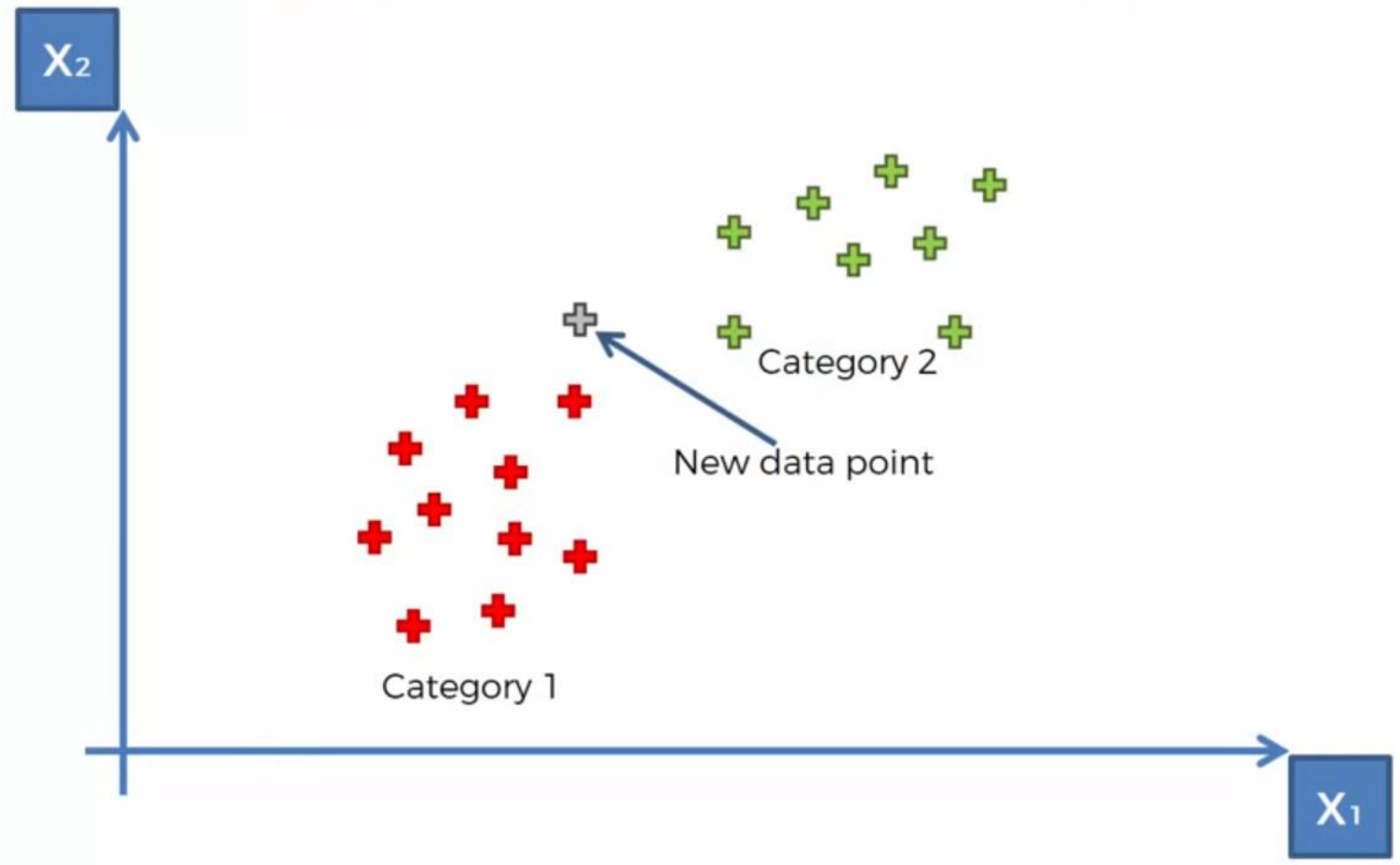
STEP 2: Take the k nearest neighbors of the new data point, according to the Euclidean Distance.



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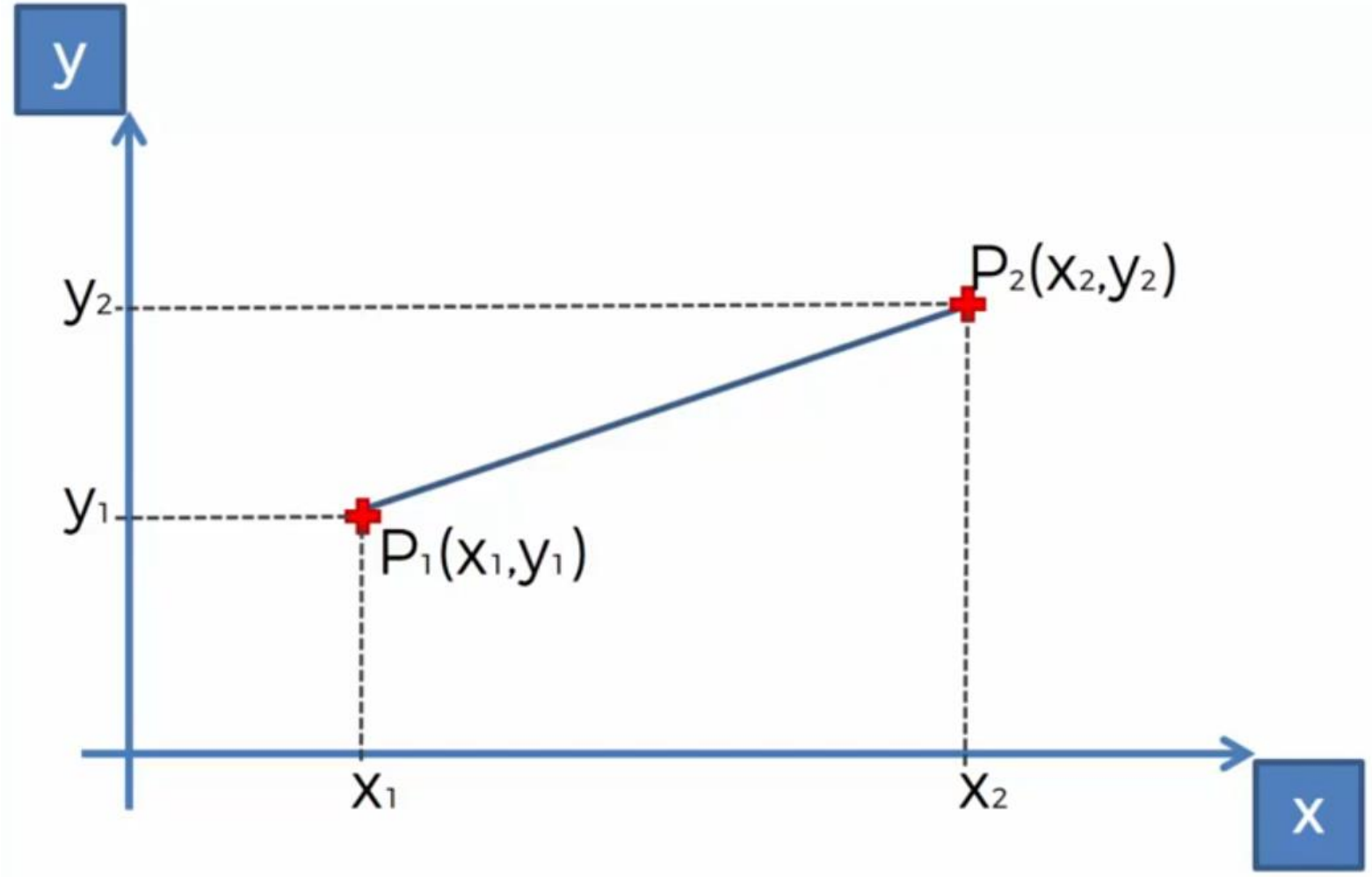

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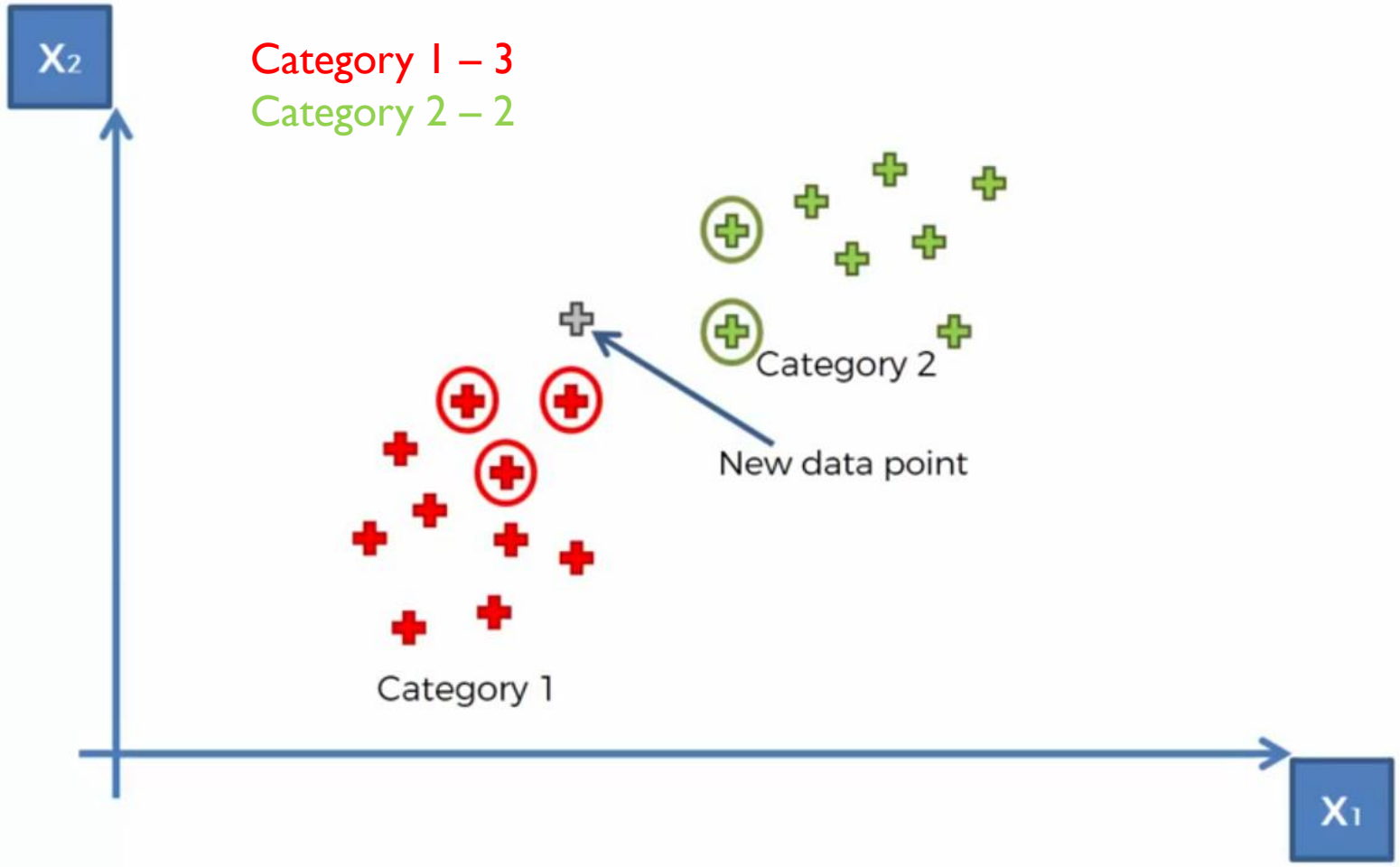

STEP 4: Assign the new data point to the category where you counted the most neighbors

Class creation

- sklearn.neighbors -> KNeighborsClassifier

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- Parameters:

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  metric (i.g. metric = ‘minkowski’)

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- Parameters:
  n_neighbors (i.g. n_neighbors= 5)
  metric (i.g. metric = ‘minkowski’)
  p (i.g. p =2 is Euclidean distance)

This is it ;-)