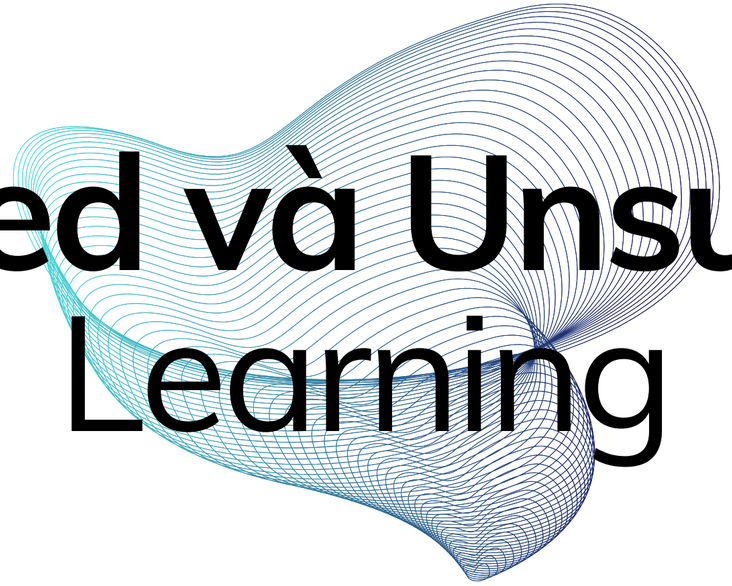
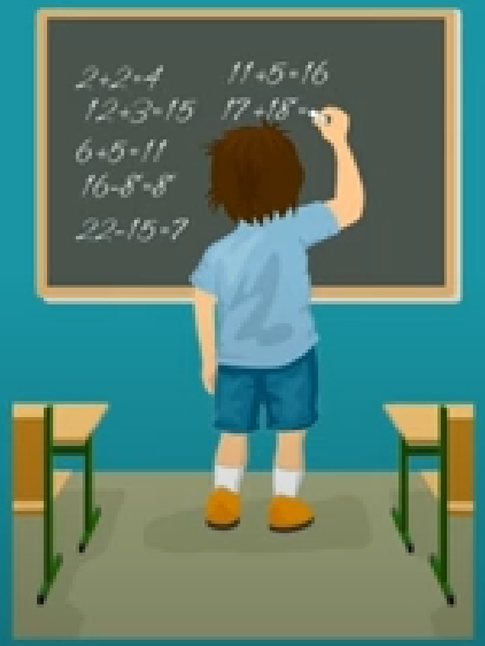
Supervised và Unsupervised Learning



Supervised learning is a method in which we teach the machine using labelled data

In unsupervised learning the machine is trained on unlabelled data without any guidance



Supervised Learning

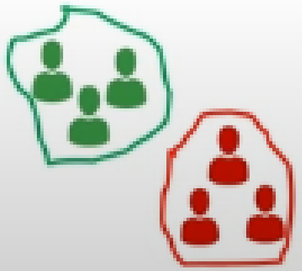
Regression

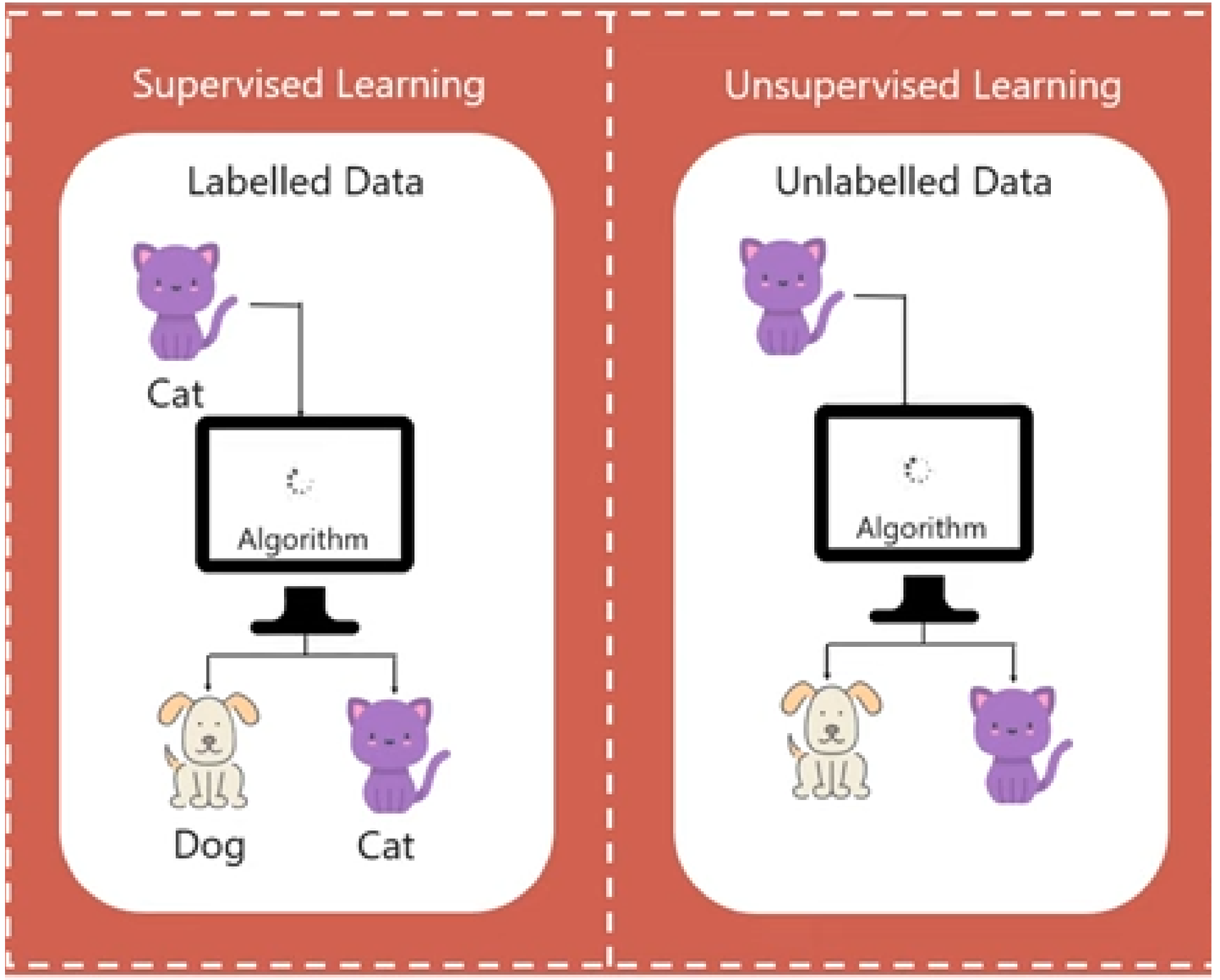
Classification

Unsupervised Learning

Association

Clustering



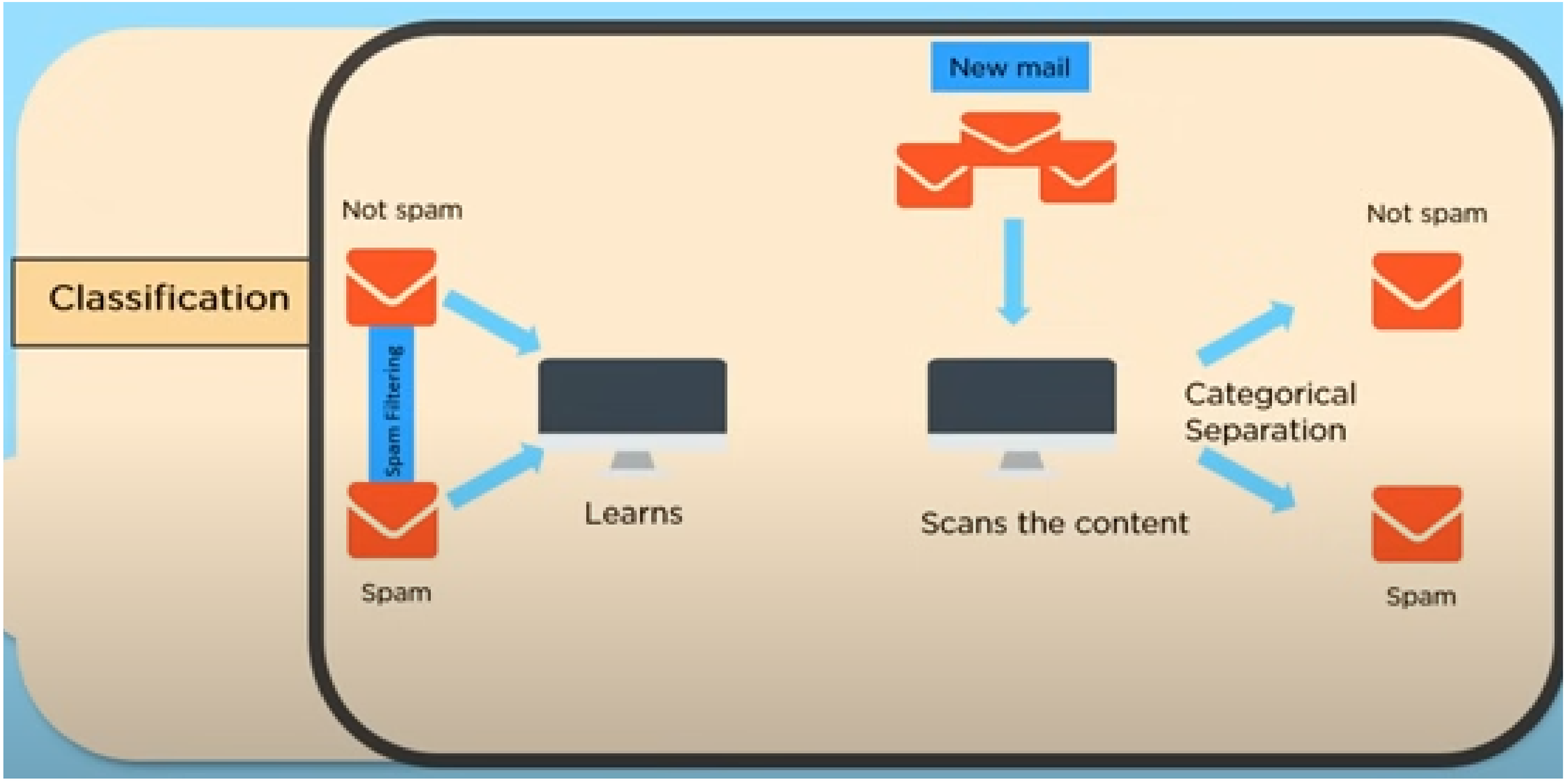

Supervised Learning
Labelled Data
Cat
Algorithm
Dog
Cat
Unsupervised Learning
Unlabelled Data
Algorithm

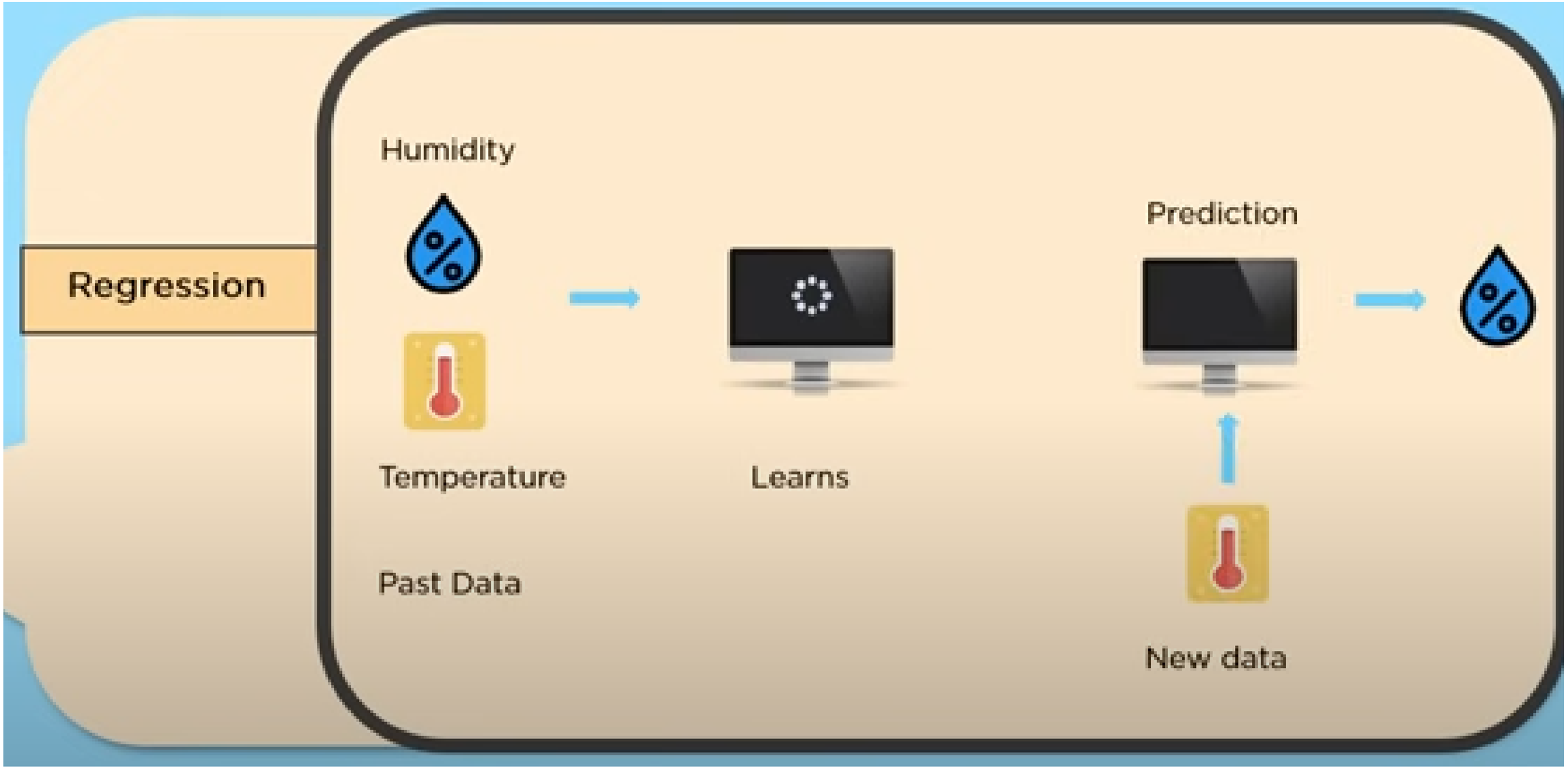
Supervised Learning

Forecast outcomes

Unsupervised Learning

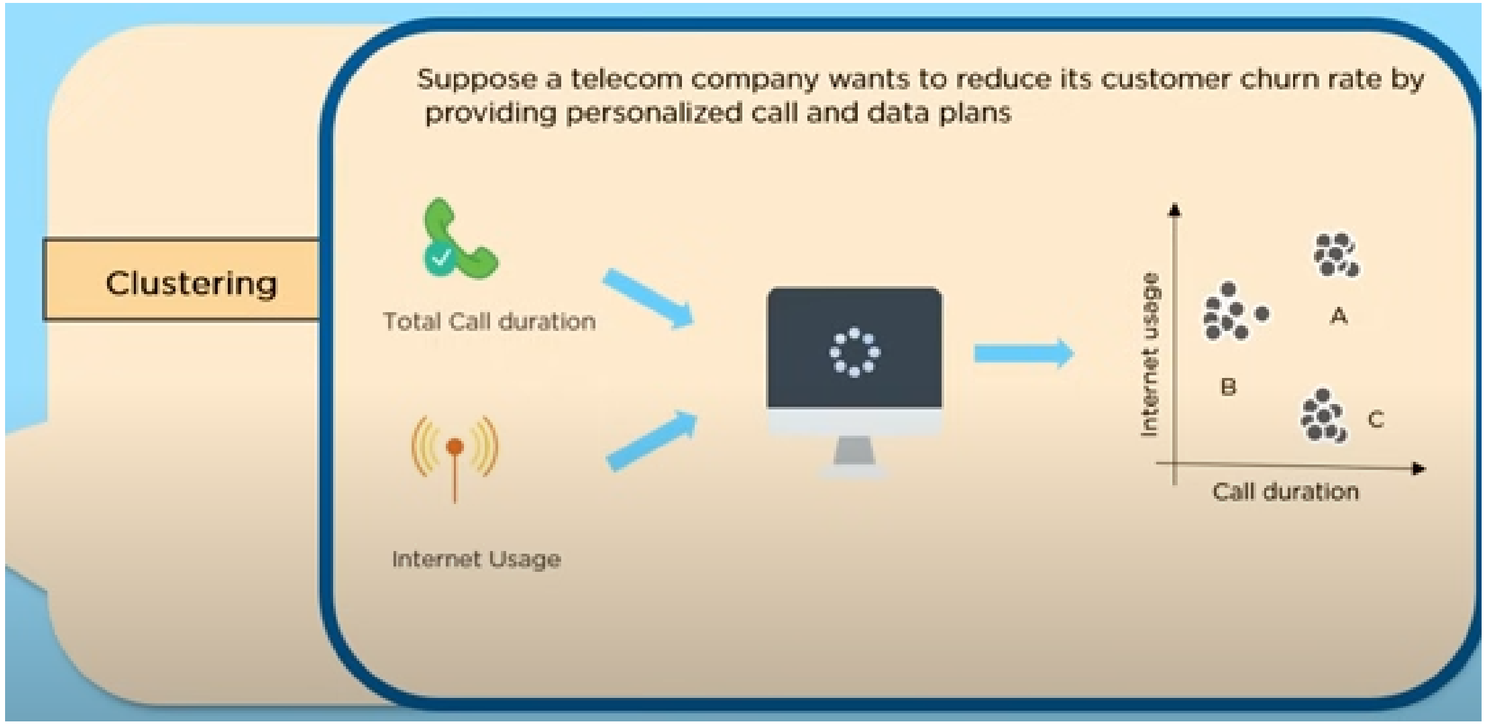
Discover underlying patterns


Classification
Not spam
Spam Filtering
Spam
Learns
New mail
Scans the content
Categorical Separation
Not spam
Spam

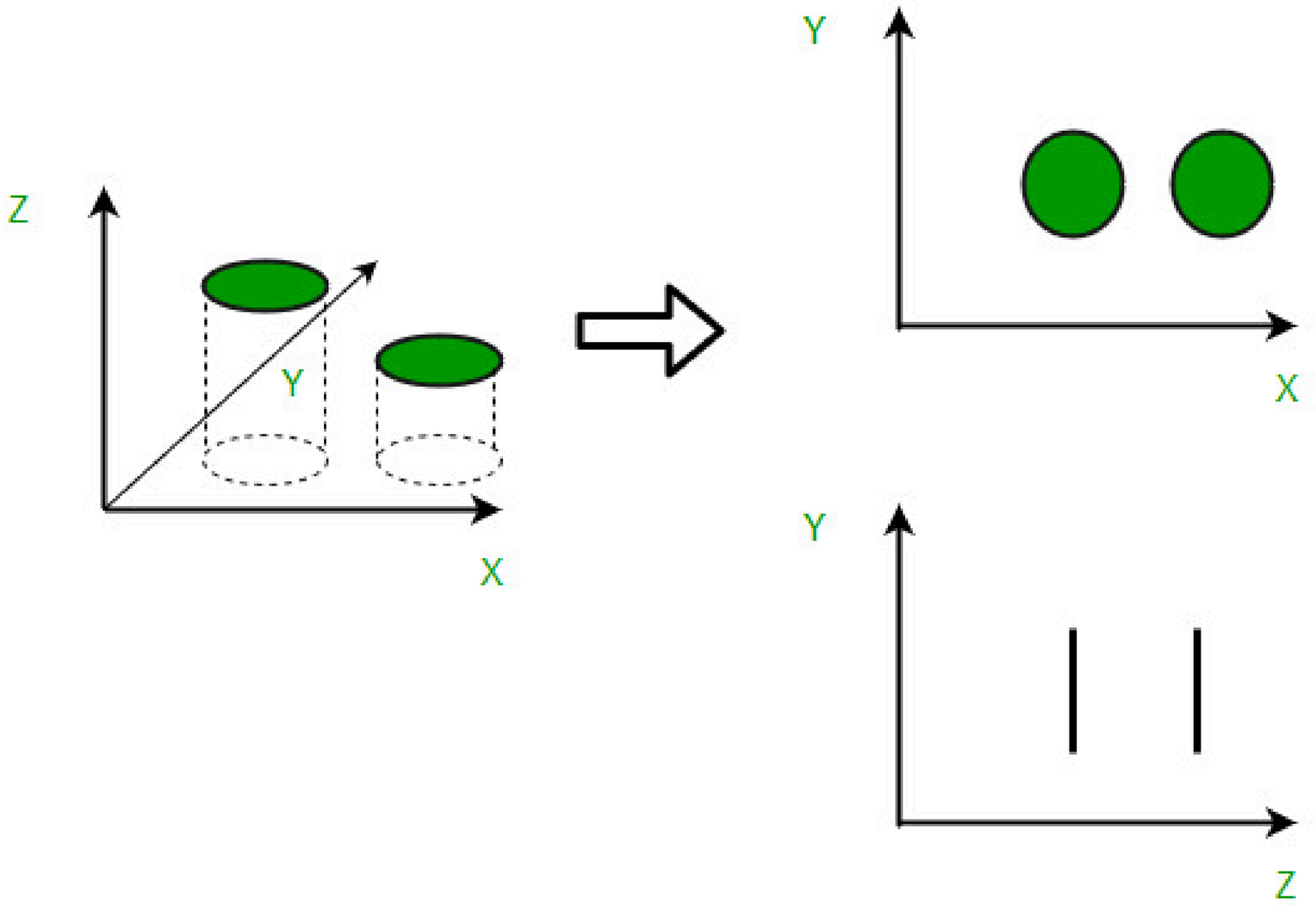

Regression
Humidity
Temperature
Past Data
Learns
Prediction
New data

Clustering

The method of dividing the objects into clusters which are similar between them and are dissimilar to the objects belonging to another cluster



Dimensionality Reduction



Logistic Regression Model

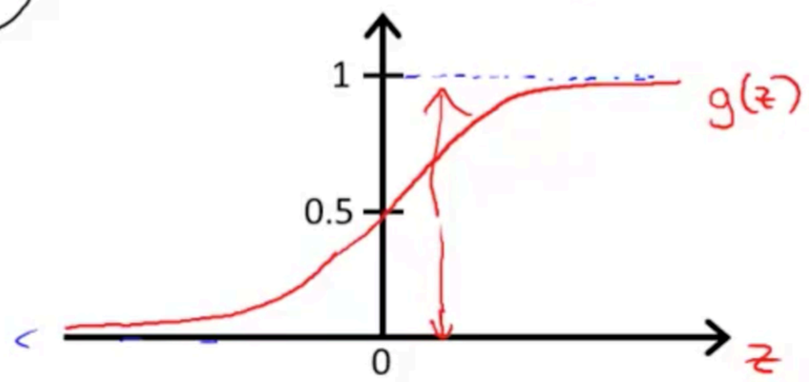
Want $0 \leq h_\theta(x) \leq 1$

$$h_\theta(x) = g(\theta^T x)$$

$$g(z) = \frac{1}{1+e^{-z}}$$

$z = \theta^T x$

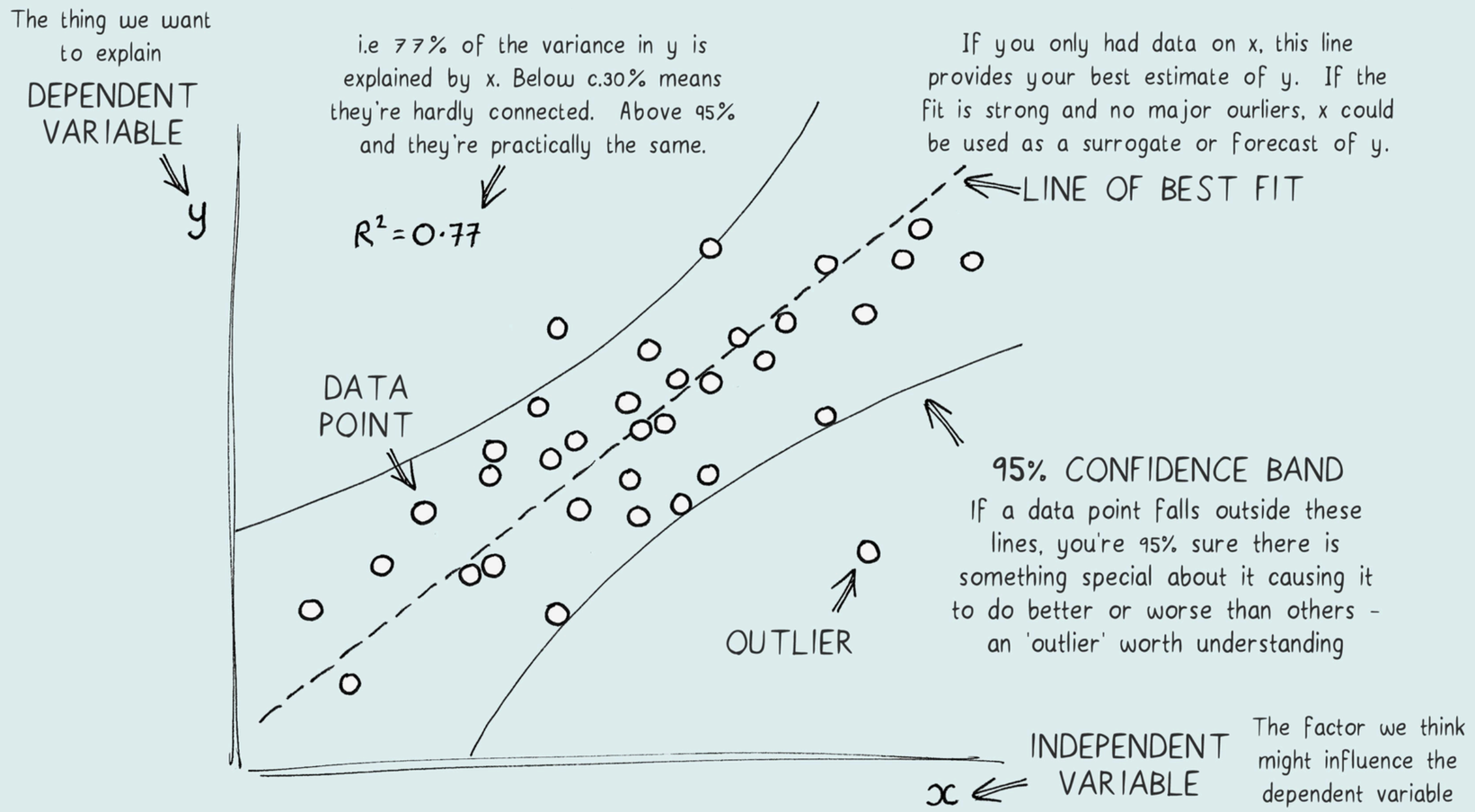
$$h_\theta(x) = \frac{1}{1+e^{-\theta^T x}}$$

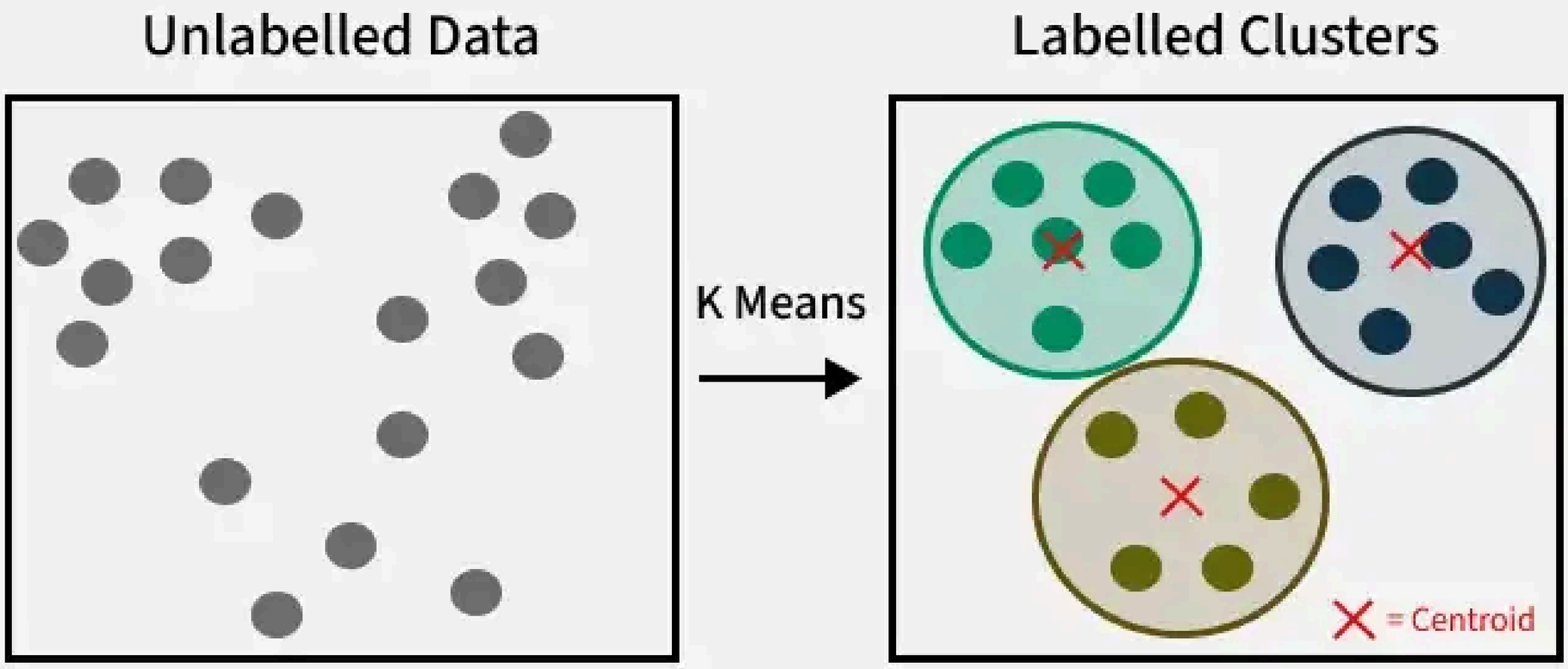


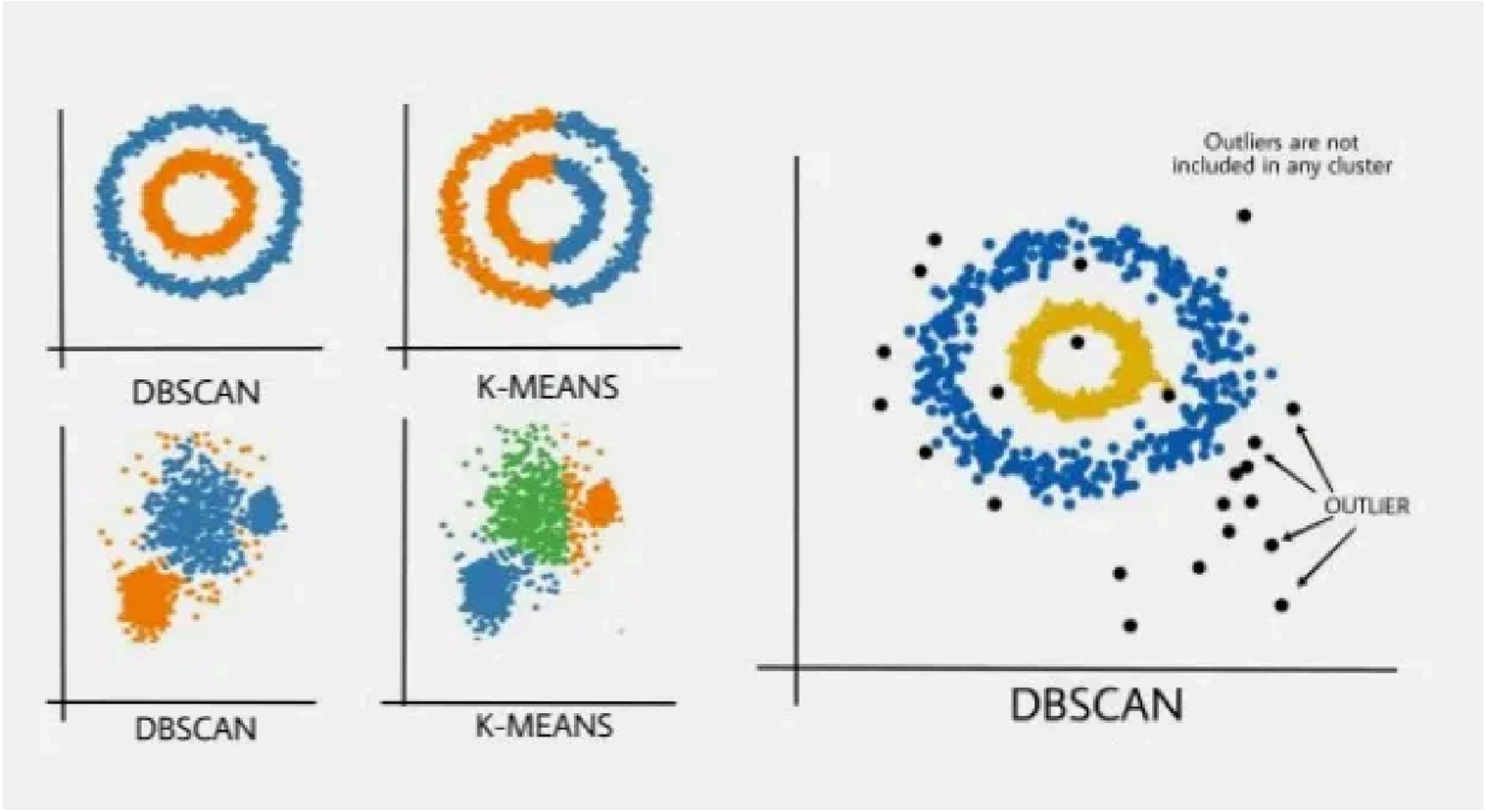
- Sigmoid function
- Logistic function

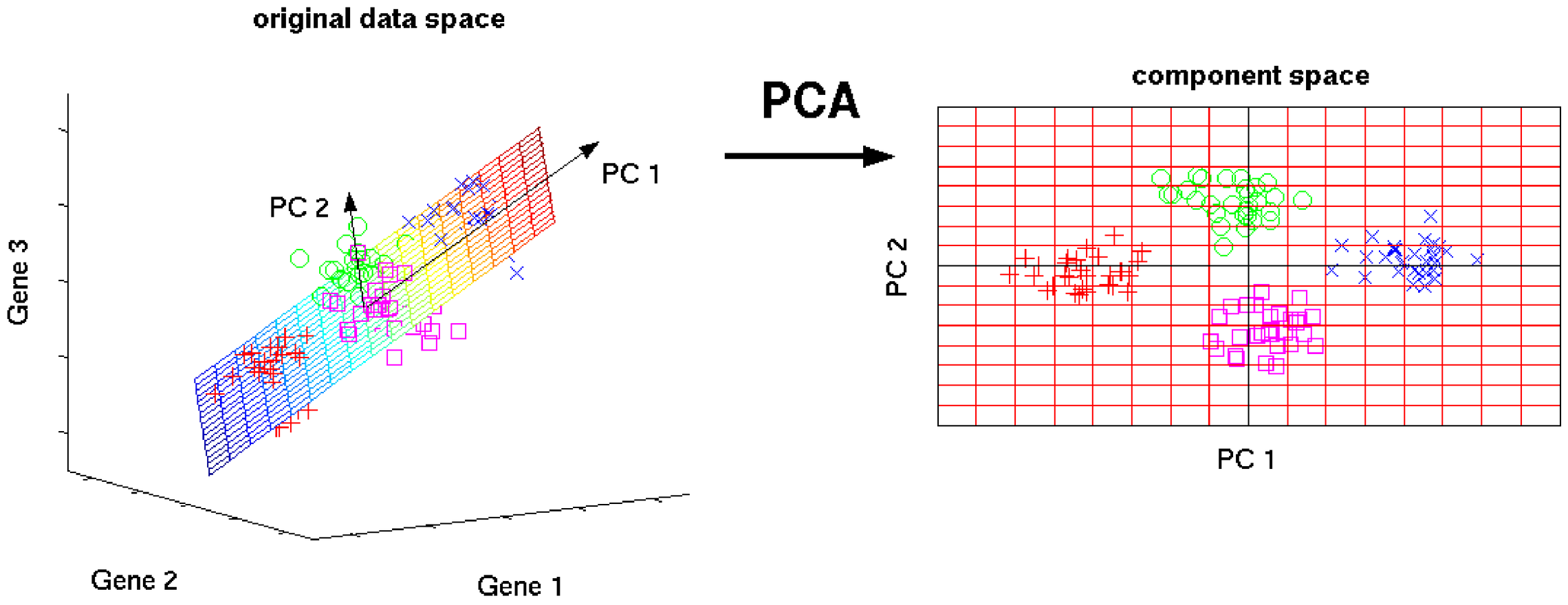
Parameters θ.

LINEAR REGRESSION




Unlabelled Data
K Means
Labelled Clusters
= Centroid


DBSCAN
K-MEANS
DBSCAN
K-MEANS
Outliers are not
included in any cluster
OUTLIER
DBSCAN


original data space
PC 1
PC 2
Gene 3
Gene 2
Gene 1
PCA
component space
PC 2
PC 1