

In this PDF, I will explain most common approaches in AI, Supervised and unsupervised. And how to choose the right approach for your problem.

There are two primary methods to artificial intelligence (AI) and machine learning: supervised learning and unsupervised learning. The primary distinction is that one use labelled data to aid in result prediction, while the other does not. There are, however, some distinctions between the two techniques, as well as critical areas where one surpasses the other. This article will explain the distinctions so you can decide which technique is best for you.

Supervised Approach is:

Approach that uses labeled dataset (fig 1) to train the model on the features. It uses labeled input and output to classify the mode, the model can measure its accuracy and learn over time.

Student	X(Input)			Y(Output)	
	Test1 marks	Test2 Marks	Study hours		Final result
1	30	35	4	Pass	
2	42	45	6	Pass	
3	20	17	1	Fail	
4	45	48	6	Pass	
5	25	22	2	Pass	
6	34	40	2	Pass	
7	49	47	6	Pass	
8	17	10	0	Fail	
9	25	20	1	Fail	
10	35	38	3	Pass	

fig 1

Types of Supervised approach:

Regression

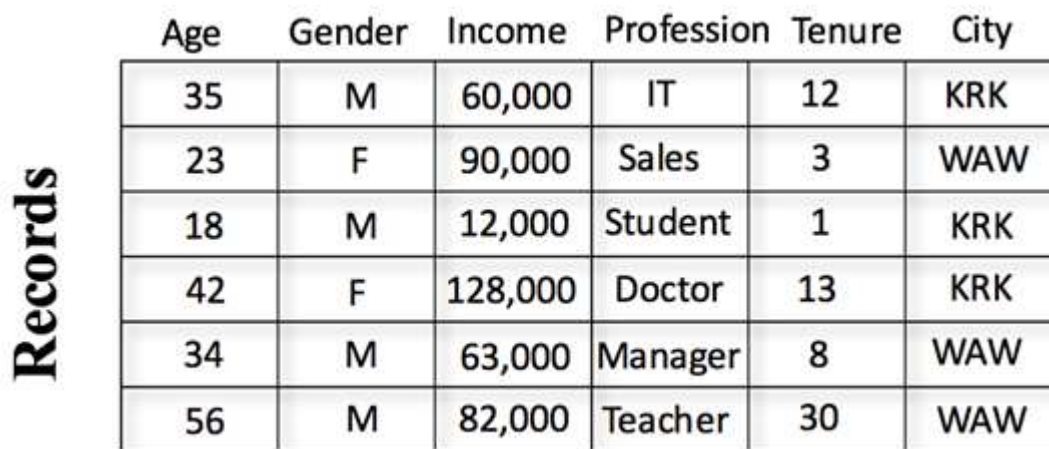
It is used for numerical dataset based on different data points, Like Stock Market Price. Example of Regression algorithms logistic regression - polynomial regression.

Classification

It is used for categorical dataset, like fire – no fire labeled. Example of Classification algorithms SVM - Random Forest.

Unsupervised Approach is:

Approach that uses unlabeled dataset (fig 2) uses machine learning algorithms to analyze and cluster unlabeled data sets. These algorithms discover hidden patterns in data without the need for human intervention.



Age	Gender	Income	Profession	Tenure	City
35	M	60,000	IT	12	KRK
23	F	90,000	Sales	3	WAW
18	M	12,000	Student	1	KRK
42	F	128,000	Doctor	13	KRK
34	M	63,000	Manager	8	WAW
56	M	82,000	Teacher	30	WAW

fig 2

Main tasks of Unsupervised:

Clustering

is a data mining technique for grouping unlabeled data based on their similarities or differences. For example, K-means clustering algorithms assign similar data points into groups. This technique is helpful for market segmentation, image compression, etc.

Association

is another type of unsupervised learning method that uses different rules to find relationships between variables in a given dataset. These methods are frequently used for market basket analysis and recommendation engines, along the lines of “Customers Who Bought This Item Also Bought” recommendations.

Difference	Approach
Labeled	Supervised
Learn from training dataset	Supervised
Better Accuracy	Supervised
Complexity	Unsupervised
Human intervention	Unsupervised

Your data scientists' assessment of the structure and volume of your data, as well as the use case, will determine the best method for your circumstance.

Make the following considerations while making your decision:

Evaluate your input data - Define your goals - Review your options for algorithms.