

Difference between Supervised and Unsupervised Learning (Machine Learning) is explained here in detail.

Supervised learning is the machine learning task of learning a function that maps an input to an output based on example input-output pairs. A wide range of supervised learning algorithms are available, each with its strengths and weaknesses.

Unsupervised learning is a type of machine learning that looks for previously undetected patterns in a data set with no pre-existing labels and with a minimum of human supervision.

Aspirants would find this article helpful while preparing for the [IAS Exam](#) from the perspective of Science and Technology.



The major differences between Supervised and Unsupervised Learning are:

Supervised Learning	Unsupervised Learning
Supervised Learning can be used for 2	Unsupervised Learning can be used for 2

different types of problems i.e. regression and classification	different types of problems i.e. clustering and association.
Input Data is provided to the model along with the output in the Supervised Learning.	Only input data is provided in Unsupervised Learning.
Output is predicted by the Supervised Learning.	Hidden patterns in the data can be found using the unsupervised learning model.
Labeled data is used to train supervised learning algorithms.	Unlabeled data is used to train unsupervised learning algorithms.
Accurate results are produced using a supervised learning model.	The accuracy of results produced are less in unsupervised learning models.
Training the model to predict output when a new data is provided is the objective of Supervised Learning.	Finding useful insights, hidden patterns from the unknown dataset is the objective of the unsupervised learning.
Supervised Learning includes various algorithms such as Bayesian Logic, Decision Tree, Logistic Regression, Linear Regression, Multi-class Classification, Support Vector Machine etc.	Unsupervised Learning includes various algorithms like KNN, Apriori Algorithm, and Clustering.
To assess whether right output is being predicted, direct feedback is accepted by the Supervised Learning Model.	No feedback will be taken by the unsupervised learning model.
In Supervised Learning, for right prediction of output, the model has to be trained for each data, hence Supervised Learning does not have close resemblance to Artificial Intelligence.	Unsupervised Learning has more resemblance to Artificial Intelligence, as it keeps learning new things with more experience.
Number of classes are known in Supervised Learning.	Number of classes are not known in Unsupervised Learning
In scenarios where one is aware of output and input data, supervised learning can be used.	In the scenarios where one is not aware of output data, but is only aware of the input data then Unsupervised Learning could be used.
Computational Complexity is very complex in Supervised Learning compared to Unsupervised Learning	There is less computational complexity in Unsupervised Learning when compared to Supervised Learning.
Supervised Learning will use off-line analysis	Unsupervised Learning uses Real time analysis of data.

Some of the applications of Supervised Learning are Spam detection, handwriting detection, pattern recognition, speech recognition etc.	Some of the applications of Unsupervised Learning are detecting fraudulent transactions, data preprocessing etc.
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- [Regulating Artificial Intelligence - RSTV Big Picture Discussion](#)
- [Yojana Magazine \(February 2020 Gist\) - Artificial Intelligence, Cyber Security](#)
- [Cyber Security - Definition, Laws](#)
- [National Cyber Security Policy - Vision, Mission, Objectives](#)
- [Cybercrime - UPSC Notes](#)
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