

What is supervised learning in machine learning?

Supervised learning, also known as supervised machine learning, is a subcategory of machine learning and artificial intelligence. It is defined by its use of labeled datasets to train algorithms that to classify data or predict outcomes accurately. As input data is fed into the model, it adjusts its weights until the model has been fitted appropriately, which occurs as part of the cross validation process.

Give an example for supervised learning?

Let's say you have a fruit basket that you want to identify. The machine would first analyze the image to extract features such as its shape, color, and texture. Then, it would compare these features to the features of the fruits it has already learned about. If the new image's features are most similar to those of an apple, the machine would predict that the fruit is an apple. For instance, suppose you are given a basket filled with different kinds of fruits. Now the first step is to train the machine with all the different fruits one by one like this:

- If the shape of the object is rounded and has a depression at the top, is red in color, then it will be labeled as –Apple.
- If the shape of the object is a long curving cylinder having Green-Yellow color, then it will be labeled as –Banana.

Now suppose after training the data, you have given a new separate fruit, say Banana from the basket, and asked to identify it.

Since the machine has already learned the things from previous data and this time has to use it wisely. It will first classify the fruit with its shape and color and would confirm the fruit name as BANANA and put it in the Banana category. Thus the machine learns the things from training data(basket containing fruits) and then applies the knowledge to test data(new fruit).

What are common supervised learning algorithms (Use Cases)?

- Classification: Used to assign categories to data points. Examples include support vector machines (SVMs), logistic regression, and decision trees.
- Regression: Used to predict continuous numerical values. Examples include linear regression, polynomial regression, and ridge regression.