

Labeled data, in the context of machine learning, refers to a dataset where each example (data point) is associated with a corresponding target label or output value.

In supervised learning, labeled data is used to train a machine learning model so that it can learn to make accurate predictions or decisions on new, unseen data.

For example,

let's consider a simple binary classification task of distinguishing between images of cats and dogs.

In a labeled dataset for this task, each image would be paired with a label indicating whether it contains a cat or a dog. The images are the input features, and the labels (cat or dog) are the target values.

Here's an example of a small labeled dataset:

Image	Label
cat_image_1.jpg	Cat
dog_image_1.jpg	Dog
cat_image_2.jpg	Cat
dog_image_2.jpg	Dog
...	...

During the supervised learning process, the model uses these labeled examples to learn the underlying patterns in the data and establish a relationship between the input features

(images) and the corresponding labels (cats or dogs).

The ultimate goal is for the model to generalize this learning and accurately predict the correct label for new, unseen images.

Creating labeled datasets often requires human effort, as experts or annotators need to assign the correct labels to each data point manually. The process of labeling data can be time-consuming and expensive, especially for large-scale datasets. However, having high-quality labeled data is crucial for the success of supervised learning algorithms, as the model's performance heavily relies on the quality and representativeness of the training data.

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