- machine learning enable a machine to automatically learn from data, improve performance from experiences and predict things without being explicity programmed.
- A machine learning has the ability to learn if it ~~is~~ can improve its performance by gaining more data.

The machine process of machine learning involves seven major steps :-

1) Gathering data 2) Data preparation
3) Data wrangling 4) Analyse Data
5) Train the model 6) Test the model
7) Deployment

1) Gathering data :-
In this step, we need to identify the different data sources, as data can be collected from various sources such as files, database, internet etc.

2) Data preparation :-
After collecting the data, we need to prepare it for further steps. Data preparation is a step where we put our data into a suitable place and prepare it to use in our machine learning training.

3) Data wrangling :-
Data wrangling is the process of cleaning and converting raw data into a useable format.

model, and the task of the machine is to find the patterns & categories of the objects.
So, now the machine will discover its pattern and differences, such as color difference, shape difference & predict the output when it is tested with the test dataset.

3) semi-supervised learning :-
semi-supervised learning is a type of machine learning algorithm that lies between supervised and unsupervised machine learning.
It represents the intermediate ground between supervised and unsupervised learning algorithms and uses the combination of labelled and unlabelled datasets during the training period.

Example :- Supervised learning is where a student is under the supervision of an instructor at home and college. If that student is self-analysing the same concept without any help from the instructor, it comes under unsupervised learning under ~~it~~ semi-supervised learning. the student has to revise himself after analyzing the same concept under the guidance of an instructor at college.

4) Reinforcement learning :-
Agent gets rewarded for each good action and get punished for each bad action; hence the goal of reinforcement learning agent is to maximize the rewards.

in his day-to-day life.

~~In~~ a Example - an example of reinforcement learning ~~it~~ is to play a game, where the Game is the environment, moves of an agent at each step define ~~stages~~ states, and the goal of the agent is to get a high score. Agent receives feedback in terms of punishment and rewards.

There are main four types of machine learning.

1) Supervised machine learning :-
As its name suggests, supervised machine learning is based on supervision. It means in the supervised learning technique, we train the machine using the "labelled" dataset, and based on the training, the machine predicts the output.

Example :- Suppose we have an input dataset of cats and dog images. So, ~~so~~ first, we will provide the training to the machine to understand the images, such as the shape & size of the tail of cat and dog, shape of eyes, color, height, etc. After completion of training, we input the picture of a cat and ask the machine to identify the object & predict the output. Now, machine is well trained. So it will check all features of the object, such as height, Shape, color, etc. & find that it's a cat. So it will put in cat category. This is the process of how the ~~se~~ machine identifies the objects in Supervised learning.

2) Unsupervised machine learning :-
Unsupervised learning is different from supervised learning technique, as its name suggests there is no need for supervision. It means, in unsupervised machine learning, the machine is trained using the ~~unla~~ unlabeled dataset & the machine predicts the output without any supervision.

4) Analysis Data :-
Now the cleaned & prepared data is passed on to the analysis step. This step involves :-
1) Selection of analytical techniques.
2) Building models.
3) Review the result.

5) Train Model :-
Now the next step is to train the model, in this step we train our model to improve its performance for better outcome of the problem.

6) Test model :-
In this step, we check for the accuracy of our model by providing a test dataset to it.

7) Deployment :-
The last step of machine learning process is deployment, where we deploy the model in the real-world system.