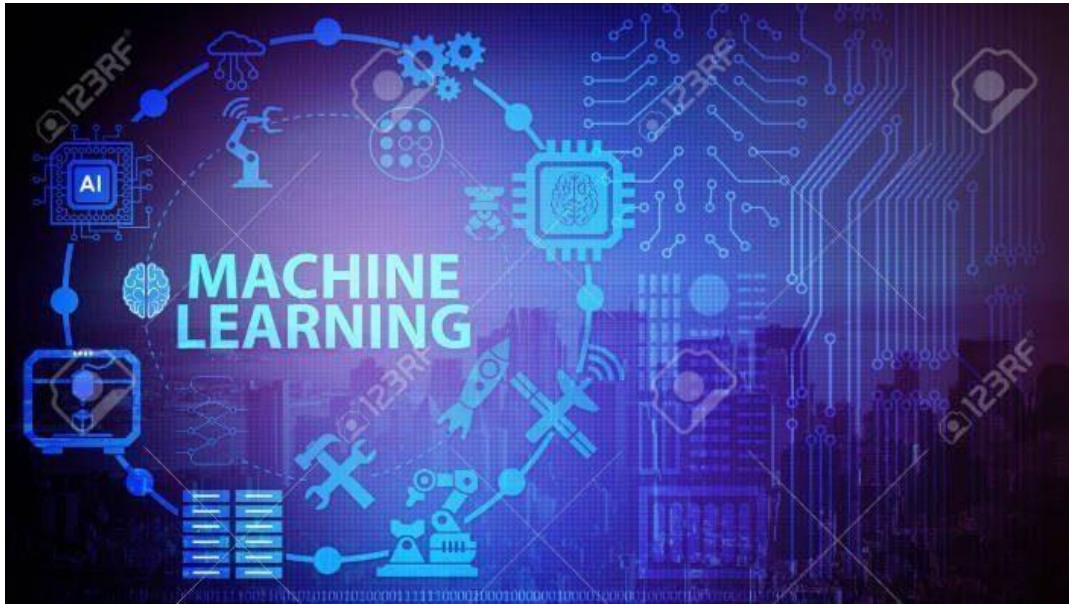
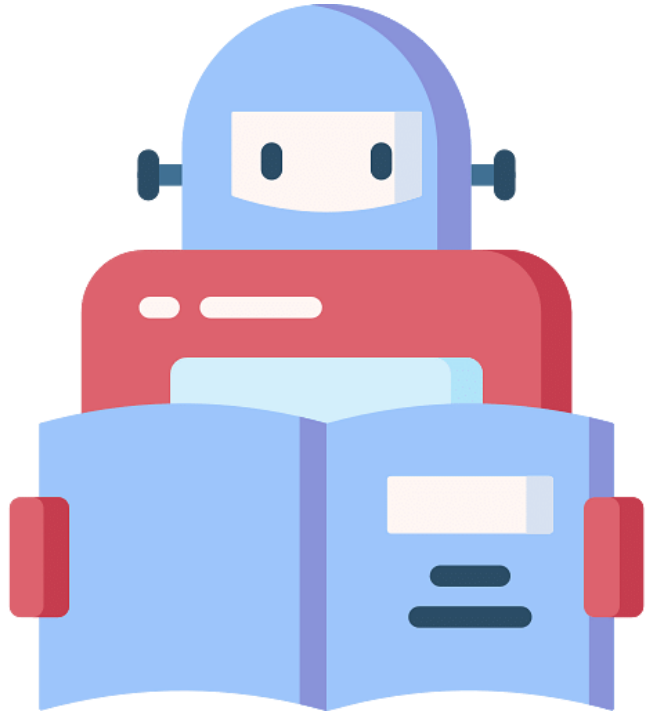
MACHINE LEARNING PROCESS





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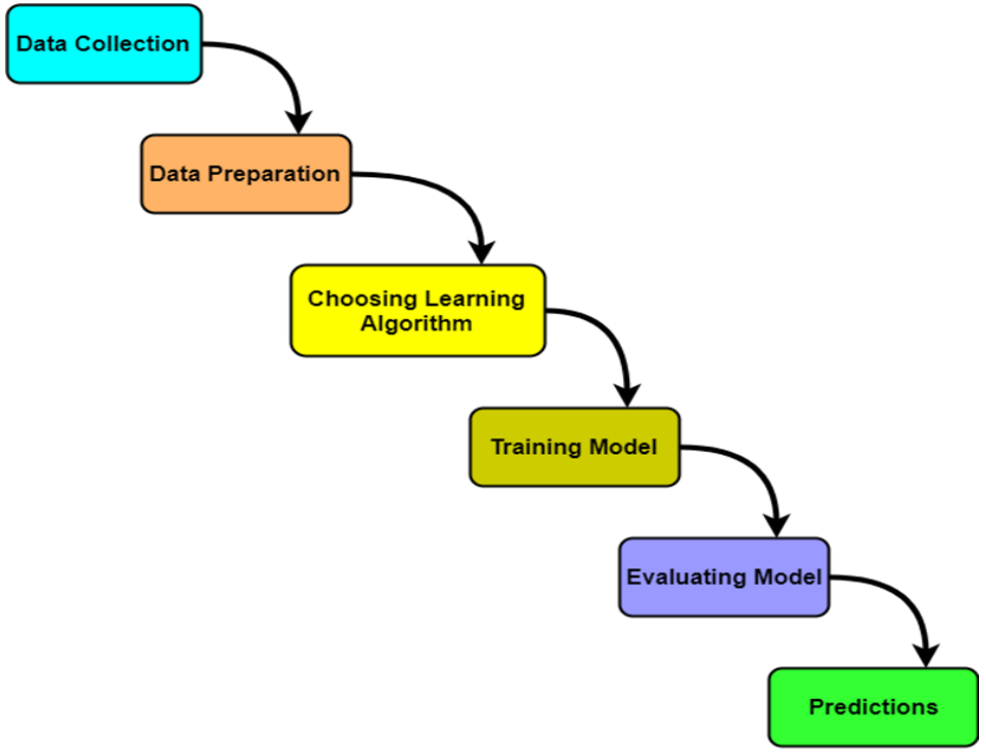
STEPS IN MACHINE LEARNING PROCESS

- ❑ Data Collection
- ❑ Data Preparation
- ❑ Choosing Learning Algorithm
- ❑ Training Model
- ❑ Evaluating Model
- ❑ Predictions



Machine Learning Workflow

DATA COLLECTION

In this stage,

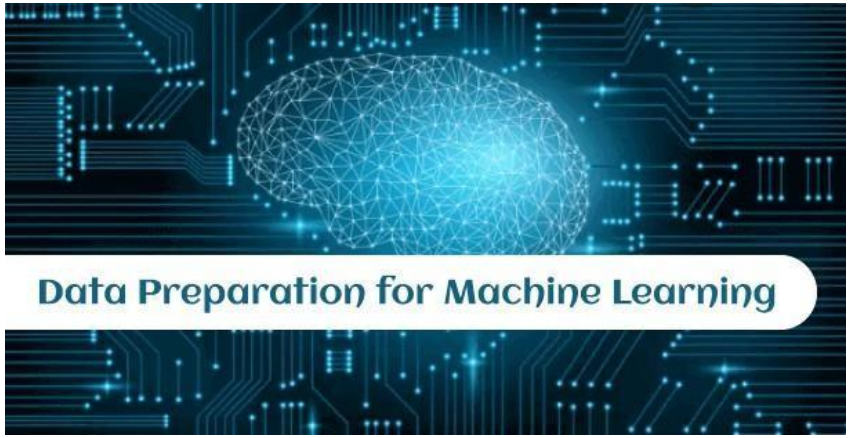
- Data is collected from different sources.
- The type of data collected depends upon the type of desired project.
- Data may be collected from various sources such as files, databases etc.
- The quality and quantity of gathered data directly affects the accuracy of the desired system.

DATA PREPARATION

In this stage,

- Data preparation is done to clean the raw data.
- Data collected from the real world is transformed to a clean dataset.
- Raw data may contain missing values, inconsistent values, duplicate instances etc.
- So, raw data cannot be directly used for building a model.

This is the most time consuming stage in machine learning workflow.



Different methods of cleaning the dataset are•Ignoring the missing values •Removing instances having missing values from

the dataset.

- Estimating the missing values of instances using mean, median or mode.
- Removing duplicate instances from the dataset.
- Normalizing the data in the dataset.

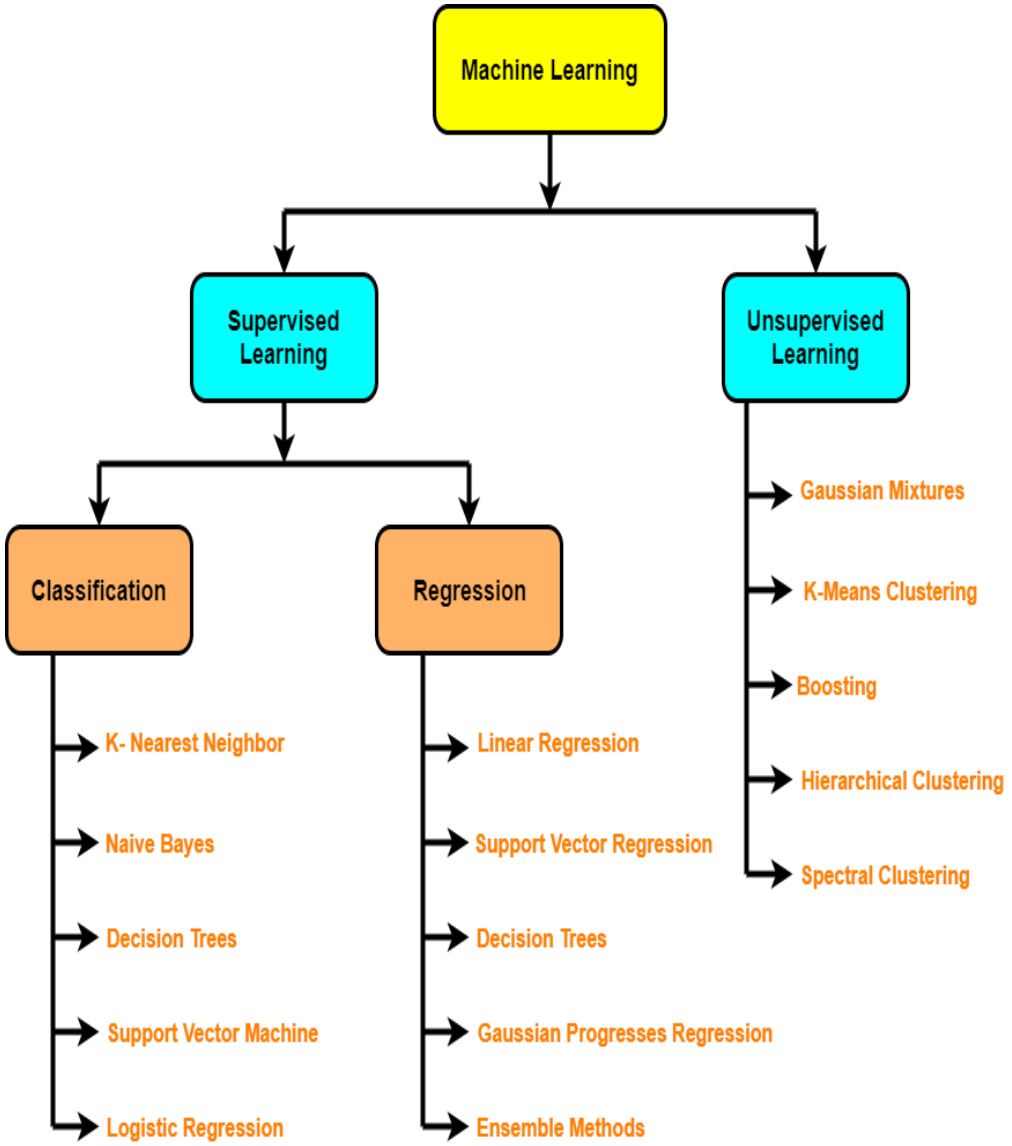
CHOOSING LEARNING ALGORITHM

In this stage,

- The best performing learning algorithm is researched.
- It depends upon the type of problem that needs to solved and the type of data we have.
- If the problem is to classify and the data is labeled, classification algorithms are used.

- If the problem is to perform a regression task and the data is labeled, regression algorithms are used.
- If the problem is to create clusters and the data is unlabeled, clustering algorithms are used.

- **The following chart provides the overview of learning algorithms-**



TRAINING MODEL

In this stage,

•The model is trained to improve its ability.

•The dataset is divided into training dataset and testing dataset.

•The training and testing split is order of 80/20 or 70/30.

•It also depends upon the size of the dataset.

•Training dataset is used for training purpose.

•Testing dataset is used for the testing purpose. •Training dataset is fed to the learning algorithm.

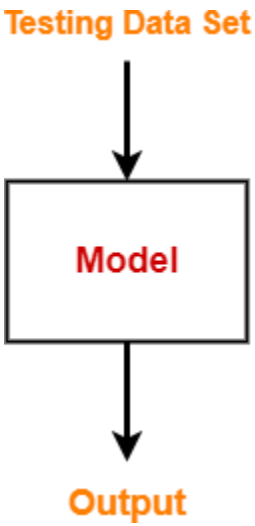
•The learning algorithm finds a

mapping between the input and the output and generates the model.

EVALUATING MODEL

In this stage,

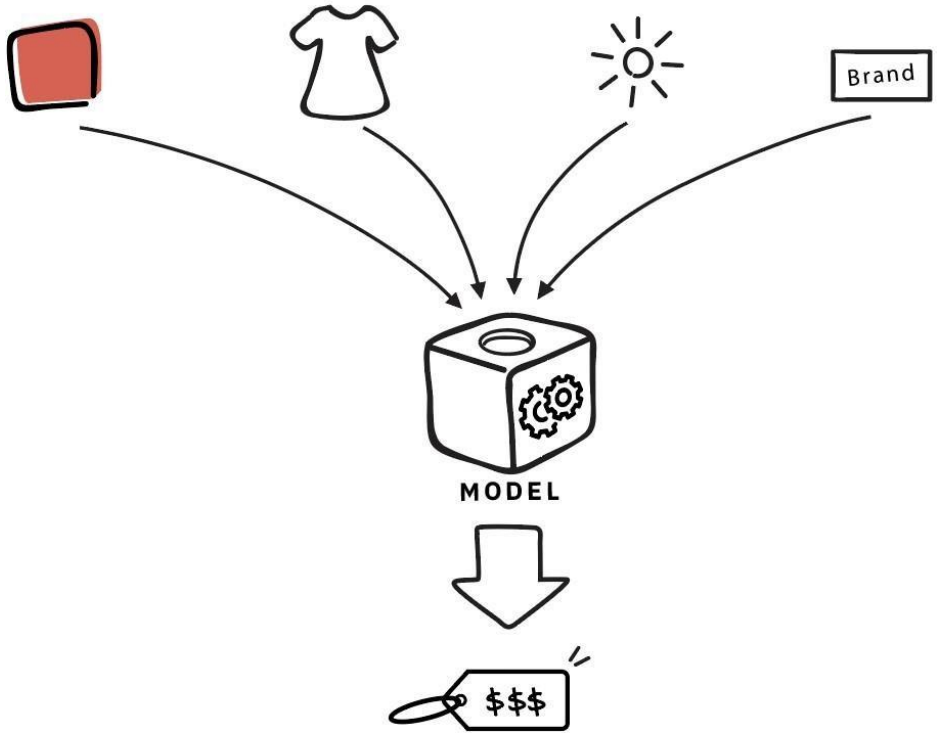
- The model is evaluated to test if the model is any good.
- The model is evaluated using the kept-aside testing dataset.
- It allows to test the model against data that has never been used before for training.
- Metrics such as accuracy, precision, recall etc are used to test the performance.
- If the model does not perform well, the model is re-built using different hyper parameters.
- The accuracy may be further improved by tuning the hyper parameters.



PREDICTIONS

In this stage,

- The built system is finally used to do something useful in the real world.
- Here, the true value of machine learning is realized.



THANK YOU

ANY QUESTIONS?