Types of Machine Learning Techniques:

There are 3 types of Machine learning techniques:

1. Supervised Machine Learning

2. Unsupervised Machine Learning

3. Reinforcement Learning

Supervised Machine Learning:

We want to predict the price of a house.

We have a dataset with the features: Size of the house, no. of rooms, price of the house

In supervised Machine Learning, we divide the features into two different categories – Independent or input feature(Size of the house, no. of the rooms) and Dependent feature or output feature (Price).

We get to solve two types of problem statements:

1. Regression problem statement – Output feature values would be continuous

2. Classification problem statement – Output feature values would be categorical

Example: We have a dataset with Independent features (No. of hours studied, no. of hours playing) and dependent feature (Pass/Fail) which is a categorical feature so it becomes a classification problem. Since there are only categories, it becomes a binary classification problem. If there are more categories, it becomes a multi-class classification problem.

Supervised machine learning because we have a dependent feature.

Unsupervised Machine Learning:

In Unsupervised Machine Learning, we do not need to predict anything and we do not know the dependent or output feature, instead we need to find out similar clusters or group.

Example: Customer Segmentation

We have a dataset with the features Salary and Spending Score (1-10).

Suppose an ecommerce company wants to send a discount coupon to people based on their spending scores.

Using Unsupervised Machine learning, we create clusters



Algorithms:

|  |  |
| --- | --- |
| Supervised Machine Learning | Unsupervised Machine Learning |
| Linear Regression | K means |
| Ridge and Lasso | Hierarchical mean |
| Elastic Net | DBScan clustering |
| Logistic Regression (Classification) |  |
| Decision Trees (Both classification and Regression) |  |
| Random Forest (Both classification and Regression) |  |
| AdaBoost (Both classification and Regression) |  |
| Xgboost (Both classification and Regression) |  |

Reinforcement learning:

Reward based learning.