**Linear Regression**

Linear Regression is widely used for applications such as sales forecasting, risk assessment analysis in health insurance companies and requires minimal tuning.

It is basically used to showcase the relationship between dependent and independent variables and show what happens to the dependent variables when changes are made to independent variables.

**Logistic Regression**

Logistic regression is used in applications such as-

1. To Identifying risk factors for diseases and planning preventive measures

2. Classifying words as nouns, pronouns, and verbs

3. Weather forecasting applications for predicting rainfall and weather conditions

4. In voting applications to find out whether voters will vote for a particular candidate or not

A good example of logistic regression is when credit card companies develop models which decide whether a customer will default on their loan EMIs or not.

The best part of logistic regression is that we can include more explanatory (dependent) variables such as dichotomous, ordinal and continuous variables to model binomial outcomes.

Logistic Regression is a statistical analysis technique which is used for predictive analysis. It uses binary classification to reach specific outcomes and models the probabilities of default classes.

**K-Nearest Neighbors Algorithm**

KNN algorithm is used in industrial applications in tasks such as when a user wants to look for similar items in comparison to others. It’s even used in handwriting detection applications and image/video recognition tasks.

The best way to advance our understanding of these algorithms is to try our hand in image classification, stock analysis, and similar beginner data science projects.

The K-Nearest Neighbors Algorithm is a lazy algorithm that takes a non-parametric approach to predictive analysis. If we have unstructured data or lack of knowledge regarding the distribution data, then the K-Nearest Neighbors Algorithm will come to our rescue. The training phase is pretty fast, and there is a lack of generalization in its training processes. The algorithm works by finding similar examples to our unknown example and using the properties of those neighboring examples to estimate the properties of our unknown examples.

The only downside is its accuracy can be affected as it is not sensitive to outliers in data points.

**Support Vector Machine (SVM) Algorithm**

Support Vector Machine Learning Algorithm is used in business applications such as comparing the relative performance of stocks over a period of time. These comparisons are later used to make wiser investment choices.

SVM Algorithm is a supervised learning algorithm, and the way it works is by classifying data sets into different classes through a hyperplane. It marginalizes the classes and maximizes the distances between them to provide unique distinctions. We can use this algorithm for classification tasks that require more accuracy and efficiency of data.

**Decision Tree Algorithm**

Applications of this Decision Tree Machine Learning Algorithm range from data exploration, pattern recognition, option pricing in finances and identifying disease and risk trends.

We want to buy a video game DVD for our best friend’s birthday but aren’t sure whether he will like it or not. We ask the Decision Tree Machine Learning Algorithm, and it will ask we a set of questions related to his preferences such as what console he uses, what is his budget. It’ll also ask whether he likes RPG or first-person shooters, does he like playing single player or multiplayer games, how much time he spends gaming daily and his track record for completing games.

Its model is operational in nature, and depending on our answers, the algorithm will use forward, and backward calculation steps to arrive at different conclusions.

**Random Forest Algorithm**

The random forest algorithm is used in industrial applications such as finding out whether a loan applicant is low-risk or high-risk, predicting the failure of mechanical parts in automobile engines and predicting social media share scores and performance scores.

The Random Forest ML Algorithm is a versatile supervised learning algorithm that’s used for both classification and regression analysis tasks. It creates a forest with a number of trees and makes them random. Although similar to the decision trees algorithm, the key difference is that it runs processes related to finding root nodes and splitting feature nodes randomly.

It essentially takes features and constructs randomly created decision trees to predict outcomes, votes each of them and consider the outcome with the highest votes as the final prediction.

**Naive Bayes Classifier Algorithm**

If we‘re planning to automatically classify web pages, forum posts, blog snippets, and tweets without manually going through them, then the Naive Bayes Classifier Algorithm will make our life easier.

This classifies words based on the popular Bayes Theorem of probability and is used in applications related to disease prediction, document classification, spam filters, and sentiment analysis projects.

We can use the Naive Bayes Classifier Algorithm for ranking pages, indexing relevancy scores and classifying data categorically.

**Principal Component Analysis (PCA) Algorithm**

PCA algorithm is used in applications such as gene expression analysis, stock market predictions and in pattern classification tasks that ignore class labels.

The Principal Component Analysis (PCA) is a dimensionality reduction algorithm, used for speeding up learning algorithms and can be used for making compelling visualizations of complex datasets. It identifies patterns in data and aims to make correlations of variables in them. Whatever correlations the PCA finds is projected on a similar (but smaller) dimensional subspace.

**K-Means Clustering Algorithm**

K-Means Clustering Algorithm is frequently used in applications such as grouping images into different categories, detecting different activity types in motion sensors and for monitoring whether tracked data points changes between different groups over time. There are business use cases of this algorithm as well such as segmenting data by purchase history, classifying persons based on different interests, grouping inventories by manufacturing and sales metrics, etc.

The K-Means Clustering Algorithm is an unsupervised Machine Learning Algorithm that is used in cluster analysis. It works by categorizing unstructured data into a number of different groups, K being the number of groups. Each dataset contains a collection of features and the algorithm classifies unstructured data and categorizes them based on specific features.

**Recommender System Algorithm**

The Recommender Algorithm works by filtering and predicting user ratings and preferences for items by using collaborative and content-based techniques. The algorithm filters information and identifies groups with similar tastes to a target user and combines the ratings of that group for making recommendations to that user. It makes global product-based associations and gives personalized recommendations based on a user’s own rating.

For example, if a user likes the TV series- The Flash and likes the Netflix channel, then the algorithm would recommend shows of a similar genre to the user.

**Neural Networks**

Essentially, deep learning networks are collectively used in a wide variety of applications such as handwriting analysis, colorization of black and white images, computer vision processes and describing or captioning photos based on visual features.

**Artificial Neural Network** algorithms consist of different layers which analyze data. There are hidden layers which detect patterns in data and the greater the number of layers, the more accurate the outcomes are. Neural networks learn on their own and assign weights to neurons every time their networks process data.

**Convolutional Neural Networks** and **Recurrent Neural Networks** are two popular Artificial Neural Network Algorithms.

Convolutional Neural Networks are feed-forward Neural networks which take in fixed inputs and give fixed outputs. For example- image feature classification and video processing tasks.

Recurrent Neural Networks use internal memory and are versatile since they take in arbitrary length sequences and use time-series information for giving outputs. For example- language processing tasks and text and speech analysis