

# Supervised Machine Learning Algorithms

Is the more commonly used today. Supervised learning is so named because the data scientist acts as a guide to teach the algorithm what conclusions it should come up with. Supervised learning requires that the algorithm's possible outputs are already known and that the data used to train the algorithm is already labeled with correct answers.

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## Machine Learning Algorithms

### Supervised machine learning

### Unsupervised machine learning

### Reinforced machine learnings

Simple linear regression	LASSO regression	Logistic regression	Support Vector Machines	Multivariate Regression	Multiple regression
<p>Simple linear regression is a statistical method that enables users to summarize and study relationships between two continuous (quantitative) variables. Linear regression is a linear model wherein a model that assumes a linear relationship between the input variables (x) and the single output variable (y).</p>	<p>LASSO stands for Least Absolute Selection Shrinkage Operator wherein shrinkage is defined as a constraint on parameters. The goal of lasso regression is to obtain the subset of predictors that minimize prediction error for a quantitative response variable. The algorithm operates by imposing a constraint on the model parameters that causes regression coefficients for some variables to shrink toward a zero.</p>	<p>It is a statistical method for analyzing a data set in which there are one or more independent variables that determine an outcome.</p>	<p>A support vector machine (SVM) is machine learning algorithm that analyzes data for classification and regression analysis. SVM is a supervised learning method that looks at data and sorts it into one of two categories. An SVM outputs a map of the sorted data with the margins between the two as far apart as possible. SVMs are used in text categorization, image classification, handwriting recognition and in the sciences.</p>	<p>This technique is used when there is more than one predictor variable in a multivariate regression model and the model is called a multivariate multiple regression. Termed as one of the simplest supervised machine learning algorithms by researchers, this regression algorithm is used to predict the response variable for a set of explanatory variables.</p>	<p>Multiple regression is a statistical tool used to derive the value of a criterion from several other independent, or predictor, variables. It is the simultaneous combination of multiple factors to assess how and to what extent they affect a certain outcome.</p>
<p><b>Application:</b> some of the most popular applications of Linear regression algorithm are in financial portfolio prediction, salary forecasting, real estate predictions and in traffic in arriving at ETAs.</p>	<p><b>Application:</b> Lasso regression algorithms have been widely used in financial networks and economics. In finance, its application is seen in forecasting probabilities of default and Lasso-based forecasting models are used in assessing enterprise wide risk framework. Lasso-type regressions are also used to perform stress test platforms to analyze multiple stress scenarios.</p>	<p><b>Application:</b> Today enterprises deploy Logistic Regression to predict house values in real estate business, customer lifetime value in the insurance sector and are leveraged to produce a continuous outcome such as whether a customer can buy/will buy scenario</p>	<p><b>Application:</b> support vector machines regression algorithms has found several applications in the oil and gas industry, classification of images and text and hypertext categorization. In the oilfields, it is specifically leveraged for exploration to understand the position of layers of rocks and create 2D and 3D models as a representation of the subsoil.</p>	<p><b>Application:</b> Industry application of Multivariate Regression algorithm is seen heavily in the retail sector where customers make a choice on a number of variables such as brand, price and product. The multivariate analysis helps decision makers to find the best combination of factors to increase footfalls in the store.</p>	<p><b>Application:</b> Some of the business applications of multiple regression algorithm in the industry are in social science research, behavioral analysis and even in the insurance industry to determine claim worthiness.</p>
Naive Bayes Classifier	Decision Trees	Random Forest	Neural Network	K-Nearest Neighbors	
<p>A naive Bayes classifier is an algorithm that uses Bayes' theorem to classify objects. Naive Bayes classifiers assume strong, or naive, independence between attributes of data points. Popular uses of naive Bayes classifiers include spam filters, text analysis and medical diagnosis.</p>	<p>Decision tree builds classification or A decision tree is a graphical representation of possible solutions to a decision based on certain conditions. It's called a decision tree because it starts with a single box (or root), which then branches off into a number of solutions, just like a tree. Popular uses of Decision Tree Algorithm includes product planning, loan approval, Customer's willingness to purchase a given product in a given setting.etc.</p>	<p>Random forest builds multiple decision trees and merges them together to get a more accurate and stable prediction. Popular uses of Random Forest Algorithm includes, it is used for example to detect customers who will use the bank's services more frequently than others and repay their debt in time, it is used to identify the correct combination of components in medicine and to analyze a patient's medical history to identify diseases, it is used to determine whether a customer will actually like the product or not.</p>	<p>Neural networks are a set of algorithms, modeled loosely after the human brain, that are designed to recognize patterns. They interpret sensory data through a kind of machine perception, labeling or clustering raw input. The patterns they recognize are numerical, contained in vectors, into which all real-world data, be it images, sound, text or time series, must be translated. Popular uses of Neural Network Algorithms include, Detect faces, identify people in images, recognize facial expressions (angry, joyful), Identify objects in images (stop signs, pedestrians, lane markers...)</p>	<p>The k-nearest-neighbors algorithm is a classification algorithm, and it is supervised: it takes a bunch of labelled points and uses them to learn how to label other points. Popular uses of K-Nearest Neighbors algorithm include, classing a potential voter to a "will vote" or "will not vote", Is a person closer in characteristics to people who defaulted or did not default on their loans, handwriting detection .etc.</p>	