Algorithms research HLT

Select one or more choices from the list of common Machine Learning Algorithms, do some investigations and write me a short summary. I am looking for the following:

* Is it Supervised/Unsupervised/Reinforcement learning?
* What does the algorithm do?
* In which situations will it be most useful?
* (Optional) Can you find any examples of where this algorithm has been used?

Linear Regression

Linear regression is supervised. You start with a dataset with a known dependent variable (label), train your model, then apply it later. You are trying to predict a real number, like the price of a house.

Logistic Regression

logistic regression is used in statistical software to understand the relationship between the dependent variable and one or more independent variables by estimating probabilities using a logistic regression equation. This type of analysis can help you predict the likelihood of an event happening or a choice being made. Logistic regression is a supervised learning algorithm because it uses true labels for training.

Logistic regression is simpler than modern deep learning algorithms. There are many cases where logistic regression is more than enough. it’s very simple to use. Logistic regression is realised in many statistical packages such as SAS, STATISTICA, R packages, and other tools. This makes it easy to use even if you do not have an advanced machine learning team for your task. It is used in the real world for Credit scoring, Medicine data analysis, text editing, gaming.

Decision Tree

Decision Tree algorithm belongs to the family of supervised learning algorithms. Unlike other supervised learning algorithms, the decision tree algorithm can be used for solving regression and classification problems too.

SVM (Support Vector Machine)

SVM is a supervised machine learning algorithm which can be used for classification or regression problems. It uses a technique called the kernel trick to transform your data and then based on these transformations it finds an optimal boundary between the possible outputs. Simply put, it does some extremely complex data transformations, then figures out how to separate your data based on the labels or outputs you've defined.

Naive Bayes

Naive Bayes is a classification algorithm that is suitable for binary and multiclass classification. It is a supervised classification technique used to classify future objects by assigning class labels to instances/records using conditional probability.

KNN (K- Nearest Neighbours)

The K-Nearest Neighbours algorithm is a supervised machine learning algorithm for labeling an unknown data point given existing labelled data.

KNN is often used in search applications where you are looking for “similar” items; that is, when your task is some form of “find items similar to this one”. You’d call this a KNN search. As KNN is a distance-based classifier, the closer two points are, the greater the similarities in behaviour and therefore selection choice.

K-Means

K-means clustering is the unsupervised machine learning algorithm that is part of a much deep pool of data techniques and operations in the realm of Data Science. It is the fastest and most efficient algorithm to categorize data points into groups even when very little information is available about data.

K-means algorithm is very popular and used in a variety of applications such as market segmentation, document clustering, image segmentation and image compression, etc. The goal usually when we undergo a cluster analysis is either: Get a meaningful intuition of the structure of the data we're dealing with.

Random Forest

Random forest is a supervised learning algorithm, the ‘forest’ it builds, is an ensemble of decision trees. An advantage of a forest is that it can be used for both classification and regression problems, which form the majority of machine learning systems. This algorithm is most useful in situations where you want to measure relative importance of each feature of a prediction model. This is useful for banking, the stock market and e-commerce.