Machine Learning Algorithms (Supervised and Unsupervised)

Day 6 of #DataScience28.

Today's subject: Machine Learning Algorithms (Supervised and Unsupervised), a #thread (thread)

#DataScience, #MachineLearning, #66DaysOfData, #SupervisedML #UnsupervisedML

Machine learning is a field of artificial intelligence that involves the development of algorithms and models that enable computers to learn from and make predictions based on data. Within machine learning, there are two main categories of algorithms: supervised and unsupervised.

Supervised learning algorithms are used when we have labeled data and we want the machine to learn a mapping function between inputs and outputs. The machine is trained on a labeled dataset, and it learns to predict the output based on the input features. Once the model is trained, it can be used to predict outputs for new, unseen data. Examples of supervised learning algorithms include linear regression, logistic regression, decision trees, and support vector machines. These algorithms are commonly used for tasks such as classification, regression, and prediction.

Unsupervised learning algorithms, on the other hand, do not have labeled data. Instead, they are used to find patterns or relationships within the data itself. The goal of unsupervised learning is to uncover structure in the data, such as clusters or patterns, rather than making predictions. Examples of unsupervised learning algorithms include k-means clustering, hierarchical clustering, and dimensionality reduction algorithms like PCA. These algorithms are often used for exploratory data analysis, data visualization, and anomaly detection.

In summary, the key difference between supervised and unsupervised learning algorithms is the presence or absence of labeled data. Supervised learning algorithms are used when we have labeled data and want to make predictions, while unsupervised learning algorithms are used to uncover relationships and patterns in the data without the need for labeled data. Both types of algorithms have their own unique strengths and weaknesses, and choosing the right algorithm depends on the specific problem and the type of data being analyzed.

PD: There are also Reinforcement Learning Algorithms, but that is a topic for another day.