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# 10 groups of machine learning algorithms

🕒 Jan 2, 2020 (<https://bigdata-madesimple.com/10-groups-machine-learning-algorithms/>)    👤 Thomas Glare (<https://bigdata-madesimple.com/author/thomas/>)

**B**y now, most people with a passion for programming and coding are already familiar with machine learning and its basics, at least. But for those who are completely new to the subject and would like to discover it and understand its intricacies, this article will take a quick tour of this amazing process and break down its most popular algorithms.

## What is machine learning?

There are several popular machine learning algorithms, way more advanced than the ones running [free slot games](https://777spinslot.com/online-slot-machines/) (<https://777spinslot.com/online-slot-machines/>), for example, but first things first! Machine learning is a revolutionary technique of data analytics that aims to teach a computer to perform a task which only comes naturally to humans and animals, learning from experience. It's an application of AI which grants systems the ability to automatically analyze and improve their performance from experience, without having to be specifically programmed to do so.

## How does it work?

Machine learning is based on algorithms that will use computational methods

in order to drive information directly from raw [data](https://english-wiki.com/wiki/Raw_data) ([https://english-wiki.com/wiki/Raw\\_data](https://english-wiki.com/wiki/Raw_data)), and “learn” from it by using predetermined equations as models. This is why most of the AI-related projects nowadays involve popular machine learning algorithms, as there’s no better way to acquire knowledge in order to make the behavior of a system intelligent.

## Machine learning algorithms

There is an overwhelming variety of algorithms in this field, so it can be pretty hard to know them all and what each of them can do. As such, organizing machine learning algorithms is not only necessary but also extremely helpful in understanding where each of them fits. The easiest way of categorizing them would be in two different groups, the first based on their learning style, and the second based on their similarity in function or form.

When it comes to the first group, there are three main styles in machine learning: [supervised learning](https://english-wiki.com/wiki/Supervised_learning) ([https://english-wiki.com/wiki/Supervised\\_learning](https://english-wiki.com/wiki/Supervised_learning)), [unsupervised learning](https://english-wiki.com/wiki/Unsupervised_learning) ([https://english-wiki.com/wiki/Unsupervised\\_learning](https://english-wiki.com/wiki/Unsupervised_learning)), and [semi-supervised learning](https://english-wiki.com/wiki/Semi-supervised_learning) ([https://english-wiki.com/wiki/Semi-supervised\\_learning](https://english-wiki.com/wiki/Semi-supervised_learning)). These are basically three different ways in which an algorithm is able to model a problem through its interaction with the data input.

However, we will mostly focus on the second group in this article. We’ll break down the most popular algorithms by similarity:

### 1. Regression

Regression aims to model the relationship between variables, refining it through a measure of error that occurs in the predictions made by a model. The regression methods are a whirlwind of stats, which is why they have been incorporated into statistical machine learning.

### 2. Instance-Based

The instance-based model is actually a decision problem. One with examples of instances of training data required or deemed important to the model. They focus on the representation of stored instances, as well as on the similarity measures in-between instances.

### 3. Regularization

These are basically extensions made to another machine learning method, usually a regression one. What they do is penalize the models according to their complexity, always favoring the simpler models that, at the same time, are better at generalizing.

### 4. Decision Tree

Decision trees are given access to machine learning data for regression and classification problems. They construct decision models based on values of attributes present in the data, which makes them fast, accurate, and one of the public's favorites.

### 5. Bayesian

These are all the algorithms that have the Bayes' Theorem at their core, applying it for classification and regression problems.

### 6. Clustering

Much like regression algorithms, clustering machine learning methods describe the problem's class and the class of methods. They are usually organized through modeling approaches like hierarchical or centroid-based.

### 7. Association Rule

Association rule in machine learning extract rules that properly explain

relationships between variables present in data. These rules discover useful commercial associations within large multidimensional datasets. Which can be exploited by organizing machine learning.

## 8. Artificial Neural Network

Much like their name suggests, these models are directly inspired by the actual structure and function of our biological neural networks. Artificial Neural Networks are a pattern matching class commonly used for classification and regression problems. They are a huge machine learning subfield, made of hundreds of algorithms capable of addressing all types of problems.

## 9. Deep Learning

Deep Learning methods are basically a modern update of the Artificial Neural Networks, exploiting abundant cheap computation. They work by building far larger and much more complex neural networks. They apply to large datasets comprised of labeled analog data. This data may include audio, video, text, and image.

## 10. Dimensionality Reduction

Dimensionality reduction algorithms are quite similar to the clustering methods, looking to exploit inherent structures in the data. However, they do this in an unsupervised order or manner, using less information for organizing machine learning data. As such, they are extremely useful for simplifying or visualizing dimensional information. Which, later on, can be used with a supervised method.

## Conclusion

Of course, this is just a small step to discover machine learning algorithms and their extremely useful applications. This article doesn't cover every single example. For instance, those from specialty tasks within the machine learning process. However, we do hope that our brief overview got you closer to the

process. However, we do hope that our blog eventually get you closer to the

most popular machine learning algorithms. As well as shed light on how to relate them. But let us know your thoughts on the matter, and if you have other great examples, feel free to share!

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Thomas Glare is passionate about coding, writing, reading, and traveling. He is always up-to-date with the latest Blockchain, AI, and programming news, and he is always bringing us new and fresh insights on the top technological breakthroughs of the moment.

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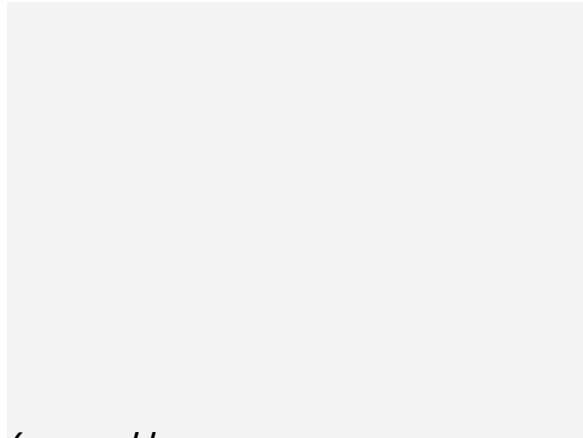
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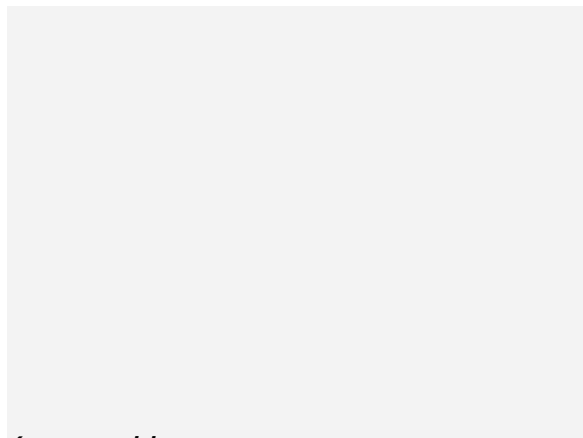
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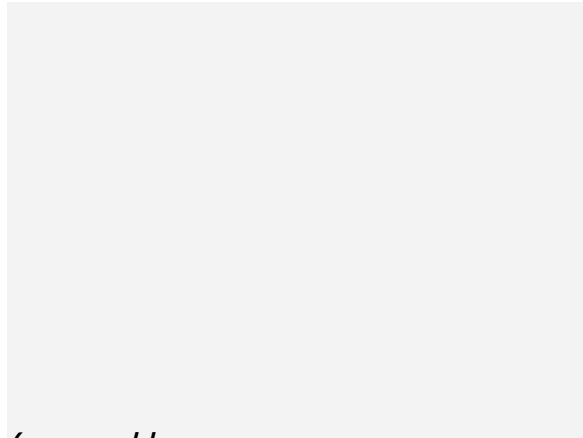
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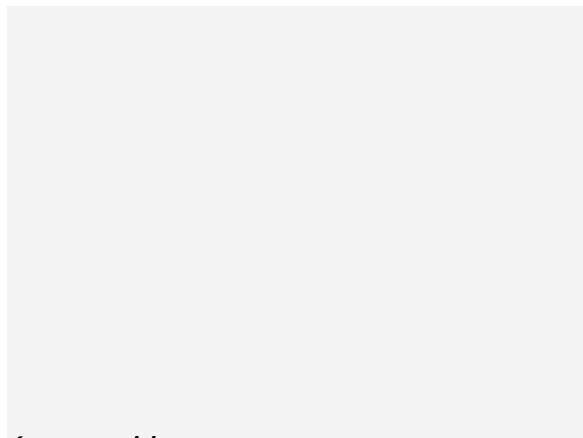
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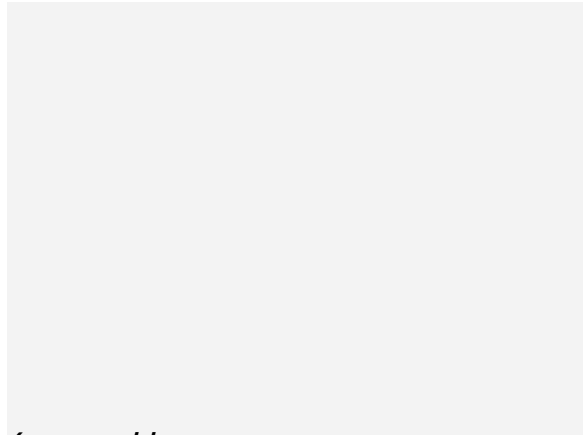
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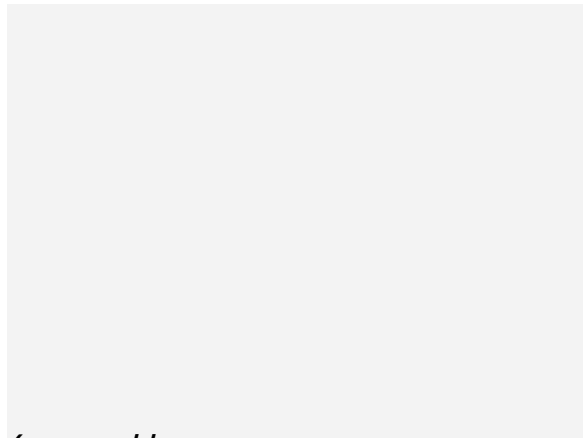
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