**HOME LEARNING WEEK 6**

1. **LINEAR REGRESSION**
   1. **Is it supervised/unsupervised/reinforcement learning?**

Linear regression is a supervised learning algorithm used in machine learning and statistics. In its simplest version, what we will do is “draw a line” that will indicate the trend of a set of continuous data.

* 1. **What does the algorithm do?**

Regression is a method of modelling a target value based on independent predictors. This method is mostly used for forecasting and finding out cause and effect relationship between variables.

Let us remember that Supervised Machine Learning algorithms learn by themselves and -in this case- to automatically obtain that "line" that we are looking for with the prediction trend. To do this, the error is measured with respect to the input points and the actual output “Y” value. The algorithm must minimize the cost of a quadratic error function and those coefficients will correspond to the optimal line. There are several methods to minimize the cost.

Simple linear regression is a type of regression analysis where the number of independent variables is one and there is a linear relationship between the independent(x) and dependent(y) variable.

* 1. **In which situations will it be most useful?**

For example, analyzing sales and purchasing data can help you discover specific purchasing patterns for specific days or times. Insights gleaned from regression analysis can help business leaders anticipate times when products will be in high demand.

* 1. **Can you find any examples of where this algorithm has been used?**

Some possible examples can be:

* Study how the father's height influences the child's height.
* Estimate the price of a house based on its surface.
* Predict the unemployment rate for each age.
* Approximate the grade obtained in a subject according to the number of hours. weekly study time.
* Prevent the computation time of a program as a function of processor speed.

We would need so many datas of ech one, for being able to do a study an corroborate the correlation between the variables.