

## **Linear Regression:**

Linear Regression is a machine learning algorithm based on supervised learning. It performs a regression task (predicting a continuous quantity), modelling a target prediction value based on independent variables. It is mostly used for finding out the relationship between variables and forecasting. Different regression models differ based on the kind of relationship between dependent and independent variables they are considering, and the number of independent variables being used. A simple linear regression studies the relationship between 2 variables and a complex linear regression studies the relationship between more than one variable.

Linear regression performs the task to predict a dependent variable value based on a given independent variable. It then finds out a linear relationship between the independent variable (input) and the dependent variable (output).

Linear regression can be a very useful tool with data that is linear. It stops being useful, however, if it is being used on data that isn't linear. The independent variable needs to change linearly with the dependent variable. An example of when this algorithm has been used is when scientists study how carbon emissions relate to climate change. They study the annual carbon emissions and the annual average temperature levels of each year, establish the connection, and predict how the situation will be in the future. Another example of when this algorithm is used is with artificial intelligence (AI). It is needed for the development of self-driving cars and for a machine to play games with human players. The learning process helps the machine improve and get better at completing tasks.