**Simple Linear Regression:**

Regression techniques are used in machine learning to predict continuous values, for example predicting salaries, age or even profits. Linear regression is the type of regression in which the correlation between the dependent and independent factors can be represented in a linear fashion.

Linear regression is a linear approach to modeling the relationship between a scalar response and one or more explanatory variables. The case of one explanatory variable is called a simple linear regression. For more than one explanatory variable, the process is called multiple linear regression. This term is distinct from multivariate linear regression, where multiple correlated dependent variables are predicted, rather than a single scalar variable.

Simple Linear Regression is the type of regression in which a single independent variable is used to predict the values of the dependent variable. It is the simplest of regression models.

[https://www.machinehack.com/wp-content/uploads/2019/07/formula.png](https://www.machinehack.com/wp-content/uploads/2019/07/formula.png)For a simple regression problem, the above equation can be simplified as:

[https://www.machinehack.com/wp-content/uploads/2019/07/simple_linear_eq.png](https://www.machinehack.com/wp-content/uploads/2019/07/simple_linear_eq.png)

We will perform the following steps to build a Simple Linear Regressor using a very simple dataset.

Step 1. Data Preprocessing

* Importing the libraries.
* Importing the data set.
* Classifying dependent and independent variables.
* Creating training and test sets.

Step 2. Simple Linear Regression

* Creating a Simple Linear Regressor.
* Training the regressor with training data.
* Predicting the salary for a test set.
* Calculating the accuracy of the predictions.
* Comparing Actual and Predicted Salaries for the test set.

Packages used:

* Pandas
* sklearn.model\_selection
* sklearn.linear\_model

Reading:

<http://onlinestatbook.com/2/regression/intro.html>

<https://machinelearningmastery.com/linear-regression-for-machine-learning/>

**Multiple Linear Regression**

Multiple Linear Regression is the type of regression in which more than one independent variables are used to predict the values of a dependent variable as opposed to Simple Linear regression where we have only a single independent variable(X).

[https://www.machinehack.com/wp-content/uploads/2019/07/formula.png](https://www.machinehack.com/wp-content/uploads/2019/07/formula.png)

Here we have X1, X2, X3, etc which are the Independent variables or features.

Step 1. Data Preprocessing

* Importing the libraries.
* Importing the data set.
* Classifying dependent and independent variables.
* Creating training and test sets.

Step 2. Multiple Linear Regression

* Create a Multiple Linear Regressor.
* Training the regressor with training data.
* Predicting the salary for a test set.
* Calculating score from Root Mean Log Squared Error

Packages used:

* Pandas
* numpy
* sklearn.model\_selection
* sklearn.linear\_model

Reading:

<http://onlinestatbook.com/2/regression/intro.html>

<https://machinelearningmastery.com/linear-regression-for-machine-learning/>

Support Vector Regression