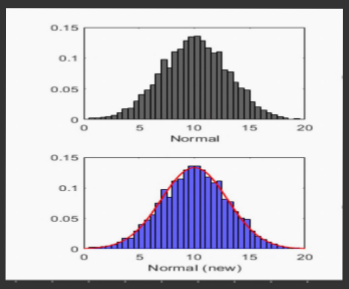
Types:

1. Standerd scaler:

it calculates the mean and standard deviation of the data set and normalize it subtracing the mean and dividing by standard devision.

$$z = \frac{x - \mu}{\sigma}$$

* it is ofen used for data, that have normal distribution. (Regression task)

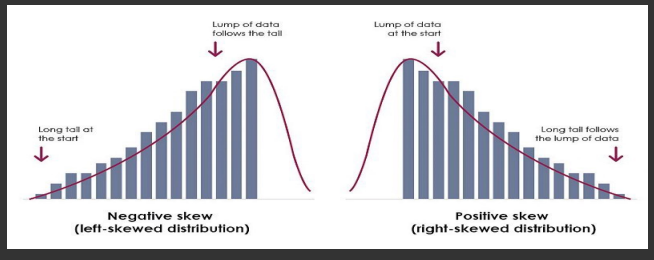


2. Min Max Scaler:

it is scaled the data set between 0 and 1, the maximum and minimum values in the scaled data set are 1 and 0.

$$x_{scaled} = \frac{x - x_{min}}{x_{max} - x_{min}}$$

it used for data that is skewed.



3. Robust Scaler : removes median and scale the data according to quantile range IQR.

IQR: is the range between the 1st (25the quantile) and 3rd quartile (75th quantile).

$$X_{\text{scale}} = \frac{x_i - x_{\text{med}}}{x_{75} - x_{25}}$$

- It is often used for data that has outliers. or is heavily skewed.

* both minmax and Robust can be use for classification task.