Correlation Coefficient in Statistics

Correlation Coefficient

- To numerically measure the strength of the relationship between two quantitative variables
- It is a unit-free measure
- Value lies between -1 and +1

Correlation Coefficient Formula

$$r = \frac{\sum (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum (x_i - \bar{x})^2 \sum (y_i - \bar{y})^2}}$$

Where,

r = Pearson Correlation Coefficient

x_i = x variable samples

y_i = y variable sample

$\bar{x}$ = mean of values in x variable

$\bar{y}$ =mean of values in y variable

Positive and Negative Correlation

- A positive value for *r* indicates a positive association between the two variables, and a negative value for *r* indicates a negative association between the two variables.
- The value of *r* is a number between −1 and +1. When the value of *r* is very close to ±1, the points in the scatterplot will lie close to a straight line.

Positive and Negative Correlation