Data Science with Python: Coefficient of determination #4753

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Evaluation is one of the major steps to be followed while approving the model. Evaluation helps in choosing the model which suits more for the dataset. It helps in determining some of the statistical meaningful insights

Coefficient of determination:

- The coefficient of determination is R^2 or r-squared.
- It is the statistical measure in a regression model.
- It helps in determining the proportion of variance in the dependent variable that is explained by the independent variable.
- It tells how well the data fits the model in other words, it tells the goodness of fit.

How the coefficient of determination helps in conveying the goodness of fit of the model.

- The coefficient of determination tells how well the regression model fits the observed data. For example, a coefficient of determination of 80% shows that 80% of the data fit the regression model.

- Usually, when the model has an r-squared value is greater than 85% is considered a good fit. When the model has an r-squared value in the range of 85% - 60% is considered a moderate fit for the model. When the model has an r-squared value is less than 60% is considered not a good fit for the model.

Calculation of the Coefficient

Mathematically, the coefficient of determination can be found using the following formula:

$$\text{Coefficient of Determination } (R^2) = 1 - \frac{SS_{regression}}{SS_{total}}$$

Where:

- $SS_{regression}$ – The sum of squares due to regression (explained sum of squares)
- SS_{total} – The total sum of squaresk

Conclusion:

•The coefficient of determination is a statistical analysis of models for data.

•The coefficient of determination is used to explain how much variability of one factor can be caused by its relationship to another factor.

•This coefficient of determination is commonly known as R-squared or R^2 and is sometimes referred to as the goodness of fit.