Coefficient of determination = R2

@wikipedia

A real number characterising the real-value model prediction quality (goodness of fit):

$$R^2 = 1 - \frac{MSD(x, \hat{x})}{MSD(x, \bar{x})} = 1 - \frac{\sum_i (x_i - \hat{x}_i)^2}{\sum_i (x_i - \bar{x})^2}$$

where

$x = \{x_1, x_2, x_3, \dots x_N\}$	observed variable represented by a discrete dataset of numerical samples
$\hat{x} = \{\hat{x}_1, \hat{x}_2, \hat{x}_3, \dots \hat{x}_N\}$	predictor of variable x, represented by another discrete dataset of numerical samples, with the same number of samples N predicted at the same conditions as the original samples $\{x_1, x_2, x_3, \dots x_N\}$
$\bar{x} = \frac{1}{N} \sum_i x_i$	mean value of the variable x, which can be considered as some sort of extreme predictor with zero variability
$MSD(x, \hat{x})$	mean square deviation between a variable x and its predictor $\hat{x}$
$MSD(x, \bar{x})$	mean square deviation between a variable x and its mean value $\bar{x}$

It is similar to Mean Square Deviation (MSD) but quantifies the model prediction efficiency in normalized way which is normally more suitable for assessment goodness of fit.

The coefficient of determination R^2 normally ranges between :

- 0, indicating that prediction error is within the variance of the observed variable around its mean value

and

- 1, indicating a fine fit, fairly reproducing the variability of the x

The R^2 values falling outside the above range indicate a substantial mismatch between variable x and model prediction $\hat{x}$ and have a meaning that gap between predicted and actual values is higher than the variance of the actual data.

See also

Formal science / Mathematics / Statistics / Statistical Metric