Evaluation Metrics: Regression

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- Mean Absolute Error
- Mean Squared Error
- Root Mean Squared Error
- Root Mean Squared Log Error
- R-squared
- Adjusted R-squared

Problem

- Not intuitive

Analytics Vidhya
Learn everything about analytics

Problem

- Not intuitive
- No benchmark to compare

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Mean Squared Error

$$\text{MSE(model)} \qquad \frac{1}{N}\sum_{i=1}^{N}(y_i - \hat{y}_i)^2$$

Relative Squared Error

$$\frac{\text{MSE(model)}}{\text{MSE(baseline)}} \qquad \frac{\frac{1}{N}\sum_{i=1}^{N}(y_i - \hat{y}_i)^2}{\frac{1}{N}\sum_{i=1}^{N}(\overline{y}_i - \hat{y}_i)^2}$$

Relative Squared Error

$$\frac{\text{MSE(model)}}{\text{MSE(baseline)}} \qquad \frac{\cancel{\frac{1}{N}}\sum_{i=1}^{N}(y_i - \hat{y}_i)^2}{\cancel{\frac{1}{N}}\sum_{i=1}^{N}(\overline{y}_i - \hat{y}_i)^2}$$

Relative Squared Error

$$\frac{\text{MSE(model)}}{\text{MSE(baseline)}} \qquad \frac{\sum_{i=1}^{N}(y_i - \hat{y}_i)^2}{\sum_{i=1}^{N}(\overline{y}_i - \hat{y}_i)^2}$$

R- Squared

$$R^2 = 1 - \frac{\text{MSE(model)}}{\text{MSE(baseline)}}$$

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R-squared either increases or does not change.

Adjusted R- Squared

$$\bar{R}^2 = 1 - \left(1 - R^2\right)\left[\frac{n-1}{n-\left(k+1\right)}\right]$$

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