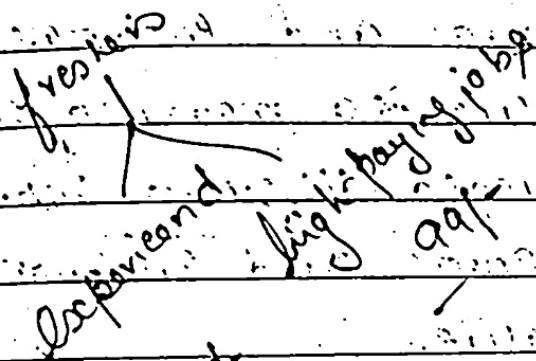


12th April, 2023  
Thursday

Regression

- Evaluation Regression Models

- R<sup>2</sup> Score Visual



26.400+

R<sup>2</sup> Score

# Mean absolute error

# mean squared error

# mean squared logarithmic error

# mean absolute error

# explained variance

# R<sup>2</sup> Score Visual  
Evaluation Regression model

R<sup>2</sup> Score:

that represents the goodness of fit of the regression model.

R<sup>2</sup> → 1 close

→ Highly accurate model

$$R^2 \text{ Score} = 1 - \frac{SSE}{SST}$$

1 -  $\frac{\text{Sum of Squared Errors}}{\text{Total Sum of Squares}}$

from sklearn.metrics import r2\_score



## UNIT- 5

### # Mean Absolute Error

## # Mean Squared Error

-@raikumar

Mean Squared Error is defined as the mean and average of square difference between actual and estimated value. It is a mean of the squared difference between actual and estimated value.

i) Mean Squared Error  
 $\rightarrow (\text{Actual} - \text{Estimated})^2$

ii)  $MSE = 0 \rightarrow \text{Error}$   
 $MSE \uparrow$

MSE value increases  
that the model error  
increases.





Mean Absolute Error

# Mean - Absolute - Error

i) Mean Absolute Error is the size of the mistake

ii) It is the mean of the mistakes in the collected prediction.

iii) The MAE Error - in which the absolute difference between actual or true value and the values that are predicted.

iii)  $\frac{1}{n} \sum |y - \hat{y}|$

iv) 
$$MAE = \frac{\sum_{i=1}^n |y_i - x_i|}{n}$$

MAE = Mean absolute Error

$y_i$  = prediction

$x_i$  = true value

$n$  = total number of d





# # Mean-Squared-Logarithmic-Error

from sklearn.metrics import

mean\_absolute\_error

mean\_absolute\_error(y\_true,

Value increases, models value increases

## MEAN SQUARED LOGARITHMIC ERROR

It computes mean squared log between the true value, actual and the target value.

MSE takes a similar approach as the mean squared error but it

utilizes a logarithmic to offset the large outlier in a dataset that it

$$\frac{1}{n} \sum_{i=1}^n \left[ \log(y_i + 1) - \log(\hat{y}_i + 1) \right]^2$$

will remove and as they were on the scale.



from sklearn.metrics

import mean\_squared\_log\_error

mean\_squared\_log\_error(y\_test, y\_pred)



# # Mean - Absolute - Percentage - Error

## Mean Absolute Percentage Error

It is calculated by considering the difference between actual value and the predicted value and dividing it by the actual value.

formula  $\Rightarrow$  
$$MAPE = \frac{1}{n} \sum_{i=1}^n \frac{|A_i - F_i|}{A_i}$$

code  $\Rightarrow$  Mean - absolute - percentage - error (y-act, y-pred)

ADARSH KUMAR



1000 → k1eb  
1200 → OS

→ CS  
→ 10T  
→ SH

formula ①

# Explained - variance - Score

$$EV = 1 - \frac{\text{Var}(y - \hat{y})}{\text{Var}(y)}$$

700 - 11th

②

explained variance score

explains the dispersion of errors of a given dataset.

It explains the dispersion of the error of the given data set.

from sklearn metrics import explained\_variance\_error

→ explained\_variance\_score(y\_test, y\_pred)

narayana

