

1. What is the percentage of correct calculation of both (Apple and Orange) in the total input Of the test set?

78 7
6 43

$$\text{Accuracy} = \frac{T(\text{Apple})+T(\text{Orange})}{T(\text{Apple})+T(\text{Orange})+F(\text{Apple})+F(\text{Orange})} = \frac{78+43}{78+7+6+43} = \frac{121}{134} = 0.90$$

2. What is the Overall Performance of the model ?

$$\text{Accuracy} = \frac{T(\text{Apple})+T(\text{Orange})}{T(\text{Apple})+T(\text{Orange})+F(\text{Apple})+F(\text{Orange})} = \frac{78+43}{78+7+6+43} = \frac{121}{134} = 0.90$$

3. What is the percentage of correct calculation of Apple to the total input of the Apple in the test set ? Or

What is the percentage of correct calculation of Orange to the total input of the Orange in the test set?

Recall talks about the only correctly classified class 78 7
6 43

$$\frac{T(\text{Apple})}{\text{Total Apple in the test set}} = \frac{78}{85} = 0.92$$

Total Apple in the test set 85

$$\frac{T(\text{Orange})}{\text{Total Orange in the test set}} = \frac{43}{49} = 0.88$$

Total Orange in the test set 49

4. What is the percentage of correct classification of Apple to the sum of correctly classified a (Apple) and wrongly classified as (Apple) in the test set ? Or

What is the percentage of correct classification of orange to the sum of correctly classified a (orange) and wrongly classified as (Orange) in the test set ?

Precision talks about the correctly and wrongly classified class 78 7
6 43

$$\frac{T(\text{Apple})}{\text{Total Apple} + \text{False Orange}} = \frac{78}{78+6} = 0.93$$

$$\frac{T(\text{Orange})}{\text{Total Orange} + \text{False Apple}} = \frac{43}{43+7} = 0.86$$

5. What if the Recall value is high and Precision value is low How will you validate your model Performance?

F1 Measure

What is the overall performance of Apple ? What is the overall performance of Orange?

$$\text{Overall Performance of Apple} = \frac{2 * \text{Recall} * \text{Precision}}{\text{Recall} + \text{Precision}} = \frac{2 * 0.92 * 0.93}{0.92 + 0.93} = 0.92$$

$$\text{Overall Performance of Orange} = \frac{2 * \text{Recall} * \text{Precision}}{\text{Recall} + \text{Precision}} = \frac{2 * 0.88 * 0.86}{0.88 + 0.86} = 0.87$$

6. Macro Average = Average of Precision , Recall , F1- Measure

$$\frac{\text{Precision of Apple} + \text{Precision of Orange}}{2} = \frac{0.93 + 0.86}{2} = 0.89$$

$$\frac{\text{Recall of Apple} + \text{Recall of Orange}}{2} = \frac{0.92 + 0.93}{2} = 0.90$$

$$\frac{F1(\text{Apple}) + F1(\text{Orange})}{2} = \frac{0.92 + 0.87}{2} = 0.90$$

7. Weighted Average

Precision

What is the sum product of proportion rate (Weight) of each class ?

$$\text{Precision (Apple)} * 85/134 + \text{Precision (Orange)} * 49/134$$

Recall

What is the sum product of proportion rate (Weight) of each class ?

$$\text{Recall (Apple)} * 85/134 + \text{Recall (Orange)} * 49/134$$

F1 Measure

What is the sum product of proportion rate (Weight) of each class ?

$$F1(\text{Apple}) * 85/134 + F1(\text{Orange}) * 49/134$$