

Support Vector Machine_Classification

Parameters in Classification:

1.Accuracy:

What is percentage of overall inputs to the test set?

The total number of test set=134

What is the percentage of correct classification of both(click(1) ¬ click(0) to total input of the test set?

[82 3]

[26 23] 2*2

$$\text{Accuracy} = \frac{T(\text{Click}) + T(\text{notclick})}{T(\text{click}) + F(\text{notclick}) + F(\text{click}) + T(\text{notclick})}$$

$$= \frac{82 + 23}{105}$$

$$= \frac{82 + 3 + 26 + 23}{134}$$

$$= \frac{105}{134} = 0.78$$

$$134$$

2.Recall:it is row-wised

82 3]

[26 23] 2*2

1.What is the percentage of correctly classification (click)to totoal sum of input to test set?

$$\text{Recall} = \frac{T(\text{Click})}{T(\text{click}) + F(\text{click})} = \frac{82}{82 + 3} = 0.96$$

2. What is the percentage of correct classification (notclick) to total sum of input to test set?

$$\text{notclick} = \frac{T(\text{notclick})}{F(\text{notclick}) + T(\text{notclick})} = 23/26 + 23 = 0.46$$

3. Precision:- its Columns-wised

$\begin{bmatrix} 82 & 3 \\ 26 & 23 \end{bmatrix} 2 \times 2$

1. What is the percentage of correct classification (click) and Wrongly Classified as (Click) in test set?

$$\text{Click} = \frac{T(\text{Click})}{T(\text{click}) + F(\text{notclick})} = 82/82 + 26 = 0.75$$

2. What is the percentage of correct classification (notclick) and Wrongly Classified as (notClick) in test set?

$$\text{NotClick} = \frac{T(\text{notclick})}{F(\text{click}) + T(\text{notclick})} = 23/3 + 23 = 0.88$$

4. F1_Measure:

1. What is the over all percentage of (click) in test set?

$$= 2 * \frac{\text{Recall} * \text{precision}}{\text{Recall} + \text{precision}} = 2 * 0.96 * 0.75 / 0.96 + 0.75 = 0.84$$

2.What is the over all percentage of(notclick) in test set?

$$=2* \frac{\text{Recall*precision}}{\text{Recall+precision}} =2*0.46*0.88/0.46+0.88=0.60$$

5.Macro_Average:

1.Precision:

1.What is the average percentage of(click¬click)correctly and wrongly classified in precision?

$$\frac{\text{precision(click)+precision(notclick)}}{2} =0.75+0.88/2=0.81$$

2.Recall:

1.What is the average percentage of(click)correctly classified in recall?

$$\frac{=\text{recall(click)+recall(notclick)}}{2} = 0.96+0.46/2=0.71$$

3.F1_Measure:

1.What is the average percentage of f1 measure(overall)?

$$= \frac{\text{F1(click)+f2(notclick)}}{2} = 0.84+0.60/2=0.72$$

6. Weighted Average:

1. what is the sum of product of proportion rate(weight) each class in precision?

$$\begin{aligned} &= \text{Precision}(\text{click}) * 85/134 + \text{precision}(\text{notclick}) * 49/134 \\ &= 0.75 * 82/134 + 0.88 * 23/134 = 0.60 \end{aligned}$$

2. what is the sum of product of proportion rate(weight) each class in recall?

$$\begin{aligned} &\text{recall}(\text{click}) * 82/134 + \text{recall}(\text{notclick}) * 49/134 \\ &= 0.96 * 82/134 + 0.46 * 23/134 = 0.66 \end{aligned}$$

3. what is the sum of product of proportion rate(weight) each class in f1 measure?

$$\begin{aligned} &= F1(\text{click}) * 82/134 + f2(\text{notclick}) * 23/134 \\ &= 0.84 * 82/134 + 0.60 * 23/134 = 0.61 \end{aligned}$$