

## Random Forest Classifier

Q.What is the percentage of correct classification of both with respect to total data?

Ans.Accuracy is  $(78+44)/(78+7+5+44) = 122/134 = 0.91$

Q.What is the percentage of correct classification of non-buyers with respect to non-buyers?

Ans.Recall of non-buyers

ie,

$(78)/(78+7) \Rightarrow 0.92$

Q.What is the percentage of correct classification of buyers with respect to total buyers?

Ans.Recall of buyers

ie,

$(44)/(44+9) \Rightarrow 0.90$

Q.What is the percentage of correct classification of non-buyers with respect to all classification of non-buyers?

Ans. Precision of non-buyers

ie,

$(78)/(78+5) \Rightarrow 0.94$

Q. What is the percentage of correct classification of buyers with respect to all classification of buyers?

Ans.Precision of buyers

ie,

$(44)/(44+7) \Rightarrow 0.86$

F1 value of Buyers =  $2 * \text{precision} * \text{accuracy} / (\text{recall} + \text{precision}) = 2 * 0.86 * 0.9 / (0.86 + 0.9) = 1.548 / 1.76 = 0.88$

F1 value of Non Buyers =  $2 * \text{precision} * \text{accuracy} / (\text{recall} + \text{precision}) = 2 * 0.92 * 0.94 / (0.92 + 0.94) = 1.73 / 1.86 = 0.93$

Q.Marco-average of Precision:

Ans:Average of Precision =  $(0.94+0.86)/2=1.8/2=0.9$

Q.Weighted Average of Precision:

Ans: To standardize data

$((\text{Precision}(\text{Buyers}) * \text{No of Buyers}) / \text{Total Users}) + ((\text{Precision}(\text{Non-Buyers}) * \text{No of Non-Buyers}) / \text{Total Users})$

ie,

$(0.86 * 49 / 134) + (0.94 * 85 / 134) = 0.31 + 0.60 = 0.91$

Q.Marco-average of Recall:

Ans:Average of Recall =  $(0.9+0.92)/2=1.812/2=0.91$

Q.Weighted Average of Recall:

Ans: To standardize data

$((\text{Recall}(\text{Buyers}) * \text{No of Buyers}) / \text{Total Users}) + ((\text{Recall}(\text{Non-Buyers}) * \text{No of Non-Buyers}) / \text{Total Users})$

ie,

$(0.92 * 85 / 134) + (0.9 * 49 / 134) = 0.58 + 0.33 = 0.91$

Q.Marco-average of F1 value:

Ans:Average of F1 value =  $(0.88+0.93)/2=1.81/2=0.905$

Q.Weighted Average of F1 value:

Ans: To standardize data

$((\text{F1 value}(\text{Buyers}) * \text{No of Buyers}) / \text{Total Users}) + ((\text{F1 value}(\text{Non-Buyers}) * \text{No of Non-Buyers}) / \text{Total Users})$

ie,

$(0.93 * 85 / 134) + (0.88 * 49 / 134) = 0.59 + 0.32 = 0.91$

## Decision Tree Classifier

Q.What is the percentage of correct classification of both with respect to total data?

Ans.Accuracy is  $(75+45)/(75+45+8+6) = 120/134 = 0.895$

Q.What is the percentage of correct classification of non-buyers with respect to total non-buyers?

Ans.Recall of non-buyers

ie,

$(75)/(75+6) \Rightarrow 0.93$

Q.What is the percentage of correct classification of buyers with respect to total buyers?

Ans.Recall of buyers

ie,

$(45)/(45+3) \Rightarrow 0.85$

Q.What is the percentage of correct classification of non-buyers with respect to all classification of non-buyers?

Ans. Precision of non-buyers

ie,

$(75)/(75+8) \Rightarrow 0.90$

Q. What is the percentage of correct classification of buyers with respect to all classification of buyers?

Ans.Precision of buyers

ie,

$(45)/(45+6) \Rightarrow 0.88$

F1 value of Buyers =  $2 * \text{precision} * \text{accuracy} / (\text{recall} + \text{precision}) = 2 * 0.85 * 0.88 / (0.85 + 0.88) = 1.496 / 1.73 = 0.86$

F1 value of Non-Buyers =  $2 * \text{precision} * \text{accuracy} / (\text{recall} + \text{precision}) = 2 * 0.92 * 0.94 / (0.92 + 0.94) = 1.7296 / 1.86 = 0.93$

Q.Marco-average of Precision:

Ans:Average of Precision =  $(0.9+0.88)/2=1.78/2=0.89$

Q.Weighted Average of Precision:

Ans: To standardize data

$((\text{Precision}(\text{Buyers}) * \text{No of Buyers}) / \text{Total Users}) + ((\text{Precision}(\text{Non-Buyers}) * \text{No of Non-Buyers}) / \text{Total Users})$

ie,

$(0.88 * 53 / 134) + (0.9 * 81 / 134) = 0.35 + 0.54 = 0.89$

Q.Marco-average of Recall:

Ans:Average of Recall =  $(0.93+0.85)/2=1.78/2=0.89$

Q.Weighted Average of Recall:

Ans: To standardize data

$((\text{Recall}(\text{Buyers}) * \text{No of Buyers}) / \text{Total Users}) + ((\text{Recall}(\text{Non-Buyers}) * \text{No of Non-Buyers}) / \text{Total Users})$

ie,

$(0.85 * 53 / 134) + (0.93 * 81 / 134) = 0.34 + 0.56 = 0.90$

Q.Marco-average of F1 value:

Ans:Average of F1 value =  $(0.86+0.93)/2=1.79/2=0.895$

Q.Weighted Average of F1 value:

Ans: To standardize data

$((\text{F1 value}(\text{Buyers}) * \text{No of Buyers}) / \text{Total Users}) + ((\text{F1 value}(\text{Non-Buyers}) * \text{No of Non-Buyers}) / \text{Total Users})$

ie,

$(0.86 * 53 / 134) + (0.93 * 81 / 134) = 0.34 + 0.56 = 0.9$

## Support Vector Machine

Q.What is the percentage of correct classification of both with respect to total data?

Ans.Accuracy is  $(78+20)/(78+20+33+3) = 98/134 = 0.73$

Q.What is the percentage of correct classification of non-buyers with respect to total non-buyers?

Ans.Recall of non-buyers

ie,

$(78)/(78+3) \Rightarrow 0.96$

Q.What is the percentage of correct classification of buyers with respect to total buyers?

Ans.Recall of buyers

ie,

$(20)/(20+3) \Rightarrow 0.38$

Q.What is the percentage of correct classification of non-buyers with respect to all classification of non-buyers?

Ans. Precision of non-buyers

ie,

$(78)/(78+33) \Rightarrow 0.70$

Q. What is the percentage of correct classification of buyers with respect to all classification of buyers?

Ans.Precision of buyers

ie,

$(20)/(20+3) \Rightarrow 0.87$

F1 value of Buyers =  $2 * \text{precision} * \text{accuracy} / (\text{recall} + \text{precision}) = 2 * 0.87 * 0.37 / (0.87 + 0.37) = 0.644 / 1.24 = 0.52$

F1 value of Non Buyers =  $2 * \text{precision} * \text{accuracy} / (\text{recall} + \text{precision}) = 2 * 0.7 * 0.96 / (0.7 + 0.96) = 1.344 / 1.66 = 0.81$

Q.Marco-average of Precision:

Ans:Average of Precision =  $(0.87+0.70)/2=1.57/2=0.79$

Q.Weighted Average of Precision:

Ans: To standardize data

$((\text{Precision}(\text{Buyers}) * \text{No of Buyers}) / \text{Total Users}) + ((\text{Precision}(\text{Non-Buyers}) * \text{No of Non-Buyers}) / \text{Total Users})$

ie,

$(0.87 * 53 / 134) + (0.70 * 81 / 134) = 0.34 + 0.42 = 0.76$

Q.Marco-average of Recall:

Ans:Average of Recall =  $(0.96+0.38)/2=1.34/2=0.67$

Q.Weighted Average of Recall:

Ans: To standardize data

$((\text{Recall}(\text{Buyers}) * \text{No of Buyers}) / \text{Total Users}) + ((\text{Recall}(\text{Non-Buyers}) * \text{No of Non-Buyers}) / \text{Total Users})$

ie,

$(0.38 * 53 / 134) + (0.96 * 81 / 134) = 0.15 + 0.58 = 0.73$

Q.Marco-average of F1 value:

Ans:Average of F1 value =  $(0.52+0.81)/2=1.33/2=0.67$

Q.Weighted Average of F1 value:

Ans: To standardize data

$((\text{F1 value}(\text{Buyers}) * \text{No of Buyers}) / \text{Total Users}) + ((\text{F1 value}(\text{Non-Buyers}) * \text{No of Non-Buyers}) / \text{Total Users})$

ie,

$(0.52 * 53 / 134) + (0.81 * 81 / 134) = 0.21 + 0.49 = 0.7$

