Assignment 1 - ML-Classification-Decision Tree

Not Purchased	Purchased
0	257
1	143

		Actual Class	
		True (Not Purchased)	**Purchased**
Predicted Class	**True (Not Purchased)**	72	7
	Purchased	6	35

Evaluation Metrics - Accuracy

Accuracy for Purchased and Not Purchased Data set:

What is the percentage of correct classification of both ("Not Purchased" and "Purchased") to the total input in the test set?

$$\frac{\text{True (Not Purchased) + True (Purchased)}}{\text{True (Not Purchased) + True (Purchased) + False (Not Purchased) + False (Purchased)}}$$

Result: 0.89

Evaluation Metrics - Recall

Recall for Not Purchased:

What is the percentage of correct classification of "Not Purchased" to the total input of (Not Purchased) in the test set?

$$\frac{\text{True (Not Purchased)}}{\text{True (Not Purchased) + False (Not Purchased)}}$$

Result: 0.91

Recall for Purchased:

What is the percentage correct classification of “Purchased” to the total input of (Purchased) in the test set?

$$\frac{\text{True (Purchased)}}{\text{True (Purchased) + False (Purchased)}}$$

Result: 0.85

Evaluation Metrics - Precision

Precision for Not Purchased:

What is the percentage of correct classification of “Not Purchased” to the Sum of correctly classified as “Not Purchased” and wrongly classified as “Not Purchased in the test set?

$$\frac{\text{True (Not Purchased)}}{\text{True (Not Purchased) + False (Purchased)}}$$

Result: 0.92

Precision for Purchased:

What is the percentage of correct classification of “**Purchased**” to the Sum of correctly classified as “Not Purchased” and wrongly classified as “Purchased in the test set?

$$\frac{\text{True (Purchased)}}{\text{True (Purchased) + False (Not Purchased)}}$$

Result: 0.83

Evaluation Metrics - F1-Measure

F1-Measure for Not Purchased:

What is the overall performance of “Not Purchased”?

$$2 * \frac{\text{Recall (Not Purchased) * Precision (Not Purchased)}}{\text{Recall (Not Purchased) + Precision (Not Purchased)}}$$

Result: 0.92

F1-Measure for Purchased:

What is the overall performance of “Not Purchased”?

$$2 * \frac{\text{Recall (Purchased)} * \text{Precision (Purchased)}}{\text{Recall (Purchased)} + \text{Precision (Purchased)}}$$

Result: 0.84

Macro Average:

Precision:

What is the average performance of Precision (Correctly and wrongly classified)?

$$\frac{\text{Precision of “Not Purchased”} + \text{Precisionof “Purchased}}{2}$$

Result: 0.88

Recall:

What is the average performance of Recall (Correctly and wrongly classified)?

$$\frac{\text{Recall of “Not Purchased”} + \text{Recall of “Purchased}}{2}$$

Result: 0.88

F1-Measure:

What is the average performance of F1-Measure (Correctly and wrongly classified)?

$$\frac{\text{F1(Not Purchased)} + \text{F1(Purchased)}}{2}$$

Result: 0.88

Weighted Average

Precision:

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

Precision (“Not Purchased”) * 79/120 + Precision (“Purchased”) * 41/120

Result: 0.89

Recall

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

Recall (“Not Purchased”) * 79/120 + Recall (“Purchased”) * 41/120

Result: 0.89

F1-Measure

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

F1 (“Not Purchased”) * 79/120 + f2 (“Purchased”) * 41/120

Result: 0.89