

# Classification performance analysis

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Actual Prediction

1	✓	1	✓	✓
0	✓	1	✓	
0	✓	1	✓	
1	✓	0		
1	✓	0		
1	✓	1	✓	✓
0	✓	0	✓	
0	✓	0	✓	
0	✓	0	✓	
0	✓	0	✓	
1	✓	0		
1	✓	0		
0	✓	1	✓	
0	✓	1	✓	
0	✓	1	✓	
1	✓	1	✓	✓
0	✓	0	✓	
0	✓	0	✓	
1	✓	1	✓	✓
1	✓	1	✓	✓

$$A = \frac{TP + TN}{TP + TN + FP + FN}$$

Accuracy = Total Correct Predictions / total predictions = 11/20 = 0.55\*100 = 55.0%

Recall - By default the meaning of recall is the correct predictions in class 1

Recall = correct predictions in class 1 / total actuals in class 1

Recall = 5/9 = 0.5556 (recall for class 1)

Recall of class 0 = 6/11 = 0.5455

$$\text{Recall} = \frac{TP}{FN + TP}$$

Precision = purity in predictions

Precision - it refers to class 1, => correct predictions in class 1 / total predictions in class 1

Precision for class 1 = 5/10 = 0.5

Precision for class 0 = 6/10 = 0.6

$$\text{Precision} = \frac{TP}{TP + FP}$$

F1 Score = harmonic mean of P & R

$$F1 \text{ Score} = \frac{2}{\frac{1}{R} + \frac{1}{P}} = \frac{2 \times P \times R}{P + R}$$

Actuals

		Predictions	
		0 negative	1 positive
Actuals	0	TN	FP
	1	FN	TP