

performance Matrix / Confusion / Precision / Recall / F1-Score

Accuracy / Roc / AUC / TPR / TNR / FPR / FNR

Confusion Matrix :-

- ~ Conts the no of times instance
- ~ Must better way to classifiers

Precision :-

- ~ what percent of positive prediction made were correct

Recall :-

- ~ what percent of actual +ve value were correctly classified by classifier

Rows = Actual Value

Col = Predictive

	Predictive (-ve)	Predictive (+ve)	
Actual (-ve) = TN + FP	TN	FP	N
Actual (+ve) = FN + TP	FN	TP	P
	Predictive (-ve) = TN + FN	Predictive (+ve) = FP + TP	

$$* \text{TPR} = \frac{TP}{P} = \frac{TP}{FN + TP}$$

$$* \text{TNR} = \frac{TN}{N} = \frac{TN}{TN + FP}$$

$$* \text{FPR} = \frac{FP}{P} = \frac{FP}{FN + TP}$$

$$* \text{precision (+ve)} = \frac{TP}{\text{Predictive (+ve)}} = \frac{TP}{FP + TP}$$

$$* \text{FNR} = \frac{FN}{N} = \frac{FN}{TN + FP}$$

$$* \text{Precision (-ve)} = \frac{TN}{\text{Predictive (-ve)}} = \frac{TN}{TN + FN}$$

$$* \text{Recall (+ve)} = \frac{TP}{\text{Actual (+ve)}} = \frac{TP}{FN + TP}$$

$$* \text{Recall (-ve)} = \frac{TN}{\text{Actual (-ve)}} = \frac{TN}{TN + FP}$$

Confusion matrix for Multi class label.

	1	2	3	4
1	True	False	False	False
2	False	True	False	False
3	False	False	True	False
4	False	False	False	True

Accuracy = $\frac{\text{Correct value}}{\text{correct + false}}$

$$\text{Accuracy} = \frac{TP + TN}{TP + TN + FP + FN}$$