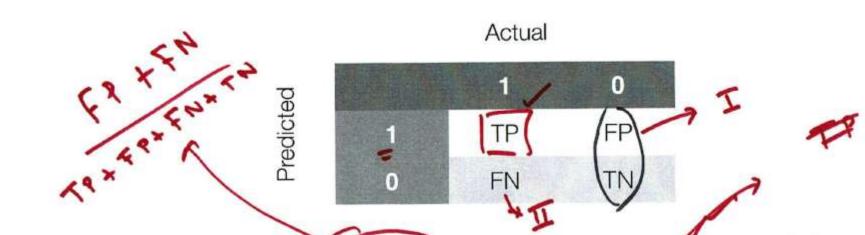
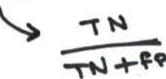


 For classification problem with a class output, the confusion matrix gives the counts of correct and erroneous predictions:



- Classification Error Rate: sum of Type 1 (FP) and Type 2 (FN) Errors (in percentage). Accuracy is 1-(error rate)
- Sensitivity (also called Recall or <u>True Positive Rate</u>): proportion of <u>True Positive Rate</u> (proportion <u>Tru</u>
- Specificity (also called <u>True Negative Rate</u>): proportion of Total Negatives that were correctly identified





Accuracy = TP + TN / TP + TN + FP + FN

prohibited.



Predicted
P 0 0
N 109 - 10

Out of 1 Billion People there are 10 terrorists

Accuracy =
$$10^9 - 10 / 10^9$$

= $1 - 10^{-8}$
= 0.99999
or 99.9999%



Recall (Sensitivity or TPR)

- Recall = TP / TP + FN
- Recall: Out of all terrorist what fraction did you identify

Precision:

- Precision = TP / TP + FP
- Out of all the predicted terrorists what fraction were really terrorists.



Label all as not a terrorist

	Р	N
Р	0	0
N	10	10 ⁹ - 10

Label all as terrorist

	Р	N
Р	10	10 ⁹ - 10
N	0	0

$$ACC = (10^9 - 10)/(10^9)$$
$$= 1 - 10^{-8}$$

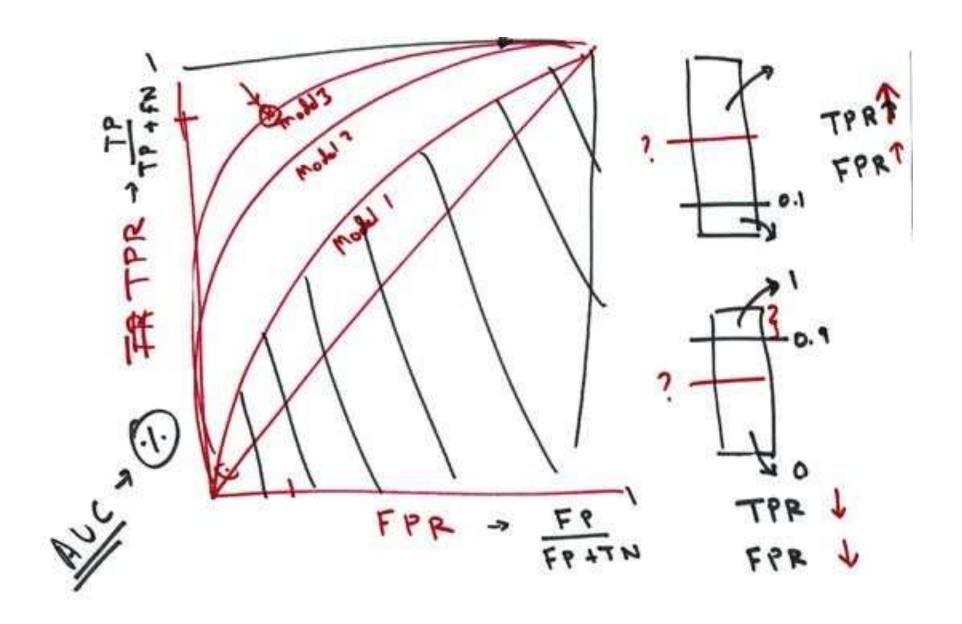
= 0.999



	Acc	Recall	Precision
All as not terrorist	1	0	0
All as terrorist		1	low
Predicts the top terrible only		0	1

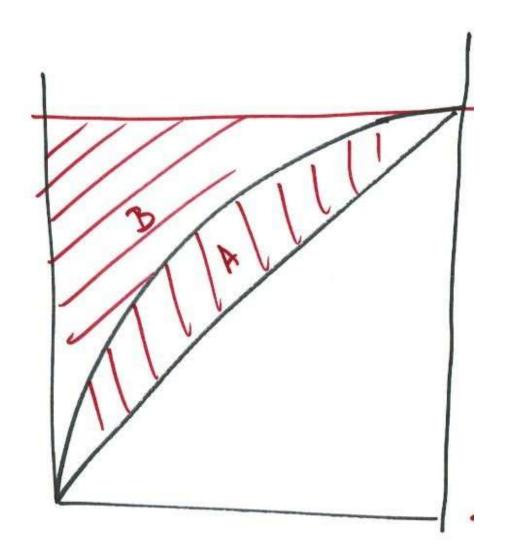
$$F_1 = (2 * P * R) / (P+R)$$





prohibited.





Gini Coefficient = A/A+B

A = AUC - 0.5

A + B = 0.5

Gini Coefficient = AUC - 0.5 / 0.5

Gini Coefficient = 2 * AUC - 1

prohibited.