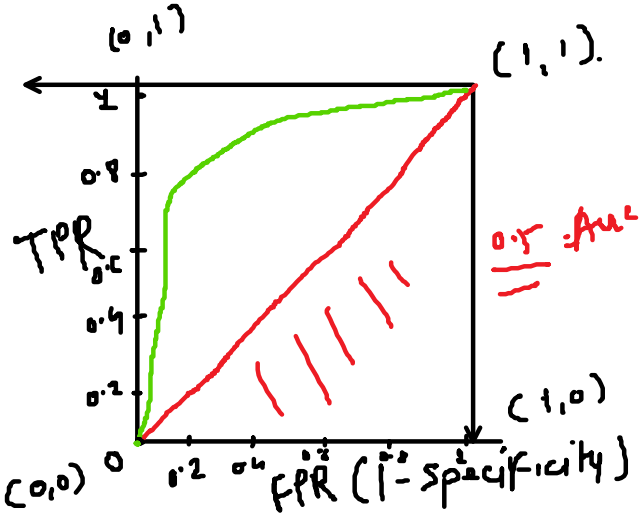
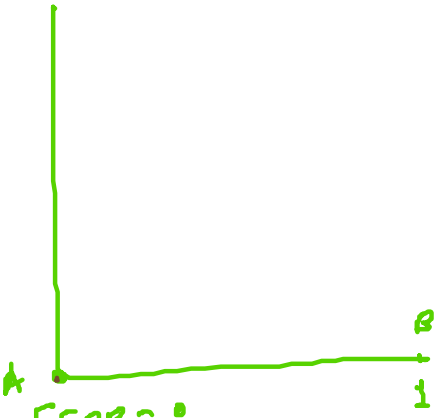
AUC_ROC_Curve

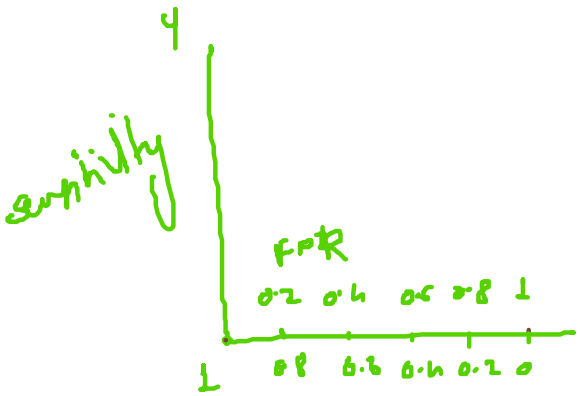
02 March 2022 07:09



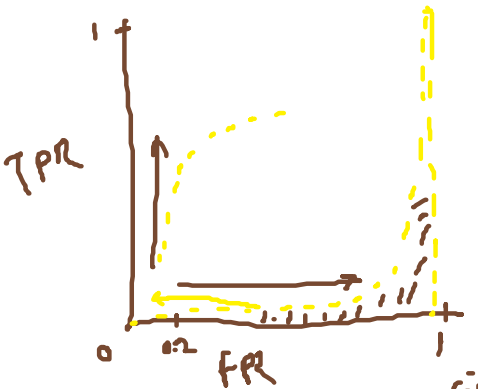
0.5 = AUC



where, [FPR = 0
specificity = 1]
FPR = (1-1) = 0



We want
FPR >> low
specificity >> high

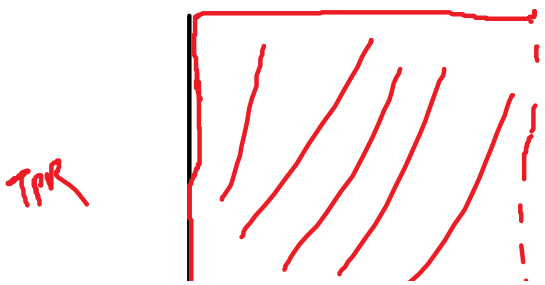


AUC = 0.12

FPR = 1 - specificity

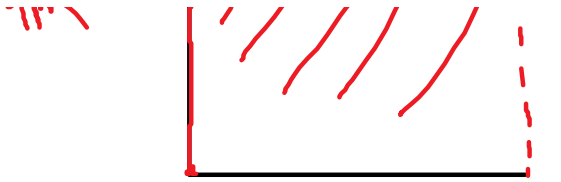
specificity = 1 - FPR

FPR = 0.67
spec = 0.33
(1 - 0.67) 0.33



Ideal condition

AUC = 1



AUC = 1

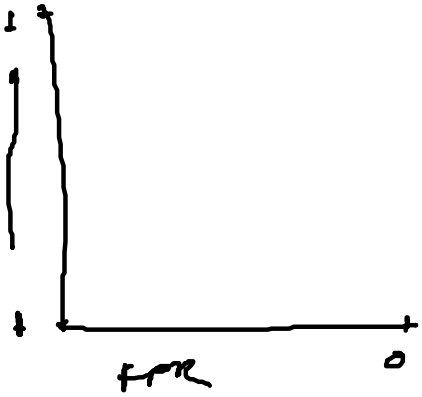
AUC = 0.1

TPR → sensitivity

FNR → 1

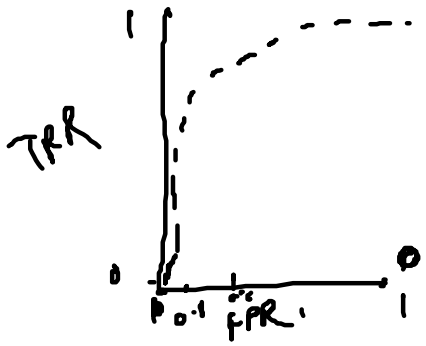
TNR → specificity

FPR



$\frac{FP}{TN+FP}$ = FPR

$TNR = \frac{TN}{TN+FP}$



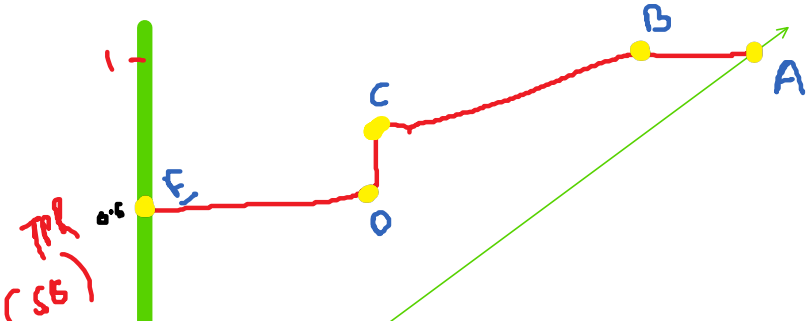
TP	FP
	3
7	7
FN	TN

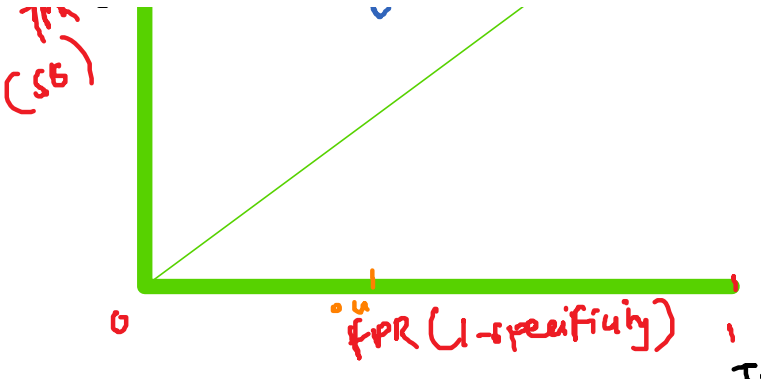
$FPR = \frac{3}{3+7} = 0.3$

$TNR = \frac{7}{3+7} = 0.7$

$1 - 0.7 = 0.3$

$1 - 0.3 = 0.7$





Point A.

P = 5 N = 5 , Total = 10

Sensitivity = higher = 1 → $\frac{TP}{TP+FN}$

specificity = lower = 0 → $\frac{TN}{FP+TN}$ =

sample. 10.

TP	FP
5	5
0	0
FN	TN

At last all tell that TPR = FPR

Point B

Sensitivity = high = 1

specificity = low = 0.2

5	4
0	1

Point C

Sensitivity = high = 0.8

specificity = high/medium = 0.6

TP	FP
4	2
1	3
FN	TN

Point D

SS = 0.6

SP =

3	2
2	3

Point E

Ss = 0.6

Sp = high = 1

3	0
2	5

ok	y_a	y_p	y_b	$y_{0.6}$	$y_{0.8}$	$y_{0.5}$
		1	1	1	1	1

OR

y_a	y_p	y_b	y_c	y_d	y_e
0	0.92	1	1	1	1
1	0.67	1	1	0	1
1	0.18	1	0	0	1
0	0.78	1	1	0	1
1	0.85	1	1	1	1
0	0.86	1	1	1	1

0 = N-ve, 1 = P +ve.

$y_{0.6}$

2	3
1	0

$y_{0.8}$

1	2
2	1

$y_{0.9}$

3	3
0	0

k-fold cross validation

Train data = 80%

Testing data = 20%

Train = 100

when k = 5

d_1	d_2	d_3	d_4	d_5
20	20	20	20	20

CV	Accuracy
d_1	85
d_2	81
d_3	88
d_4	73
d_5	80

Avg = $\frac{85+81+88+73+80}{5}$

= 81.8

Hyperparameter Tuning

Hyperparameter Tuning

1) Grid Search CV

2) Randomized Search CV

alpha:- 0.2

alpha : [0.2, 0.4, 0.6, 1, 2]

CPU:-

GPU:-

hii