

PRECISION RECALL

Harmonic Mean

 $F_eta = \left(rac{1}{1+eta^2}\mathsf{Precision}^{-1} + rac{eta^2}{1+eta^2}\mathsf{Recall}^{-1}
ight)^{-1}$ 

 $= (1 + \beta^2) \left( \frac{1}{\mathsf{Precision}} + \beta^2 \cdot \frac{1}{\mathsf{Recall}} \right)^{-1}$   $= (1 + \beta^2) \left( \frac{\beta^2 \cdot \mathsf{Precision} + \mathsf{Recall}}{\mathsf{Precision} \cdot \mathsf{Recall}} \right)^{-1}$   $= (1 + \beta^2) \frac{\mathsf{Precision} \cdot \mathsf{Recall}}{\beta^2 \cdot \mathsf{Precision} + \mathsf{Recall}}$ 

 $\frac{2(A*B)}{A+B} = \frac{2(95*5)}{95+5} = 15$ 

Why we are sub Beta value as 1?

Beta Value : Low – Gives Important to Precision
 Beta Value : high – Gives Important to Recall

Beta Value: 1 – Gives Equal Important to Precision and Recall

Cont...

Recall

Recall = \_\_\_\_ = 0.11

FN=0), Precision =  $\frac{1}{1+0}$  = 1(100%)

F1 Score

Average or Mean

 $\frac{A+B}{2} = \frac{95+5}{2} = 50$ 

A - Higher Value
B - Lower value

Summarize Precision and Recall in Single Value
 GOOD MODEL – It has Good Precision and Recall
 For Eg:-

0.5+1

 $F1 = ----- = 0.75 \qquad (0----0.5--0.75--1)$ 

Recall = 0.5 ; Precision = 1

**Precision** 

recision = \_\_\_\_ = 0.5

f(FP=0), Precision =  $\frac{1}{1+0}$  = 1(100%)