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Metrics:

TP : correctly predicted positive
TN : correctly predicted negative
FP : incorrectly predicted positive
FN : incorrectly predicted negative

I'm
angry at
you
but love you
still

① Precision: accuracy of positive predictions.

→ Use: when cost of FP is high.

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

② Recall: (sensitivity / True Positive rate)

Measures the model's ability to find all the actual positive cases.

→ Use: when cost of FN is high

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

③ F1-score: harmonic mean.

$$F_1 = 2 \times \frac{P \times R}{P + R}$$

Receiver Operating
characteristics

④ AUC (Area under ROC curve)

→ It measures performance across all possible classification threshold.

AUC = 1.0 (perfect)

AUC = 0.5 (random guessing)

FPR: false positive rate = $\frac{FP}{FP+TN}$



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ROC curve: plots "(Recall)" against "(FPR)"

⑤ Regression metric: (R^2)

$$R^2 = 1 - \frac{SS_{res}}{SS_{tot}}$$