Worked Answers and Explanations

NOTES FOR SHS | TOPIC 63 | Original educational resource

1. Accuracy

Correct predictions divided by all predictions; it is (TP+TN)/n.

2. Confusion outcomes

TP is positive correctly predicted; FP is negative incorrectly predicted positive; TN is negative correctly predicted; FN is positive incorrectly predicted negative.

3. Accuracy

(40+130)/200 = 0.85 = 85 percent.

4. Precision

40/(40+10) = 0.80 = 80 percent.

5. Recall

40/(40+20) = 2/3 = 66.67 percent.

6. F1

2(0.8)(2/3)/(0.8+2/3) = 8/11 = 72.73 percent. Also 2TP/(2TP+FP+FN) = 80/110.

7. Majority baseline

If 950 of 1000 examples are negative, predicting all negative gives 95 percent accuracy but zero positive recall.

8. Averages

Macro averages all per-class scores equally; weighted averages them by class support. They can differ when the classes are uneven.

9. Thresholds

Raising the threshold generally predicts fewer positives and often lowers recall; precision may increase but is not guaranteed to increase at each step.

10. Rare-fault screening

Report positive recall and false negative counts, precision and false positives, prevalence, a baseline and the costs of both errors. This is not a deployment recommendation.