

Classification Report - Logistic Regression Classifier

(Questions & Answers)

♦ Accuracy

Your model achieves an accuracy of 89%. How would you validate whether this is truly a good score?

Answer:

I would look at class distribution, precision, and recall. If the dataset is imbalanced, high accuracy might not reflect true performance. I'd also compare it against a baseline (like a dummy classifier) and check precision-recall trade-offs for each class.

♦ Precision

Class 1 has a precision of 87%. What does this tell you about the quality of positive predictions?

Answer:

It means that when the model predicts class 1, it's correct 87% of the time. The model is relatively good at avoiding false positives for class 1.

How might increasing the decision threshold affect precision?

Answer:

Increasing the threshold typically increases precision (fewer false positives), but can decrease recall (more false negatives).

♦ Recall

The recall for class 1 is 82%. In your opinion, is this acceptable? What does it mean operationally?

Answer:

It means the model captures 82% of the actual class 1 instances. Whether that's acceptable depends on the context—if missing class 1 instances has a high cost, we might want to improve recall even at the expense of precision.

In binary classification, how is recall impacted when class 1 becomes more underrepresented?

Answer:

Recall tends to decrease as the minority class becomes rarer, because the model gets fewer examples to learn from and may become biased toward predicting the majority class.

♦ **F1-Score**

Your F1-score for class 1 is 0.84. Why might this be a more informative metric than accuracy?

Answer:

F1-score balances both precision and recall, giving a clearer picture when there's class imbalance. Accuracy alone can be misleading if one class dominates.

If you had to tune the model, would you prefer optimizing for F1-score or accuracy? Why?

Answer:

I'd prefer optimizing for F1-score, especially if class balance and false positives/negatives matter. It's a better holistic measure in such scenarios.

♦ **Macro Average**

The macro averaged precision is 0.88. What does that indicate about model fairness across classes?

Answer:

It shows the model performs fairly well on both classes, treating them equally regardless of sample size. It's helpful in checking for bias toward the majority class.

Would a high macro average and low accuracy ever occur? If so, when?

Answer:

Yes — if the model performs equally but poorly on all classes, or if it performs well on the minority class but badly on the dominant one, macro avg may be decent but accuracy will drop.

♦ **Weighted Average**

What does it mean if the weighted F1-score is very close to the accuracy?

Answer:

It means the class distribution isn't too skewed, and the model is performing consistently across classes. Weighted average accounts for class frequencies, making it usually closer to accuracy than macro avg.

If class 0 has much higher support, how does that affect the weighted average?

Answer:

Class 0's metrics will dominate the weighted average. If performance on class 0 is good, the overall weighted scores will look better—even if the model under performs on class 1.