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Module 1 Graded Quiz Logisitic Regression

Graded Assignment • 30 min

Due Oct 1, 11:59 PM PDT

Your grade: 90%

Your latest: **90%** • Your highest: **90%**

To pass you need at least 70%. We keep your highest score.

Next item →

1. The output of a logistic regression model applied to a data sample_____. 1 / 1 point

- ○ is the log odds of the sample, which you can use for interpretive purposes.
- ○ tells you the odds of the sample belonging to a certain class.
- ◉ is the probability of the sample being in a certain class.
- ○ tells you which class the sample belongs to.

Correct
Correct. Logistic regression outputs a value between zero and one which can be thought of as the probability of the sample being in a certain class.

2. Describe how any binary classification model can be extended from its basic form on two classes, to work on multiple classes. 1 / 1 point

- ○ Use process of elimination to discard any unimportant classes.
- ○ Fit the binary classifier to all of the classes simultaneously.
- ○ Use the coefficients from a linear regression model to weight the classes.
- ◉ Use a one-versus all technique, where for each class you fit a binary classifier to that class versus all of the other classes.

Correct
Correct. With each class, we're going to be estimating the binary logistic regression versus all other classes. And the estimated category is going to be the class with the highest estimated probability for each one of those one-versus-all classifiers.

3. Which tool is most appropriate for measuring the performance of a classifier on unbalanced classes? 1 / 1 point

- ○ The Receiver Operating Characteristic (ROC) curve.
- ○ The false positive rate.
- ○ The true positive rate.
- ◉ The precision-recall curve.

Correct
Correct. The precision-recall curve displays the precision vs recall for different probability thresholds. Both precision and recall are focused on the positive class, which is normally the minority class in imbalanced classification problems.

4. (True/False) One of the requirements of logistic regression is that you need a variable with two classes. 1 / 1 point

- ○ True
- ◉ False

Correct
Correct! You can use a multinomial logistic regression if you have more than two classes. You can review the demo in lesson 2 of this module, in which you did a multinomial logistic to predict a target variable with more than two classes.

5. (True/False) The shape of ROC curves are the leading indicator of an overfitted logistic regression. 1 / 1 point

- ○ True
- ◉ False

Correct
Correct! Although overfitted models tend to have really high ROC curves with high values of area under the curve, a classification matrix or a measure like accuracy can be more reliable. Please review the lesson *Confusion Matrix, Accuracy, Specificity, Precision, and Recall.*

6. **Consider this scenario for Questions 3 to 7.** 1 / 1 point

You are evaluating a binary classifier. There are 50 positive outcomes in the test data, and 100 observations. Using a 50% threshold, the classifier predicts 40 positive outcomes, of which 10 are incorrect.

What is the classifier's Precision on the test sample?

- ○ 25%
- ○ 60%
- ◉ 75%
- ○ 80%

Correct
Correct! You can find more information in the lesson *Confusion Matrix, Accuracy, Specificity, Precision, and Recall.*

7. **Consider this scenario for Questions 3 to 7.** 1 / 1 point

You are evaluating a binary classifier. There are 50 positive outcomes in the test data, and 100 observations. Using a 50% threshold, the classifier predicts 40 positive outcomes, of which 10 are incorrect.

What is the classifier's Recall on the test sample?

- ○ 25%
- ◉ 60%
- ○ 75%
- ○ 80%

Correct
Correct! You can find more information in the lesson *Confusion Matrix, Accuracy, Specificity, Precision, and Recall.*

8. **Consider this scenario for Questions 3 to 7.** 1 / 1 point

You are evaluating a binary classifier. There are 50 positive outcomes in the test data, and 100 observations. Using a 50% threshold, the classifier predicts 40 positive outcomes, of which 10 are incorrect.

What is the classifier's F1 score on the test sample?

- ○ 50%
- ◉ 66.7%
- ○ 67.5%
- ○ 70%

Correct
Correct! You can find more information in the lesson *Confusion Matrix, Accuracy, Specificity, Precision, and Recall.*

9. **Consider this scenario for Questions 3 to 7.** 1 point

You are evaluating a binary classifier. There are 50 positive outcomes in the test data, and 100 observations. Using a 50% threshold, the classifier predicts 40 positive outcomes, of which 10 are incorrect.

Increasing the threshold to 60% results in 5 fewer positive predictions, all of which are correct. Which of the following statements about this new model (compared with the original model that had a 50% threshold) is TRUE?

- ◉ The F1 score of the classifier would decrease.
- ○ The area under the ROC curve would decrease.
- ○ The F1 score of the classifier would remain the same.
- ○ The area under the ROC curve would remain the same.

Incorrect
Incorrect. Please review the lesson *ROC and Precision-Recall Curves*.

10. **Consider this scenario for Questions 3 to 7.** 1 / 1 point

You are evaluating a binary classifier. There are 50 positive outcomes in the test data, and 100 observations. Using a 50% threshold, the classifier predicts 40 positive outcomes, of which 10 are incorrect.

The threshold is now increased further, to 70%. Which of the following statements is TRUE?

- ○ The Recall of the classifier would Increase.
- ○ The Precision of the classifier would decrease.
- ○ The Recall of the classifier would increase or remain the same.
- ◉ The Precision of the classifier would increase or remain the same.