← Go Back to Supervised Learning

Course Content

Supervised Learning - Week 2

Type	:	Graded Quiz
Attempts	:	1/1
Questions	:	10
Time	:	20m
Due Date	:	Oct 31, 2021, 11:59 PM
Your Marks	:	8/10

Instructions

The Quiz has 10 questions

Time limit - 20 minutes

You have to complete the quiz to get access to the next module.

IMPORTANT:

1. Attempt the Quiz only once you are prepared and have enough time on your hand to finish it. This is to be done before the due date. No extension will be provided for it once the deadline is passed.
2. Once the Quiz is opened, you must complete it. You CAN NOT start the Quiz, leave it for an extended period of time and then come

back later to finish.

3. Ensure there is a proper internet connection while taking up the Quiz. Any breakup in the connection will automatically submit your Quiz.

4. Please note that few Questions shall have multiple answers and all options need to be selected correctly for full marks.
5. Please note that the questions can be sourced from videos, reading material and reference links provided for study. Few questions can also be sourced from the concepts whare extensions of the concepts explained in videos. Hence please do ensure a thorough understanding of concepts using all the resources provided for the week.
6. If a question has all the options as correct and has "All of these" as one of the options, select "All of these" rather than selecting all the options.
7. The mark distribution for multiple answer questions (ie for Questions with more than 1 answer) is explained with an example below. There can be questions with 2 or 3 or all 4 correct answers.
    - For example, a question with 2 correct answers marks will be awarded as follows
        - Full Marks - only when both answers are correctly selected.
        - Partial Marks (0.5 marks) - In case of selecting only 1 correct answer and no wrong answers are select
        - Aggregation and Net Score is "0" - In case of selecting 1 correct answer and 1 wrong answer, there shall be aggregation (-0.5) for the wrong answer and the net score for that question will be zero.
    - For example, a question with 3 correct answers marks will be awarded as follows
        - Full Marks - Only when all the 3 answers are correctly selected.
        - Partial Marks (0.33 or 0.66 marks) - In case of selecting only 1 correct answer or 2 correct answers and **no wrong answers are selected.**
        - Aggregation and net Score is "0" - In case of selecting all wrong answers or selecting 1 correct answer and 1 wrong answer, there shall be an aggregation of scores (ie +0.33 - O.33). Please note the -ve score is a result of the wrong answer. Therefore the net score for that question will be zero.
8. Any other technical issues if faced on Olympus, please share the screenshot so the team so can understand and solve it on priority.

Regards,

Program Office

Attempt History

Attempt #1

Oct 31, 2021, 11:58 PM

Marks: 8

Q No: 1

Correct Answer

Marks: 1/1

Given the below Confusion Matrix, predict the accuracy

		Predicted	
	Class	1	0
Actual	1	30	10
	0	20	30

0.33

0.34

0.66 You Selected

0.56

Accuracy = 30+30/30+30+10+20 = 6/9 = .66

Setting up threshold Video: 6mins - 10 mins & Performance Measures Video: 0 - 2 mins

---

Q No: 2 Correct Answer

Marks: 1/1

Logistic Regression is a classification algorithm which:

- Directly calculates the labels of the target variable without calculating the probability.
- (selected) Calculates probabilities using a sigmoid function for the target variable and converts into labels based on a threshold. You Selected
- None of these
- Calculates probabilities for the target variable using the equation of a line and converts into labels based on a threshold.

We use logit function in logistic regression and not a straight line, to retrieve probabilities.

Logistic Regression Video: 10 mins - 15mins

Q No: 3 Correct Answer

Marks: 1/1

Which of the following is true with respect to F-1 score of a model.

Select all that apply

- [ ] None of these
- [x] It ranges between 0 and 1. You Selected
- [ ] It is inversely proportional to accuracy
- [x] It is used to evaluate a classification model You Selected

For an imbalanced data, accuracy might increase but, f-1 score being a harmonic mean between precision and recall, does not increase proportionally with accuracy. F-1 score and precision are not inversely proportional.

Performance Measures Video: 17 - 20 mins

Q No: 4 Correct Answer

Marks: 1/1

While predicting if a patient is suffering from a rare disease, you end up classifying everyone(10^5 number of people) as not suffering while there were 100 suffering patients. The accuracy of your model is:

~90%

~0%

~50%

~ 99% You Selected

Ans: The accuracy is the ratio of correct predictions to the total predictions. Since you still correctly predicted about entire of the population(10^5-10, since it is a rare disease), you have very high accuracy. However, this might not be the metric you are looking for while evaluating your model.

Performance Measures Video: 4 - 6mins

Q No: 5 Correct Answer

Marks: 1/1

Increasing the threshold does not change the values in the confusion matrix of a model for a given dataset.

True

False

You Selected

The change in threshold varies the confusion metric as a change in the threshold might change the predicted labels.

Setting up threshold. Video: 10mins, Concept of threshold and confusion matrix are explained. Learners have to correlate the two concepts for the solution

---

Q No: 6

Incorrect Answer

Marks: 0/1

Let's say you are given a dataset having binary target values representing cancer diagnosis of patients and their features. The target contains the probability of patients having cancer or not and it ranges between 0 to 1. What would be the range of output if we apply the logit function to this target column?

- -1 to +1
- 0 to infinity
- -infinite to + infinite — Correct Option
- 0 to 1 — You Selected

It creates a map of probability values from (0,1) to (-inf ,+inf) Input range: 0 to 1 Output Range : -inf to +inf

Logistic regression - Logit function for multidimension is explained Video - 38 mins - 39 mins Video: 13 - 14 mins for 2dimension

---

Q No: 7 Correct Answer

Marks: 1/1

Suppose you have been given a fair coin and you want to find out the odds of getting heads. Which of the following option is true for such a case?

- (●) odds will be 1 — You Selected
- ( ) odds will be 0.5
- ( ) None of these
- ( ) odds will be 0

Odds is given by (p/1-p) = (0.5/(1-0.5)) = 1, *p - probability

Logistic regression - Odds ratio is explained Video - 17mins - 20 mins

---

Q No: 8 Correct Answer

Marks: 1/1

Keeping the value of threshold to be very low, say (0.05), what will be the value of True Positive rate(TPR), False Positive Rate(FPR) and specificity?

- ○ High TPR, Low FPR, Low Specificity
- ○ High TPR, High FPR, High Specificity
- ◉ High TPR, High FPR, Low Specificity — You Selected
- ○ Low TPR, High FPR, High Specificity

For low value of threshold, TPR and FPR will be high & Specificity = 1- TPR, So it will be low

Evaluation of models, Video: 15 - 20 mins

Q No: 9 Correct Answer

Marks: 1/1

Which of the following statement about model evaluation metric is NOT True ?

Specificity is defined as the proportion of actual negatives, which got predicted as the negative

Sensitivity is a measure of the proportion of actual positive cases that got predicted as positive

Precision is the ratio of correctly predicted positive observations to the total actual positive observations. You Selected

Precision is the ratio of correctly predicted positive observations to the total predicted positive observations.

Performance Measures Video: 0 - 19mins & Evaluation of Models Video - 5: 15mins

---

Q No: 10 Incorrect Answer

Marks: 0/1

A logistic regression model of classifying the cancer patient from non cancer patient given by the mathematical function F(0.2 + 0.25*tumor_dia + 1.1*tumor_coarseness). Find the probability of a patient with tumour dia 5.5 and tumour coarseness of 0.7 to be a non cancer user ? (Hint: Consider Sigmoid function)

0.087 Correct Option

0.97 You Selected

0.25

0.13

Explanation: As given in the question, the function to classify the cancer patient is 0.2 + 0.25*tumor_dia + 1.1*tumor_coarseness In logitstic regression, The probability of a patient with tumour dia 5.5 and tumour coarseness of 0.7 to be a cancer patient is = 1/(1+ e^-(0.2+0.25*5.5 + 1.1*0.7) =1/(1+e^-(2.345) =1/1.0958 =0.91257 As we are asked to find the probability of the patient to be a non-cancer user, it becomes 1- the probability of cancer user therefore, the answer becomes 1-0.91257 = 0.0874 = 0.087

Concept is explained along with the formulas

+ Add comments