Q&A

26 January 2020 19:07

1.) Joint Probability vs Conditional Probability
Can you point out the difference between joint probability and conditional probability, using the example you just saw?
Suggested Answer
If you notice the in video example, in joint probability the total sample space does not get affected (remains 100) whereas in conditional probability the total sample space gets reduced to the number of times the event we are conditioning on occurs(changes to 12 times when Sachin scores a century)

2.) Bayes Theorem and Its Building Blocks
What type of probability is 'the probability that an email which contains the word 'viagra' is spam'?
Suggested Answer
Conditional probability

3.) Bayes Theorem and Its Building Blocks
What type of probability is 'the probability that an email contains the word 'viagra' and it is spam'?
Suggested Answer
Joint Probability

4.) Bayes Theorem and Its Building Blocks
What is the symbolic notation of conditional probability?
Suggested Answer
$P(A|B)$

5.) Bayes Theorem and Its Building Blocks
What is the symbolic notation of joint probability?
Suggested Answer
$P(A \cap B)$

6.) Prior Probability
Prior probability, e.g. P(class = edible) is the probability of occurrence of an event before collection of new data or features. For example P(edible) is the probability of finding an edible mushroom - without any dependence on the individual data points. Thus, P(edible) is equal to:
The fraction of edible mushrooms in the data set
Feedback :*P(edible) is the fraction of edible mushrooms in the data set.*

7.) Likelihood
Likelihood, e.g. P(X = CONVEX | Class = edible) is the probability of finding a convex mushroom among the edible ones. Thus, P(CONVEX |edible) is equal to:
The fraction of CONVEX mushrooms among the edible class mushrooms
Feedback :*P(CONVEX |edible) is equal to the fraction of CONVEX mushrooms among the edible class mushrooms.*

8.) Bag of Words Representation
Why is it called **Bag of Words Representation?**
It is because the sentences are broken down into words and the ordering doesn't matter anymore as if it were put in a bag and shuffled.

9.)
It is because the sentences are broken down into words and the ordering doesn't matter anymore as if it were put in a bag and shuffled.

6
It is because the sentences are broken down into words and the ordering doesn't matter anymore as if it were put in a bag and shuffled.

10.)Can you recall why should we not worry about the denominator in this case?
It is because the denominator will be same for both the classes and hence will not affect the final result.

11.)Feature Vector
Suppose you have the following dictionary based on some training document narrating stories about love or action.

W1	W2	W3	W4	W5	W6	W7	W8
bike	couple	fast	furious	tears	love	shoot	songs

What will be feature vector of the document “A fast moving bike entered into the complex and shoot the couple.“
1,1,1,0,0,0,1,0
Feedback :
W4,W5,W6,W8 are not present , hence 0 for them and 1 for others is correct choice.

12.) Naive Bayes Classifier
Assume the following likelihoods i.e P(word|class) for each word being part of a positive or negative review of a hotel.

	Pos	**Neg**
i	0.09	0.16
loved	0.30	0.06
the	0.06	0.05
food	0.04	0.35
and	0.08	0.07
cleanliness	0.40	0.03

What class will Naive Bayes assign to the sentence “I loved the food and cleanliness.” if the priors of the classes are considered equal (it is equivalent to not considering the prior)
Pos
Feedback :
= is Pos and - is Neg
P(I | +)P(loved|+)P(the|+)P(food|+)P(and|+)P(cleanliness |+) >
P(I | -)P(loved|-)P(the|-)P(food|-)P(and|-)P(cleanliness |-)

13.) Naive Bayes Classifier
Assume the following likelihoods i.e P(word|class) for each word being part of a positive or negative review of a hotel.

	Pos	**Neg**
i	0.09	0.16
loved	0.30	0.06
the	0.06	0.05
food	0.04	0.35
and	0.08	0.07
cleanliness	0.40	0.03

What class will Naive Bayes assign to the sentence “I loved the food and cleanliness.” if the prior

probabilities for positive and negative classes are considered 0.1 and 0.9 respectively
Neg
Feedback :

+ is Pos and - is Neg
P(I | +)P(loved|+)P(the|+)P(food|+)P(and|+)P(cleanliness |+)P(+) <
P(I | -)P(loved|-)P(the|-)P(food|-)P(and|-)P(cleanliness |-)P(-)