

Quiz 6

Started: Nov 18 at 1:53pm

Quiz Instructions

Question 1

1 pts

We are testing a set of toy cars from a new manufacturer. Each toy car has the same probability p to be incorrectly assembled. If we tested 5 toy cars, and we found 3 of those toy cars are incorrectly assembled. What is the most probable value for p based on the maximum likelihood estimation? Round it to two decimals.

Question 2

1 pts

Follow the previous question. If we know the density function of the prior distribution of p is:

$$P(p) = 2p$$

What is the most probable value for p based on the maximum a posteriori estimation? Round it to two decimals.

Question 3

1 pts

Follow the previous questions. Which of the following statement is INCORRECT?

- (A) As we examine more and more toys, the choice of prior becomes less impactful.
- (B) We usually assume a uniform prior distribution if no further information is given for p .

(C) A proper choice of prior distribution can significantly reduce the number of experiments needed for the convergence to optimal p .

(D) When the prior is a normal distribution, Maximum A Posteriori estimator is the same as Maximum Likelihood estimator

☐ A

☐ B

☐ C

☒ D

Question 4

1 pts

Consider building a Naive Bayes classifier for a 3-class multi-class classification problem with 20 binary features. What is the minimal number of parameters we need to specify for this Naive Bayes classifier?

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Question 5

1 pts

Consider building a Naive Bayes classifier based on the training data below.

Patient	Age (A)	Weight (W)	Workout Regularly (E)	Diabetes (D)
1	Young	Light	No	Yes
2	Young	Heavy	No	Yes
3	Young	Heavy	No	No
4	Young	Heavy	No	No
5	Young	Light	Yes	No
6	Young	Light	Yes	No
7	Young	Light	Yes	No
8	Young	Light	Yes	No
9	Old	Heavy	No	Yes
10	Old	Heavy	Yes	Yes
11	Old	Light	No	No
12	Old	Light	Yes	No

What is the prior probability $P(D = \text{Yes})$ for the Naive Bayes classifier trained on the above data based on the maximum likelihood estimation?

Round it to two decimals.

Question 6

1 pts

Follow the previous question. What is the probability $P(W = \text{Heavy} | D = \text{No})$ for the Naive Bayes classifier trained on the above data based on the maximum likelihood estimation?

Round it to two decimals.

Quiz saved at 10:47am

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