

CS7641 ML Practice Quiz

Module SL 9: Bayesian Learning

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Question 1

What is the primary aim of Bayesian Learning in machine learning?

- A. To find the hypothesis with the lowest probability given data and domain knowledge.
- B. To identify the hypothesis with the highest probability, represented as the argmax of h given some data D .
- C. To eliminate all hypotheses that do not perfectly align with the given data.
- D. To focus solely on prior probabilities without considering new data.
- E. To prioritize computational efficiency over accuracy in hypothesis selection.

Question 2

In the context of Bayesian Learning, how is Bayes' Rule significant?

- A. It eliminates the need for prior probabilities in the calculation.
- B. It relates the probability of a hypothesis given data to the probability of data given the hypothesis.
- C. It suggests that the probability of the data given the hypothesis is not important.
- D. Bayes' Rule states that the likelihood of seeing data is independent of the hypothesis.
- E. It calculates the probability of the data without considering the hypothesis.

Question 3

How does noisy data affect the computation of probabilities in Bayesian Learning?

- A. Noisy data does not affect probabilities in Bayesian Learning.
- B. Noisy data leads to disregarding the probability of observing the dataset if the hypothesis is true.
- C. It involves adjusting the probabilities for each data item based on the noise factor and multiplying these probabilities.
- D. The probability of noisy data is always zero.
- E. Noisy data in Bayesian Learning is handled by assuming a constant multiplier for all data items.

Question 4

What is the Minimum Description Length (MDL) principle in Bayesian Learning, and how is it applied?

- A. MDL prioritizes maximizing the length of the hypothesis and the data.
- B. It involves minimizing the sum of the length of the probability of the data given the hypothesis and the length of the hypothesis itself.
- C. MDL suggests that larger decision trees are more likely than smaller ones.
- D. It focuses on maximizing error and complexity to find the simplest hypothesis.
- E. MDL is a technique that only applies to neural networks and not to decision trees.

Question 5

In Bayesian Classification, how is the best label for an input determined?

- A. By selecting the hypothesis with the minimum probability given the data.
- B. Through a weighted vote based on the probability of each hypothesis given the data.
- C. The best label is always the one with the highest prior probability, regardless of the data.
- D. By choosing the label that minimizes the maximum a posteriori hypothesis.
- E. Bayesian Classification does not involve finding the best label for an input.

Answer Key

1. B
2. B
3. C
4. B
5. B