CS7641 ML Practice Quiz  
Module SL 9: Bayesian Learning

Created by Kyle Nakamura with the help of ChatGPT

# 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