Q1. What is prior probability? Give an example.

Prior probability, in probability theory and statistics, refers to the probability assigned to an event or outcome based on prior knowledge or assumptions before any new evidence or information is considered.
Let's say we're considering the probability of it raining tomorrow in a city where it typically rains about 30% of the time during this season (based on historical weather data).

Q2.What is posterior probability? Give an example.

Posterior probability, in probability theory and statistics, refers to the updated probability of an event or outcome after considering new evidence, data, or information. It's the revised probability based on both prior knowledge and the new information received.
Let's continue with the example of predicting whether it will rain tomorrow in a city where it typically rains about 30% of the time during this season (based on historical weather data).

Q3. What is the likelihood probability? Give an example.

In statistics, the term "likelihood" refers to the probability of observing the data given a specific model or hypothesis. It's important to note that likelihood is different from probability, although the two are related. Probability is the likelihood of a future event occurring, whereas likelihood is the probability of the observed data given a particular parameter or hypothesis.
Let's consider a coin toss experiment. We want to estimate the probability of the coin landing heads up.

Q4. What is Naïve Bayes classifier? Why is it named so?

Naïve Bayes is a simple and commonly used probabilistic machine learning algorithm for classification tasks.

Naïve Bayes is named "naïve" because it makes the "naïve" assumption that the features used to describe an instance are conditionally independent, given the class label.

1. Write any two features of Bayesian learning methods.

Bayesian learning methods, which are rooted in Bayesian statistics and probability theory, have several key features that distinguish them from other machine learning approaches.

1. Probabilistic Framework
2. Incorporation of Prior Knowledge

Q6. Define the concept of consistent learners.

A consistent learner, in the context of machine learning and statistical learning theory, refers to a learning algorithm or model that, as the amount of training data increases indefinitely, converges to the true underlying function or distribution. In simpler terms, a consistent learner produces increasingly accurate predictions or approximations of the true model as more data becomes available.

Q7. Write any two strengths of Bayes classifier.

The Naïve Bayes classifier, a common type of Bayes classifier, possesses several strengths that make it a popular choice in various applications.

1. Efficiency and Speed
2. Effective with High-Dimensional Data

Q8. Write any two weaknesses of Bayes classifier.

While Bayes classifiers, particularly the Naïve Bayes classifier, have several advantages, they also come with certain weaknesses that can impact their performance in specific scenarios.

1. Assumption of Feature Independence
2. Sensitivity to Input Data Quality and Missing Values

Q9. Explain how Naïve Bayes classifier is used for text classification.**

Naïve Bayes classifier is a simple and commonly used algorithm for text classification and spam filtering due to its efficiency and effectiveness in handling high-dimensional data, such as text data.
It involves preprocessing the text, building the model, and then using it for classification.

Q10. Explain how Naïve Bayes classifier is used for spam filtering.

Naïve Bayes classifier is a simple and commonly used algorithm for text classification and spam filtering due to its efficiency and effectiveness in handling high-dimensional data, such as text data.

It involves preprocessing the email content, building the model using labeled data, and then using it for classification.

Naïve Bayes classifier is a widely used algorithm for text classification and spam filtering due to its efficiency and effectiveness in handling high-dimensional data, such as text data.
It involves preprocessing, labeling data, building the model, and using it to classify market sentiment based on textual data.
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