

Unit 3: Quiz

Due Feb 10 at 11:59pm **Points** 7 **Questions** 7
Available until Feb 11 at 3am **Time Limit** 60 Minutes

This quiz was locked Feb 11 at 3am.

Attempt History

	Attempt	Time	Score
LATEST	<u>Attempt 1</u>	3 minutes	7 out of 7

Score for this quiz: **7** out of 7

Submitted Feb 6 at 2:53pm

This attempt took 3 minutes.

Correct!

Question 1

1 / 1 pts

Select the answers that best complete the following statement. Unlike Naïve Bayes, which is a ____ model, Logistic Regression is a ____ model.

- ☒ Generative, discriminative
- ☐ Discriminative, generative
- ☐ Supervised, Unsupervised
- ☐ Quadratic, linear

Question 2

1 / 1 pts

Computing the final values of the parameters for Logistic Regression requires the use of what technique?

Correct!

- ☒ Gradient Ascent
- ☐ Expectation Maximization
- ☐ Matrix Factorization

Question 3

1 / 1 pts

If the true value of μ is known, then the MLE estimator of

$$\sigma^2 \text{ is } \sigma_{MLE}^2 = \frac{1}{N} \sum_{i=1}^N (x_i - \mu)^2$$

Is the estimation of σ^2 unbiased?

Correct!

- ☒ Yes
- ☐ No

Question 4

1 / 1 pts

Researchers at a medical center are interested in exploring the relationship between patient age (x_1), patient weight (x_2) and the presence (1) or absence (0) of a particular disease. If researchers decide to use logistic regression, which of the following would be interpreted as the probability that the positive outcome (e.g., disease) is present?

- ☐ Probability = $\beta_0 + \beta_1 x_1 + \beta_2 x_2$

Correct!

☐ Probability = $\frac{e^{\beta_0 + \beta_1 x_1 + \beta_2 x_2}}{1 - e^{\beta_0 + \beta_1 x_1 + \beta_2 x_2}}$

☒ Probability = $\frac{e^{\beta_0 + \beta_1 x_1 + \beta_2 x_2}}{1 + e^{\beta_0 + \beta_1 x_1 + \beta_2 x_2}}$

☐ Probability = $\frac{e^{-\beta_0 - \beta_1 x_1 - \beta_2 x_2}}{1 + e^{-\beta_0 - \beta_1 x_1 - \beta_2 x_2}}$

Question 5

1 / 1 pts

Suppose the scores of randomly selected students are normally distributed with an unknown mean and a standard deviation. A random sample of 10 students returns the following scores: [81, 71, 71, 74, 56, 92, 83, 74, 91, 66]. Estimate μ by using maximum likelihood estimation.

(Choose the closest one.)

☐ 56

☐ 92

☐ 11

☒ 76

Correct!

Question 6

1 / 1 pts

When tossing a dice several times, let α_0 stand for the number of odd rolls and α_e stand for the number of even rolls. Let p be the probability of getting an even number. Using maximum likelihood estimation, how do you estimate p ?

☒ $\hat{p} = \frac{\alpha_e}{\alpha_e + \alpha_0}$

Correct!

☐ $\hat{p} = \frac{\alpha_e}{\alpha_0}$

☐ $\hat{p} = \frac{\alpha_0}{\alpha_e + \alpha_0}$

☐ $\hat{p} = \frac{\alpha_0}{\alpha_e}$

Question 7**1 / 1 pts**

Which of the following is true for generative or discriminative classifier models that read the input x and the label y ? (Select all that apply.)

Correct!

A generative classifier makes its predictions by using Bayes' rule to calculate $P(y|x)$.



A discriminative classifier learns a model of the joint probability $p(x, y)$.

Correct!

A discriminative classifier models the posterior $P(y|x)$ directly.

Correct!

A generative classifier attempts to learn $p(x|y)$.



A discriminative classifier learns a model of the joint density $p(x, y)$.



No answer text provided.

Quiz Score: 7 out of 7