

Q1 Instructions

1 Point

Open notes: The quiz is open notes. You are free to use any content from the course website or from your own personal notes.

No communication: ANY communication with other students about the quiz content is strictly forbidden and will result in a failing grade for the whole class (not just this quiz).

No partial credit: Every question is all or nothing credit. Thus, you must get the answer exactly right to get credit for the question (including SELECT ALL questions). No partial credit will be given on quizzes.

Number Format: When giving numbers as short answers, please give in standard decimal notation with preceding "0." for decimals if needed but no trailing 0s (e.g., "0.15", "2.9", "0.001", "100" but NOT "0.15000" NOR ".15" NOR ".001" NOR "6.0").

Honor Pledge: I assert that I have not received any information about this quiz and will not share any quiz content with anyone else. I understand that any violation of this will result in a failing grade for the whole class (not just this quiz).

Yes, I understand the policies above and assert the honor pledge.

No

Q2

1 Point

Which statements are true for BatchNorm? (Select all that apply)

- ✓ BatchNorm normalizes the minibatch so that the features have a varying mean and variance and then applies a shift and scale.

For spatial BatchNorm, the mean is obtained by averaging over the channel dimension.

BatchNorm can stabilize and accelerate training of neural networks.

Q3
1 Point

Frequentist and Bayesian interpretations of probability lead to a different set of axioms for probability.

- True
- False

Q4
1 Point

Which statements about probability density functions are always true?

$$p(y|x) = p(x, y)/p(y)$$

- ✓ $p(x, y) = p(x)p(y|x)$

$$p(x|y) = p(y|x)$$

$$p(x)p(y|x) = p(y)p(x|y)$$

Q5
1 Point

A probability mass function (PMF) can be greater than 1.

True

False

Q6

1 Point

If two variables are uncorrelated, i.e. $\rho_{X,Y} = 0$, then the distribution of the two variables are independent, i.e., $p(x, y) = p(x)p(y)$.

True

False

Q7

3 Points

Suppose we have a probability mass function (PMF) over binary random variables defined as:

$$P(x, y) = \begin{bmatrix} P(0, 1) = 0.5 & P(1, 1) = 0.1 \\ P(0, 0) = 0.2 & P(1, 0) = 0.2 \end{bmatrix}$$

Answer the following questions based on this PMF.

Q7.1

1 Point

What is the marginal probability of $Y = 0$, i.e., $P(y = 0)$?
(Remember to include 0 before decimal point, e.g., "0.6")

0.4

Q7.2

1 Point

What is the conditional probability of $X = 0$ given that $Y = 0$, i.e., $P(x = 0|y = 0)$?

(Remember to include 0 before decimal point, e.g., "0.6")

0.5

Q7.3

1 Point

What is $P(x = 0|y = 1) + P(x = 1|y = 1)$?

0

0.2

0.3

0.4

0.5

0.6

0.7

1

Q8

1 Point

Suppose that $\mathbb{E}[f(x)] = 10$ and $\mathbb{E}[g(x)] = 4$ for some functions f and g .

What is the value of $\mathbb{E}[5f(x) + 3g(x) + 2]$?

64

Q9

1 Point

Let X and Y be independent continuous random variables. If we know that $p(X = 2|Y = 1) = 2$, $p(Y = 1) = 3$, and $p(Y = 1|X = 3) = 4$, what is $p(X = 2, Y = 1)$? (Insufficient information [-1] is a valid answer.)

-1

Answer

6

Quiz 6

● Graded

Student

Paloma Arellano

Total Points

7 / 11 pts

Question 1

Instructions

1 / 1 pt

Question 2

(no title)

0 / 1 pt

Question 3

(no title)

1 / 1 pt

Question 4

(no title)

0 / 1 pt

Question 5

(no title)

1 / 1 pt

Question 6

(no title)

1 / 1 pt

Question 7

(no title)

2 / 3 pts

7.1 (no title)

1 / 1 pt

7.2 (no title)

1 / 1 pt

7.3 (no title)

0 / 1 pt

Question 8

(no title)

1 / 1 pt

Question 9
(no title)

0 / 1 pt

+ 1 pt Correct

✓ + 0 pts Incorrect