csd3186s25-a.sg

Started on	Monday, 13 January 2025, 10:45 AM
State	Finished
Completed on	Monday, 13 January 2025, 10:55 AM
Time taken	10 mins 21 secs
Grade	**18.00** out of 20.00 (**90**%)

Question **1**
Correct
Mark 2.00 out of 2.00
Flag question

What is the purpose of the gradient descent algorithm?

Select one:
- To identify the most important features for prediction
- To find the optimal parameters (weights) that minimize the error ✔
- To perform dimensionality reduction
- To calculate the correlation between features

Your answer is correct.
The correct answer is: To find the optimal parameters (weights) that minimize the error

Question **2**
Correct
Mark 2.00 out of 2.00
Flag question

In linear regression, which of the following represents the relationship between the dependent and independent variables?

Select one:
- A straight line ✔
- A quadratic function
- A logarithmic curve
- A constant function

Your answer is correct.
The correct answer is: A straight line

Question **3**
Correct
Mark 2.00 out of 2.00
Flag question

What does the learning rate control in gradient descent?

Select one:
- The size of the steps taken towards the minimum of the cost function. ✔
- The stopping condition of the algorithm.
- The number of iterations the algorithm will run.
- The initialization of the model parameters.

Your answer is correct.
The correct answer is: The size of the steps taken towards the minimum of the cost function.

Question **4**
Correct
Mark 2.00 out of 2.00
Flag question

The cost function in linear regression is also known as:

Select one:
- Hinge loss
- Log loss
- Cross-entropy loss
- Mean squared error (MSE) ✔

Your answer is correct.
The correct answer is: Mean squared error (MSE)

Question **5**
Correct
Mark 2.00 out of 2.00
Flag question

What does the "**bias term**" (intercept) in linear regression represent?

Select one:
- The point where the regression line crosses the y-axis ✔
- The slope of the regression line
- The correlation coefficient
- The rate of change of the dependent variable

Your answer is correct.
The correct answer is: The point where the regression line crosses the y-axis

Question **6**
Correct
Mark 2.00 out of 2.00
Flag question

Which of the following is the goal of linear regression?

Select one:
- To find the optimal decision boundary between two classes
- To minimize the sum of the squared differences between the actual and predicted values ✔
- To maximize the correlation between the independent and dependent variables
- To predict the categorical outcomes of data

Your answer is correct.
The correct answer is: To minimize the sum of the squared differences between the actual and predicted values

Question **7**
Correct
Mark 2.00 out of 2.00
Flag question

The gradient descent update rule for the weights in linear regression is:

Select one:
- $w = w - \beta * \nabla J(w)$
- $w = w - \alpha * \nabla J(w)$ ✔
- $w + \beta * \nabla J(w)$
- $w = w + \alpha * \nabla J(w)$

Your answer is correct.
The correct answer is: $w = w - \alpha * \nabla J(w)$

Question **8**
Incorrect
Mark 0.00 out of 2.00
Flag question

In the context of gradient descent, what does the symbol '**α**' represent?

Select one:
- The error term
- The learning rate
- The number of iterations
- The weight of the features ✘

Your answer is incorrect.
The correct answer is: The learning rate

Question **9**
Correct
Mark 2.00 out of 2.00
Flag question

Which of the following methods can be used to assess the performance of a linear regression model?

Select one:
- Confusion matrix
- Cross-entropy loss
- Hinge loss
- Mean squared error (MSE) ✔

Your answer is correct.
The correct answer is: Mean squared error (MSE)

Question **10**
Correct
Mark 2.00 out of 2.00
Flag question

In gradient descent, what happens if the learning rate is too large?

Select one:
- The model might overshoot the minimum and not converge ✔
- The model converges at the same rate
- The model converges more quickly
- The model will take longer to converge

Your answer is correct.
The correct answer is: The model might overshoot the minimum and not converge

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