Week 5 Quiz

Q1.

In the linear regression equation: $Y = Wx + b$, which of the following are the input features:

    A. x

    B. y

    C. W

    D. b

Q2.

For linear regression, if you find parameters w and b so that $J(w,b)$ is very close to Zero, what can you conclude?

    A. The selected values of parameters w and b cause the algorithm to fit the training data well.

    B. The selected values of parameters w and b cause the algorithm to fit the training data poorly.

    C. Such values are not possible to get – there must be a problem in the model.

Q3.

How many iterations are required for a supervised learning algorithm to converge:

    A. Between 100 and 1000

    B. Between 1000 and 10,000

    C. Between 10,000 and 100,000

    D. The number of iterations is not known ahead of time.

Q4.

[True or False] To make gradient descent converge, we must slowly decrease alpha () over time.

    A. True

    B. False

Q5.

To address overfitting, in case we can't get more data samples, we can do the following:

    A. A) Adjust the parameters carefully so that we get a more well-fitted curve.

B. B) Select relevant features

C. C) Use Regularization

D. B or C

Q6.

Which of the following best describes the role of gradient descent in multiple linear regression?

A. A) It is used to calculate the maximum error between predicted and actual values.

B. B) It helps in minimizing the error between the predicted values and the actual values by updating the coefficients.

C. C) It represents the equation of the line in a multiple linear regression model.

D. D) It is only applicable in one-variable linear regression for updating the coefficient.

Q7.

In the context of logistic regression, what role does the sigmoid function play?

A. A) It converts the regression model's continuous output into a categorical class.

B. B) It maps any real-valued number into a value between 0 and 1, suitable for predicting probabilities.

C. C) It is used to calculate the cost function in logistic regression.

D. D) It linearly separates the data into different classes.

Q8.

Why can't the Mean Squared Error (MSE) cost function be used in logistic regression?

A. A) Because MSE always returns values between 0 and 1.

B. B) MSE can only be used in regression problems, not classification.

C. C) The cost function resulting from using MSE in logistic regression would be non-convex, making it difficult to find the global minimum.

D. D) MSE is too complex to calculate in logistic regression.

Q9.

What does the "naive" assumption in the Naive Bayes classifier refer to?

A. A) The assumption that all classifiers will make mistakes.

B. B) The assumption that features in a dataset have no relationships with each other.

C. C) The assumption that the dataset is too large to process.

D. D) The assumption that Bayes' theorem cannot be applied to modern datasets.

Q10.

Which of the following statements accurately differentiates between supervised learning and reinforcement learning?

A. A) In supervised learning, models are trained on a labeled dataset to predict outcomes, while in reinforcement learning, an agent learns to make decisions by receiving rewards or penalties for actions taken in an environment.

B. B) Supervised learning and reinforcement learning both rely on labeled datasets to train models, with the difference being only in the complexity of the models used.

C. C) Reinforcement learning is a subset of supervised learning, where the model is explicitly given the correct answers (rewards) for every decision it makes.

D. D) In both supervised learning and reinforcement learning, models are trained until they achieve a predefined number of correct predictions on a test dataset.