1-**In a simple linear regression model (One independent variable), If we change the input variable by 1 unit. How much output variable will change?**

a) by 1
b) no change
c) by intercept
d) by its slope

Answer d

2- In practice, Line of best fit or regression line is found when _____

a) Sum of residuals (∑(Y – h(X))) is minimum
b) Sum of the absolute value of residuals (∑|Y-h(X)|) is maximum
c) Sum of the square of residuals (∑ (Y-h(X))2) is minimum
d) Sum of the square of residuals (∑ (Y-h(X))2) is maximum

Answer c

3-. True-False: Linear Regression is a supervised machine learning algorithm.

A)TRUE

B) FALSE

Solution: (A)

4-. True-False: Linear Regression is mainly used for Regression.

A)TRUE

B) FALSE

Solution: (A)

5-In regression analysis, the variable that is being predicted is54555

5-In the regression equation y = bo + b1x, bo is the intercept y

A-True

b-false

Answer a

6-2) True-False: Is Logistic regression mainly used for Regression?

A)TRUE

B) FALSE

Solution: B

7-True-False: Is it possible to apply a logistic regression algorithm on a 3-class Classification problem?

A)TRUE

B) FALSE

Solution: A use one vs all

8- What would be the range of cost in logistic regression?

A)(0,inf)

B)(-inf,0)

C)(0,1)

D) (-inf, inf)

Solution: C

1Logistic regression is a type of:
a) Supervised learning algorithm
b) Unsupervised learning algorithm
c) Reinforcement learning algorithm
d) None of the above
answer a

The dependent variable in logistic regression is:
a) Continuous
b) Categorical
c) Binary
d) Both b) and c)
answer d

In logistic regression, the output is predicted using:
a) Linear regression equation
b) Logistic function (sigmoid)
c) Exponential function
d) None of the above
answer b

The logistic function maps the predicted values to the range of:
a) [-∞, ∞]
b) [0, 1]
c) [0, ∞]
d) [1, ∞]
answerb

The cost function used in logistic regression is called:
a) Mean squared error (MSE)
b) Mean absolute error (MAE)
c) Log loss (cross-entropy)

d) None of the above

answer c

Logistic regression can be used for
: a) Binary classification
b) Multiclass classification
c) Both a) and b)
d) Regression problems
answer c

Logistic regression assumes a linear relationship between the
: a) Independent variables and the target variable
b) Dependent variable and the target variable
c) Independent variables and the dependent variable
d) None of the above
answer c

The logistic regression equation can be represented as:

a) Y = β0 + β1X

b) Y = e^(β0 + β1X)

c) Y = 1 / (1 + e^(β0 + β1X))

d) Y = α0 + α1X

answer c

Introduction of nn

Question 1: What is a neural network?

A) A set of algorithms that mimic the human brain.

B) A type of machine learning algorithm used for regression tasks.

C) A graphical representation of data points in multi-dimensional space

. D) A statistical technique used for hypothesis testing.

Answer: A) A set of algorithms that mimic the human brain.

Question 2: What are the main components of a neural network?

A) Input layer, hidden layer, and output layer.

B) Features, labels, and predictions.

C) Training data, validation data, and test data.

D) Mean, median, and mode.

Answer: A) Input layer, hidden layer, and output layer.

Question 3: What is the purpose of an activation function in a neural network?

A) To determine the number of hidden layers in the network.

B) To compute the loss function and optimize the network.

C) To introduce non-linearities and enable complex mappings between inputs and outputs

D) To evaluate the performance of the network during training.

Answer: C) To introduce non-linearities and enable complex mappings between inputs and outputs.

Question 4: What is backpropagation in neural networks?

A) The process of initializing the weights and biases in the network.

B) The technique used to calculate the gradient of the loss function with respect to the network's parameters.

C) The process of feeding forward the input data through the network

. D) The algorithm used to determine the optimal learning rate for training the network.

Answer: B) The technique used to calculate the gradient of the loss function with respect to the network's parameters.

Question 5: What is overfitting in the context of neural networks?

A) When the network fails to converge during training.

B) When the network performs well on the training data but poorly on unseen data.

C) When the network architecture is too simple to capture complex patterns in the data. D) When the learning rate is set too low, causing slow convergence.

Answer: B) When the network performs well on the training data but poorly on unseen data

Question 6: What is the basic building block of a neural network?

A) Neuron.

B) Activation function.

C) Loss function.

D) Gradient descent.

Answer: A) Neuron

Question : What is the purpose of the bias term in a neural network?

A) To prevent overfitting during training.

B) To initialize the weights of the network.

C) To calculate the accuracy of the network's predictions.

D) To shift the activation function to the left or right.

Answer: D) To shift the activation function to the left or right.

Question : What is the role of the output layer in a neural network?

To calculate the loss function

. B) To perform the feature extraction.

C) To evaluate the performance of the network.

D) To provide the final predictions.

Answer: D) To provide the final predictions

Question : Which of the following neural network architectures is used for sequence data and natural language processing tasks?

A) Feedforward neural network (FNN)

B) Convolutional neural network (CNN)

C) Recurrent neural network (RNN)

D) Autoencoder

Answer: C) Recurrent neural network (RNN)

Question : What is a feedforward neural network?

A) A network that has feedback connections between neurons.

B) A network that only has one layer of neurons.

C) A network where information flows in one direction, from input to output.

D) A network that uses recurrent connections for time-series data.

Answer: C) A network where information flows in one direction, from input to output.

Question : What is a convolutional neural network (CNN) commonly used for?

A) Image and video recognition tasks.

B) Text classification tasks

. C) Stock market prediction.

D) Speech synthesis.

Answer: A) Image and video recognition tasks.

Question : What is a recurrent neural network (RNN) suitable for?

A) Image classification tasks.

B) Natural language processing tasks

. C) Clustering and unsupervised learning tasks

. D) Reinforcement learning tasks.

Answer: B) Natural language processing tasks.

Question : What is the purpose of a pooling layer in a CNN?

A) To reduce the size of the input data.

B) To increase the number of learnable parameters

. C) To add non-linearities to the network.

D) To perform element-wise multiplication.

Answer: A) To reduce the size of the input data.

Question : What is the main advantage of using a deep neural network?

A) Faster training time.

B) Lower computational requirements.

C) Ability to learn more complex representations

. D) Improved generalization performance.

Answer: C) Ability to learn more complex representations

4 : Which of the following is a characteristic of a deep neural network (DNN)?

A) It has only one hidden layer

B) It is typically shallow and wide

C) It is prone to overfitting

D) It has multiple hidden layers

1: Which of the following is an architectural component of a feedforward neural network?

A) Recurrent connections

B) Convolutional layers

C) Max pooling

D) Skip connections

Answer: B) Convolutional layers

2: What is the purpose of pooling layers in a convolutional neural network (CNN)?

A) To reduce the spatial dimensions of the input

B) To increase the number of feature maps

C) To add non-linearity to the network

D) To regularize the network and prevent overfitting

Answer: A) To reduce the spatial dimensions of the input

---------- **backprobagation**----------

1-What is backpropagation in neural networks?

a. A technique for training deep learning models

b. A method for calculating the gradient of the loss function with respect to the weights

c. A process of propagating the error from the output layer to the input layer

d. All of the above

answer d

Which of the following steps are involved in backpropagation?

a. Forward pass

b. Error calculation

c. Gradient calculation

d. Weight update

e. All of the above

answer e

What is the purpose of the backward pass in backpropagation?

a. To calculate the output of the neural network

b. To calculate the loss function

c. To update the weights based on the calculated gradients

d. To propagate the error from the output layer to the input layer

answer d

Which activation function is commonly used in backpropagation?

a. Sigmoid

b. ReLU

c. Tanh

d. All of the above

answer d

What is the role of the learning rate in backpropagation?

a. It determines the speed at which the weights are updated

b. It affects the convergence of the neural network

c. It helps prevent overshooting or undershooting the optimal solution

d. All of the above

answer d

What is the main drawback of using backpropagation in deep neural networks?

a. It is computationally expensive

b. It may suffer from the vanishing or exploding gradient problem

c. It requires a large amount of labeled training data

d. It cannot handle non-linear activation functions

answer b

How does backpropagation handle multi-layer neural networks?

a. It updates the weights layer by layer, starting from the output layer

b. It calculates the gradients for each layer independently

c. It uses the chain rule to propagate the gradients from the output layer to the input layer

d. It randomly adjusts the weights to find the optimal solution

answer c

What is the purpose of the backpropagation algorithm?

a. To minimize the difference between the predicted and actual outputs

b. To maximize the accuracy of the neural network\

c. To find the optimal set of weights for the neural network

d. To speed up the training process

answer c

True or False: Backpropagation can only be used for supervised learning tasks.

a. True

b. False

answer b

Which phase of the backpropagation algorithm involves adjusting the weights of the neural network?

a) Forward pass

b) Error calculation \

c) Gradient calculation

d) Weight update

answer d

True or False: Backpropagation can only be used for feedforward neural networks.

a) True

b) Fals

answer b

n backpropagation, which step follows the forward pass?

a) Weight initialization

b) Gradient calculation

c) Weight update

d) Activation function application

answe b

What is the purpose of backpropagation in neural networks?

a) To calculate the loss function

b) To propagate the input through the network

c) To update the weights and biases based on the error

d) To initialize the weights and biases of the network

answer c

What does backpropagation calculate?

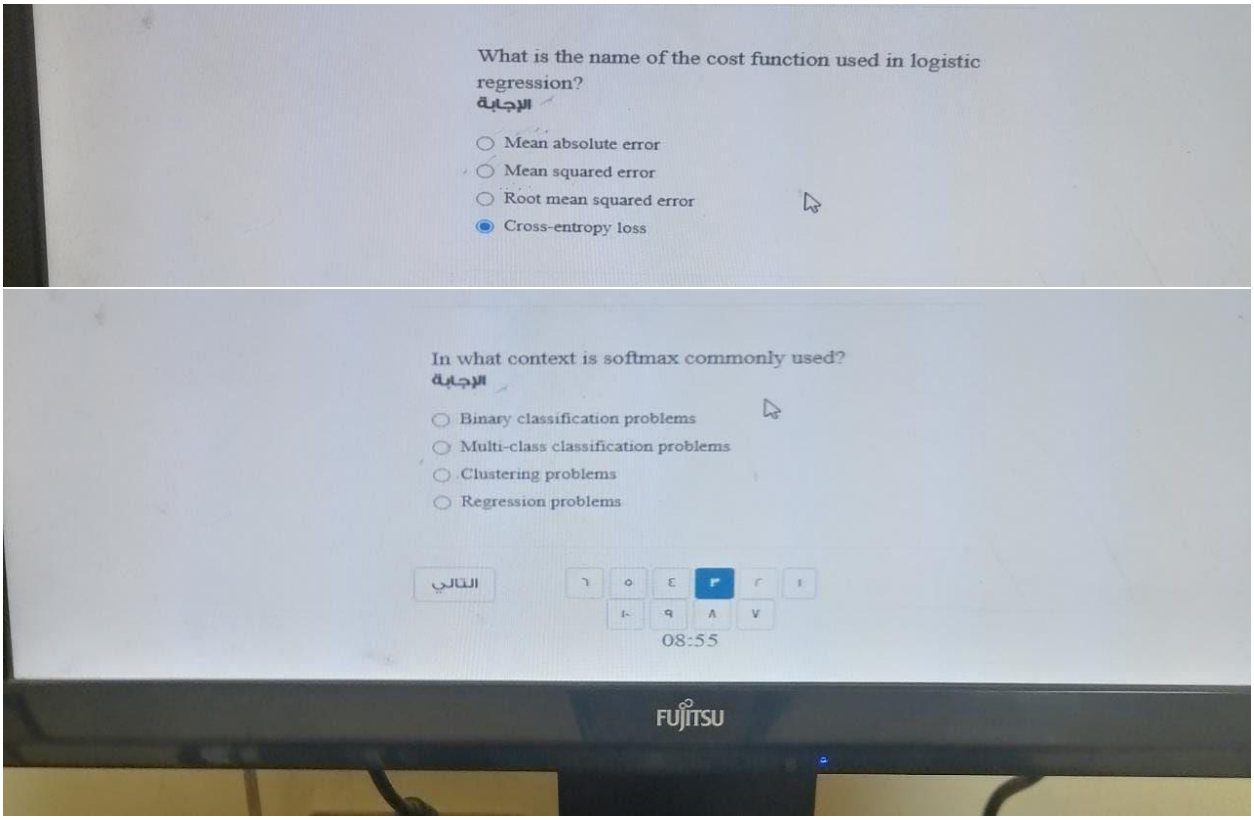
a) The activation values of each neuron

b) The output of the neural network

c) The gradients of the loss function with respect to the network parameters

d) The forward pass through the network

answer c



In what context is softmax commonly used?

الإجابة

- Binary classification problems
- Multi-class classification problems
- Clustering problems
- Regression problems

التالي

08:53

What is hebb's rule of learning

الإجابة

- the system learns from its past mistakes
- none of the mentioned
- the strength of neural connection get modified accordingly
- the system recalls previous reference inputs & respective ideal outputs

التالي

08:48

Which of the following is a technique for randomly selecting a subset of the training data on each epoch, in order to prevent overfitting?

الإجابة

- Dropout
- Batch normalization
- Momentum term
- Adagrad

التالي

09:51

FUJITSU

In logistic regression, what is the equation for the logistic function?

الإجابة

- y = 1/(1 + e^-(mx + b))
- y = e^(mx + b)
- y = mx + b
- y = mx/(1 + b)

التالي

What is the primary task of a convolutional neural network (CNN)?
الإجابة

- ○ Object classification
- ○ Regression analysis
- ○ Text generation
- ○ Audio processing

المادة اختيارى الكلية -٤

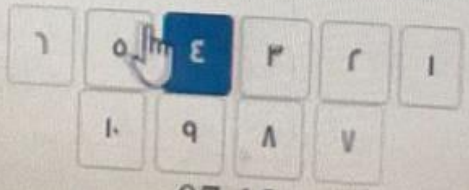
رقم المعمل

In a neural network, what is the purpose of the bias term?

الإجابة

- To reduce overfitting
- To adjust the output of each neuron
- To prevent vanishing gradients
- To improve the speed of training

التالي



07:18

Which of the following is an unsupervised learning algorithm?

الإجابة

- Naive Bayes
- K-means clustering
- Support Vector Machine
- Decision Tree

التالي

07:32

السنة الدراسية الفرقة الرابعة - علوم الحاسب

المادة اختيارى الكلية -٤

رقم المعمل

Which of the following statement is true about outliers in Linear regression?

الإجابة

- None of these
- Linear regression is not sensitive to outliers
- Linear regression is sensitive to outliers
- Can't say

التالي

١ ٢ ٣ ٤ ٥ ٦

٧ ٨ ٩ ١٠

07:19

رقم المعمل

What is the purpose of the chain rule in the backpropagation algorithm?

الإجابة

- To propagate the error from the output layer to the hidden layers
- To calculate the derivative of the loss function with respect to the weights in the hidden layers
- To calculate the derivative of the activation function
- To adjust the learning rate during training

السنة الدراسية الفرقة الرابعة - علوم الحاسب

المادة اختيارى الكلية -٤

رقم المعمل

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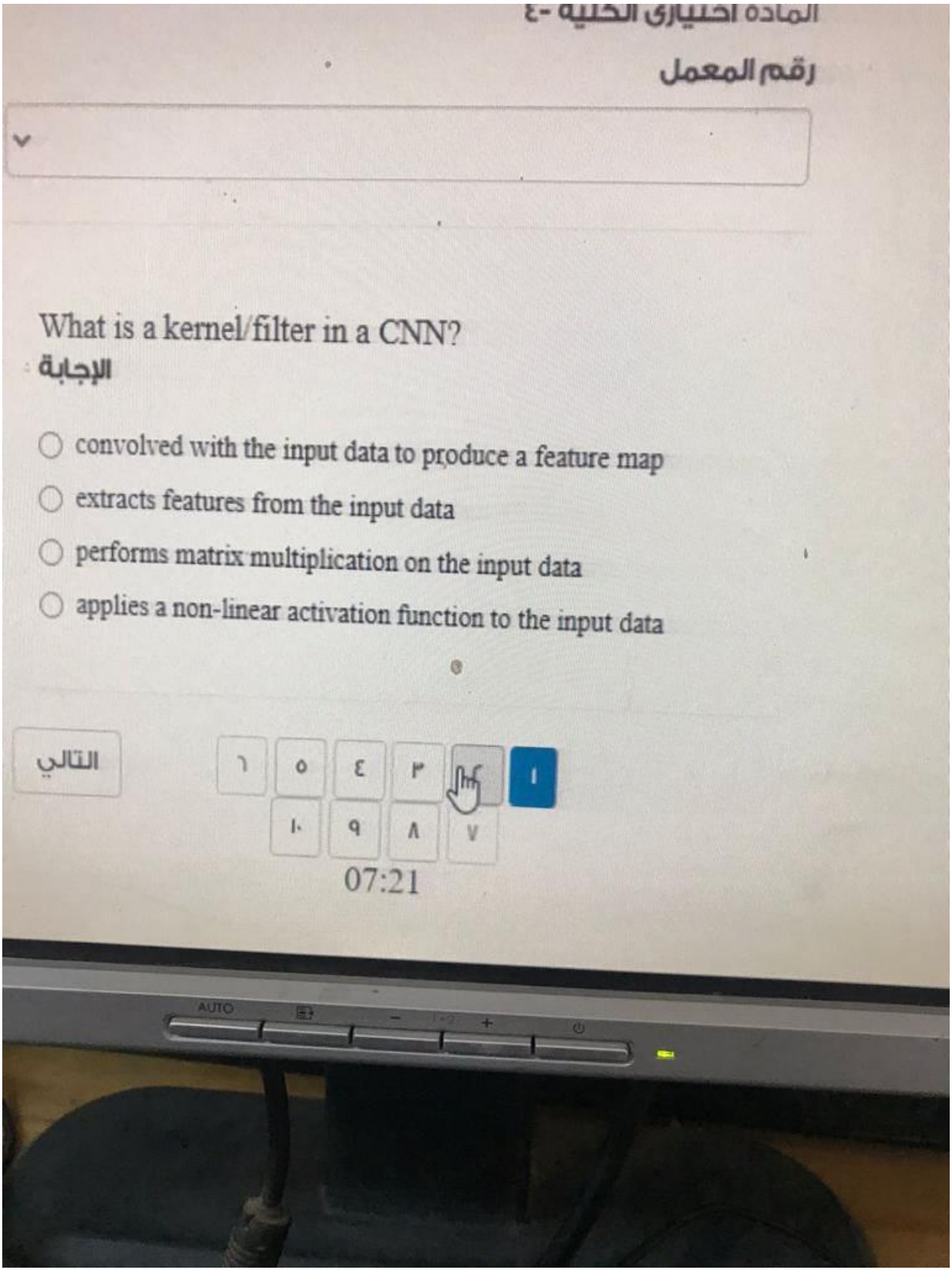
التالي

٦ ٤ ٣ ٢ ١

١٠ ٩ ٨ ٧

07:17


المادة اختيارى الكلية -٤
رقم المعمل
What is a kernel/filter in a CNN?
الإجابة
convolved with the input data to produce a feature map
extracts features from the input data
performs matrix multiplication on the input data
applies a non-linear activation function to the input data
التالي
١ ٢ ٣ ٤ ٥ ٦
٧ ٨ ٩ ١٠
07:21
AUTO

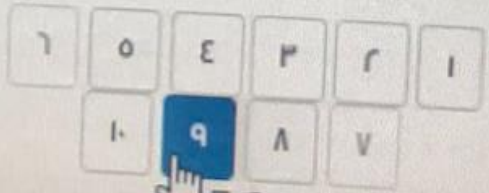
رقم المعمل

What is the range of the logistic function?

الإجابة

- [0, ∞]
- (-1, 1)
- [-∞, ∞]
- [0, 1]

التالي



7:25

المادة اختيارى الكلية -٤

رقم المعمل

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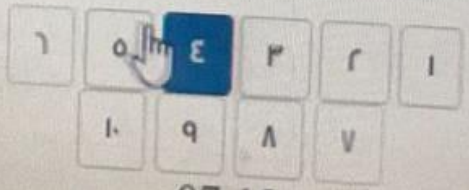
التالي



07:18