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Course outline

About NPTEL ()

How does an NPTEL online course work? ()

Week 1 ()

Week 2 ()

Linearly Separable Boolean Functions (unit?unit=36&lesson=37)

Representation Power of a Network of Perceptrons (unit?unit=36&lesson=38)

Sigmoid Neuron (unit?

Week 2 : Assignment 2

The due date for submitting this assignment has passed.

Due on 2024-08-07, 23:59 IST.

As per our records you have not submitted this assignment.

1) How many boolean functions can be designed for 3 inputs? ***1 point***

- 8
- 16
- 256
- 64

No, the answer is incorrect.
Score: 0

Accepted Answers:
256

2) How many weights does a neural network have if it consists of an input layer with 2 neurons, three hidden layers each with 4 neurons, and an output layer with 2 neurons? Assume there are no bias terms in the network.

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Numeric) 48

1 point

3) A function $f(x)$ is approximated using 250 tower functions. What is the minimum number of neurons required to construct the network that approximates the function? ***1 point***

- 250
- 249

unit=36&lesson=39)
Learning Parameters: (Infeasible) guess work (unit?unit=36&lesson=41)
Learning Parameters: Gradient Descent (unit?unit=36&lesson=42)
Representation Power of Multilayer Network of Sigmoid Neurons (unit?unit=36&lesson=43)
Lecture Material for Week 2 (unit?unit=36&lesson=44)
Quiz: Week 2 : Assignment 2 (assessment?name=281)
Week 2 Feedback Form: Deep Learning - IIT Ropar (unit?unit=36&lesson=185)
Week 3 ()
week 4 ()
Week 5 ()
Week 6 ()
Week 7 ()

- 251
- 500
- 750
- 501

No, the answer is incorrect.
Score: 0
Accepted Answers:
501

4) Given the following input values to a sigmoid neuron: ***1 point***
$x_1 : 0.72, x_2 : 0.49, x_3 : 0.08, x_4 : 0.53, \text{ and } x_5 : 0.27$, what labels will the sigmoid neuron predict for these inputs? (Answer in sequence from x_1 to x_5).

- [0, 1, 1, 1, 1]
- [1, 0, 0, 1, 0]
- [0, 1, 0, 1, 0]
- [1, 1, 0, 1, 0]

No, the answer is incorrect.
Score: 0
Accepted Answers:
[1, 0, 0, 1, 0]

5) You are training a model using the gradient descent algorithm and notice that the loss decreases and then increases after each successive epoch (pass through the data). Which of the following techniques would you employ to enhance the likelihood of the gradient descent algorithm converging? (Here, η refers to the step size.) ***1 point***

- Decrease the value of η
- Increase the value of η
- Set $\eta = 1$
- Set $\eta = 0$

No, the answer is incorrect.
Score: 0
Accepted Answers:
Decrease the value of η

6) Which of the following statements is true about the representation power of a multilayer network of perceptions? ***1 point***

- A multilayer network of perceptrons can represent any function.
- A multilayer network of perceptrons can represent any linear function.
- A multilayer network of perceptrons can represent any boolean function.
- A multilayer network of perceptrons can represent any continuous function.

No, the answer is incorrect.
Score: 0
Accepted Answers:
A multilayer network of perceptrons can represent any boolean function.

Week 8 ()

Week 9 ()

week 10 ()

Week 11 ()

Week 12 ()

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Problem Solving Session - July 2024 ()

7) How many boolean functions can be designed for 4 inputs? ***1 point***

- 65,536
- 8
- 256
- 64

No, the answer is incorrect.
Score: 0

Accepted Answers:
65,536

8) How many neurons do you need in the hidden layer of a perceptron to learn any boolean function with 4 inputs? (Only one hidden layer is allowed) ***1 point***

- 16
- 64
- 56
- 32

No, the answer is incorrect.
Score: 0

Accepted Answers:
16

9) What happens to the output of the sigmoid function as $|x|$ becomes very large for input x?Select all relevant operations ***1 point***

- The output approaches 0.5
- The output approaches 1.
- The output oscillates between 0 and 1.
- The output approaches 0.

No, the answer is incorrect.
Score: 0

Accepted Answers:
The output approaches 1.
The output approaches 0.

10) Consider a function $f(x) = x^3 - 3x^2 + 2$. What is the updated value of x after 2nd iteration of the gradient descent update, if the learning rate is 0.1 and the initial value of x is 4?

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 1.76,1.82

1 point