

Unit 5 - Week 4

Course outline

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Week 4

 Introduction to Machine Learning

 Linear Models for Classification

 Biological Neural Network

 Perceptron

 Perceptron Learning

 Logical XOR

 Activation Functions

 Gradient Descent

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Assignment 4

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

Due on 2019-08-28, 23:59 IST.

1) Which one of the following is linearly inseparable? 1 point

- NAND
 NOR
 Compliment of XOR
 None of the above

No, the answer is incorrect. Score: 0

Accepted Answers: Compliment of XOR

2) Perceptron's activation value is computed using 0 points

- $wx_i + b$
 $\sum_i wx_i + b$
 $\sum_i x_i + b$
 None of the above

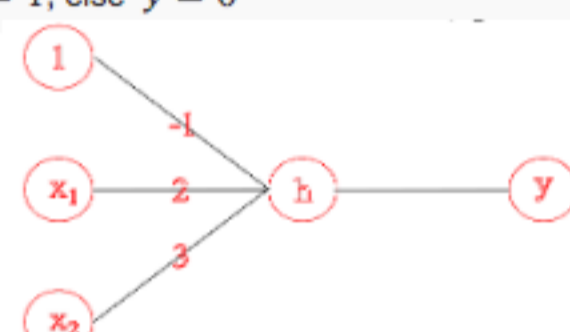
No, the answer is incorrect. Score: 0

Accepted Answers: $\sum_i wx_i + b$

3) Using the input, target and initial weights for the Perceptron (not trained yet) as given in the table and the diagram, compute the absolute value of the error 1 point

for each input set of values. Note: if $h \geq 0$, $y = 1$; else $y = 0$

x_1	x_2	target	y	error
1	2	0		
2	3	0		
0	-1	1		



- $[1 \ 0 \ 1]^T$
 $[1 \ 1 \ 1]^T$
 $[0 \ 0 \ 1]^T$
 $[0 \ 0 \ 0]^T$

No, the answer is incorrect. Score: 0

Accepted Answers: $[1 \ 1 \ 1]^T$

4) A sigmoid function squashes the values in the range of $[0 \ 1]$ 1 point

- True
 False

No, the answer is incorrect. Score: 0

Accepted Answers: True

5) Perceptron classifies data with more than 2 classes 1 point

- True
 False

No, the answer is incorrect. Score: 0

Accepted Answers: False

6) In a backpropagation network, the error became very small within two epochs. What would you check/correct? 1 point

- Change the learning parameter and start the training process again
 Use another known input (not used during the epoch) to find out if $y - \hat{y}$ is small
 Select some random input set used for training to find out whether the network has learned
 Check the initial values of the weights
 All of the above

No, the answer is incorrect. Score: 0

Accepted Answers: All of the above

7) If you are asked to identify the car reviews as positive or negative from a corpus of 1GB text, what are the tasks (includes building the neural network architecture) that you would plan to perform? 0 points

- (a) Understand the domain related keywords that describe sentiments
 (b) Preprocess to extract all words
 (c) Create a dictionary of positive and negative words
 (d) Construct one-hot vector for each sentiment word
 (e) Construct a target table (0 for negative sentiment and 1 for positive sentiment)
 (f) Corresponding to each sentiment words
 (g) Include two neurons at the output layer
 (h) Include two neurons at the hidden layer

- a,b,c,d,e,f,g -All tasks
 a,b,c,d,e
 b,c,d,e,f,g
 b,c,d,e
 None of the above

No, the answer is incorrect. Score: 0

Accepted Answers: a,b,c,d,e

8) An ANN is designed to recognize the sentiment of a sentence as positive or negative. If One-hot vector X is used as input, then the size input layer is $|X| \geq |V_s| + 2$ where V_s represents the vocabulary of sentiment words 1 point

- True
 False

No, the answer is incorrect. Score: 0

Accepted Answers: False

9) Assume that the size of vocabulary of a corpus is $|V| = 10000$. You are asked to design an ANN-based multi-class classifier. Which one of the activation functions would you use at the output layer? 1 point

functions would you use at the output layer?

- Sigmoid
 Tanh
 Softmax
 Hyperbolic Tangent function

No, the answer is incorrect. Score: 0

Accepted Answers: Softmax