

EN.605.647.83.SP21 Neural Networks

Course Modules Module 11: A Stochastic Version of Binary Associative

Memories - The Restricted Boltzmann Machine

Review Test Submission: Module 11 Online Assignment

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User	BRIAN THOMAS LOUGHRAN
Course	EN.605.647.81.SP21 Neural Networks
Test	Module 11 Online Assignment
Started	4/13/21 5:34 PM
Submitted	4/13/21 5:43 PM
Due Date	4/20/21 11:59 PM
Status	Completed
Attempt Score	3 out of 21 points
Time Elapsed	8 minutes
Instructions	Download the problem set on the other assignment link so that you can see the graphical images and the data and answer the following questions.
Results Displayed	Submitted Answers, Feedback, Incorrectly Answered Questions

Question 1

0 out of 3 points



If the initial visible vector $v = (1, 1)$, what are the probabilities that the hidden layer nodes will be 1s? For this question, indicate what that probability is for hidden node a having a state of 1. Answer to two significant decimal digits.

Selected Answer: .75

Response Feedback: Remember, the activity function value must be used in the sigmoid function.

Question 2

0 out of 3 points



What is the probability of hidden node b being a 1? Answer to at least 4 significant decimal digits.

Selected Answer: .3122

Response Feedback: You need that activity function value for node b .**Question 3**

0 out of 3 points



What is the probability for hidden node c equalling 1? Answer to 4 significant decimal digits.

Selected Answer: .6542

Response Feedback: Hmmm. You again need to be resolute and calculate the activity value for node c .

Question 4

0 out of 3 points



Use the following random numbers to determine the states of the hidden layer nodes given the probabilities you obtained in part a): 0.87, 0.14, 0.64. You will get a vector with three elements indicating the state value for the corresponding nodes, i.e., (a,b,c). What is the numeric value of those vector elements? E.g., if the vector was (1,1,1) the numeric value would be 111.

Selected Answer: 101

Response Feedback: Remember, the vector is from left to right with the values of nodes (a,b,c).

Question 5

0 out of 3 points



Given the states you obtained in part b) for the hidden layer nodes, what are the probabilities that the visible layer nodes will be 1s? For this question, what is the probability that the state for node 1 is a 1? Answer to 4 significant decimal digits.

Selected Answer: .9525

Response Feedback: Remember, you're going to need the activity function value for node 1.

Question 6

0 out of 3 points



What is the probability that node 2 will equal a 1? Answer to three significant decimal digits.

Selected Answer: 0.0474

Response Feedback: Again, remember to calculate the activity function value of node 2 based on the states you determined.

Question 7

3 out of 3 points



Use the following random numbers to determine the reconstructed states of the visible layer nodes given the probabilities you obtained in part c): 0.25, 0.72. You will get a vector corresponding to the states of nodes 1 and 2, i.e., (S_1, S_2). If this vector was just two numerals that are concatenated, what would its numeric value be? E.g, a vector (0,0) would have a numeric value of 0, while a vector (1,1) would have the numeric value of 11. Use this approach in answering this question.

Selected Answer: 10

Response Feedback: Good job!

Tuesday, April 13, 2021 5:43:06 PM EDT

← OK