Unit 3 - Week 1

Assignment 1

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

Due on 2020-02-12, 23:59 IST.

1) Which of the following is (are) application(s) of deep learning? *1 point*

- Video captioning
- Visual question answering
- Video summarization
- All of the above

No, the answer is incorrect.
Score: 0
Accepted Answers:
All of the above

2) Match the following: *1 point*

A biological neuron consists of

a. dendrite	I. Transmits the output of this neuron
b. Synapse	II. Receive signal from other neurons
c. Soma	III. Point of connection to other neurons
d. Axon	IV. Process the information

- a-II, b- III, c-IV, d-I
- a-I, b-III, c-II, d-IV
- a-IV, b-III, c-II, d-I
- a-I, b-II, c-III, d-IV

No, the answer is incorrect.
Score: 0
Accepted Answers:
a-II, b- III, c-IV, d-I

3) Deep learning works well despite of _____ problem(s). *1 point*

- High capacity (Susceptible to overfitting)
- Numerical instability (vanishing/exploding gradient)
- Sharp minima
- All of the above

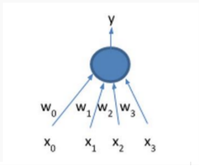
No, the answer is incorrect.
Score: 0
Accepted Answers:
All of the above

4) An average human brain has around _____ neurons *1 point*

- 10^2
- 10^{11}
- 10^{10}
- None of the above

No, the answer is incorrect.
Score: 0
Accepted Answers:
10^{11}

5) Suppose you want to predict employee retention in the company. The description of each input x i is given in Figure 1 also the weight assigned to each of these inputs is given by
W=[w_1,w_2,w_3] and the threshold is represented by the parameter θ. *1 point*



x_1: Job satisfaction level (1 to 10)
x_2: Years_Spent_in_LastCompany (boolean) 0–less than or equal to 5 years and 1- more than 5 years)
x_3: Current_Salary(High, low)

Now, consider the feature vector X= [8 1 1]; which means employee who has joined company has more than 5 years of experience in the last company and also offered high salary in the current company, also employee's level of job satisfaction is 8. Now consider HR who assigns the following weights to each of these inputs: W= [0.3 1 0.6]. Further suppose that θ=1. Based on above information, what do you think will be employee's retention rate in the company?

- Yes
- No

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

6) Which of the following Boolean function is not linearly separable? *1 point*

- AND
- OR
- NOT
- XOR

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

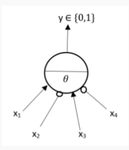
7) Which of the following points are TRUE for McCulloch Pitts (MP) Neuron Model and Perceptron Model? *1 point*

i. Inputs are not weighted in MP neurons
ii. Perceptron model can take weights with respective to inputs provided.
iii. MP neuron model process real inputs as well
iv. Perceptron model process real inputs as well

- i, ii
- i, ii, iii
- i, ii, iv
- i, ii, iii, iv

No, the answer is incorrect.
Score: 0
Accepted Answers:
i, ii, iv

8) Recall that McCulloch Pitts (MP) neuron aggregates the inputs and takes a decision based on this aggregation. If the sum of all inputs is greater than the threshold (θ), then the output of MP neuron is 1, otherwise the output is 0. We say that a MP neuron implements a Boolean function if the output of the MP neuron is consistent with the truth table of the Boolean function. In other words, if for a given input configuration, the Boolean function outputs 1 then the output of the neuron should also be 1. Similarly, if for a given input configuration, the Boolean function outputs 0 then the output of the neuron should also be 0.
Consider the following Boolean function:
(x 1 AND (x 2) AND (x 3 AND !x 4)
The MP neuron for the above Boolean function is as follows: *1 point*



- θ = 1
- θ = 2
- θ = 3
- θ = 4

No, the answer is incorrect.
Score: 0
Accepted Answers:
θ = 2

9) Which of the following statements is true for the Perceptron Learning Algorithm? *1 point*

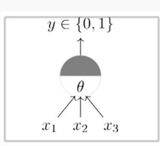
Statement I: Threshold needs to be hand coded

Statement II: Threshold can be learnt

- I & II
- I
- II
- None of the statements

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

10) Consider the following McCulloch Pitts unit in Figure 2. Identify the Boolean function for which the Neuron fires only if θ = 3. *1 point*



- AND
- OR
- NOR
- XOR

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