테스트테스트 • 20 min20 minutes

Shallow Neural Networks

과제 제출
기한년 8월 30일 오후 3:59 KST년 8월 30일 오후 3:59 KST
시도하기8 hours당 3회
다시 시도해주십시오

성적 받기
통과 점수:80% 이상
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피드백 보기
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탐색 확인

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이 페이지에 머물기 이 페이지에서 나가기

Shallow Neural Networks
성적 평가 퀴즈 • 20 min

만료 년 8월 30일 오후 3:59 KST

축하합니다! 통과하셨습니다!
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학습 계속하기

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Shallow Neural Networks

최신 제출물 성적
100%
1.
질문 1

Which of the following are true? (Check all that apply.)

1 / 1점

$a^{[2](12)}$a[2](12) denotes the activation vector of the 2^{nd}2nd layer for the 12^{th}12th training example.

맞습니다

$a^{[2](12)}$a[2](12) denotes activation vector of the 12^{th}12th layer on the 2^{nd}2nd training example.

$a^{[2]}_4$a4[2] is the activation output of the 2^{nd}2nd layer for the 4^{th}4th training example

XX is a matrix in which each column is one training example.

맞습니다

XX is a matrix in which each row is one training example.

$a^{[2]}_4$a4[2] is the activation output by the 4^{th}4th neuron of the 2^{nd}2nd layer

맞습니다

$a^{[2]}$a[2] denotes the activation vector of the 2^{nd}2nd layer.

맞습니다
2.
질문 2

The tanh activation is not always better than sigmoid activation function for hidden units because the mean of its output is closer to zero, and so it centers the data, making learning complex for the next layer. True/False?

1 / 1점

False

True

맞습니다

Yes. As seen in lecture the output of the tanh is between -1 and 1, it thus centers the data which makes the learning simpler for the next layer.

3.
질문 3

Which of these is a correct vectorized implementation of forward propagation for layer ll, where $1 \leq l \leq L$1 ≤ l ≤ L?

1 / 1점

- $Z^{[l]} = W^{[l]}A^{[l]} + b^{[l]}$Z[l] = W[l]A[l] + b[l]
- $A^{[l+1]} = g^{[l+1]}(Z^{[l]})$A[l+1] = g[l+1](Z[l])

- $Z^{[l]} = W^{[l-1]}A^{[l]} + b^{[l-1]}$Z[l] = W[l−1]A[l] + b[l−1]
- $A^{[l]} = g^{[l]}(Z^{[l]})$A[l] = g[l](Z[l])

- $Z^{[l]} = W^{[l]}A^{[l-1]} + b^{[l]}$Z[l] = W[l]A[l−1] + b[l]
- $A^{[l]} = g^{[l]}(Z^{[l]})$A[l] = g[l](Z[l])

- $Z^{[l]} = W^{[l]}A^{[l]} + b^{[l]}$Z[l] = W[l]A[l] + b[l]
- $A^{[l+1]} = g^{[l]}(Z^{[l]})$A[l+1] = g[l](Z[l])

맞습니다
4.
질문 4

You are building a binary classifier for recognizing cucumbers (y=1) vs. watermelons (y=0). Which one of these activation functions would you recommend using for the output layer?

1 / 1점

tanh

sigmoid

ReLU

Leaky ReLU

맞습니다

Yes. Sigmoid outputs a value between 0 and 1 which makes it a very good choice for binary classification. You can classify as 0 if the output is less than 0.5 and classify as 1 if the output is more than 0.5. It can be done with tanh as well but it is less convenient as the output is between -1 and 1.

5.
질문 5

Consider the following code:

```
A = np.random.randn(4,3)B = np.sum(A, axis = 1, keepdims = True)
```

What will be B.shape? (If you're not sure, feel free to run this in python to find out).

1 / 1점

(, 3)

(4, 1)

(1, 3)

(4,)

맞습니다

Yes, we use (keepdims = True) to make sure that A.shape is (4,1) and not (4,). It makes our code more robust.

6.
질문 6

Suppose you have built a neural network. You decide to initialize the weights and biases to be zero. Which of the following statements is true?

1 / 1점

Each neuron in the first hidden layer will compute the same thing, but neurons in different layers will compute different things, thus we have accomplished "symmetry breaking" as described in lecture.

Each neuron in the first hidden layer will perform the same computation. So even after multiple iterations of gradient descent each neuron in the layer will be computing the same thing as other neurons.

Each neuron in the first hidden layer will perform the same computation in the first iteration. But after one iteration of gradient descent they will learn to compute different things because we have "broken symmetry".

The first hidden layer's neurons will perform different computations from each other even in the first iteration; their parameters will thus keep evolving in their own way.

맞습니다

7.
질문 7

Logistic regression's weights w should be initialized randomly rather than to all zeros, because if you initialize to all zeros, then logistic regression will fail to learn a useful decision boundary because it will fail to "break symmetry", True/False?

1 / 1점

True

False

맞습니다

Yes, Logistic Regression doesn't have a hidden layer. If you initialize the weights to zeros, the first example x fed in the logistic regression will output zero but the derivatives of the Logistic Regression depend on the input x (because there's no hidden layer) which is not zero. So at the second iteration, the weights values follow x's distribution and are different from each other if x is not a constant vector.

8.
질문 8

You have built a network using the tanh activation for all the hidden units. You initialize the weights to relative large values, using np.random.randn(..,..)*1000. What will happen?

1 / 1점

This will cause the inputs of the tanh to also be very large, causing the units to be "highly activated" and thus speed up learning compared to if the weights had to start from small values.

It doesn't matter. So long as you initialize the weights randomly gradient descent is not affected by whether the weights are large or small.

This will cause the inputs of the tanh to also be very large, thus causing gradients to also become large. You therefore have to set αα to be very small to prevent divergence; this will slow down learning.

This will cause the inputs of the tanh to also be very large, thus causing gradients to be close to zero. The optimization algorithm will thus become slow.

맞습니다

Yes. tanh becomes flat for large values, this leads its gradient to be close to zero. This slows down the optimization algorithm.

9.
질문 9

Consider the following 1 hidden layer neural network:

Which of the following statements are True? (Check all that apply).

1 / 1점

$W^{[1]}$W[1] will have shape (4, 2)

맞습니다

$b^{[1]}$b[1] will have shape (2, 1)

$b^{[2]}$b[2] will have shape (1, 1)

맞습니다

$W^{[2]}$W[2] will have shape (1, 4)

맞습니다

$W^{[1]}$W[1] will have shape (2, 4)

$W^{[2]}$W[2] will have shape (4, 1)

☑ ☐

$b^{[1]}$b[1] will have shape (4, 1)

✓
맞습니다

☐ ☐

$b^{[2]}$b[2] will have shape (4, 1)

10.
질문 10

In the same network as the previous question, what are the dimensions of $Z^{[1]}$Z[1] and $A^{[1]}$A[1]?

1 / 1점

◉ ○

$Z^{[1]}$Z[1] and $A^{[1]}$A[1] are (4,m)

○ ○

$Z^{[1]}$Z[1] and $A^{[1]}$A[1] are (1,4)

○ ○

$Z^{[1]}$Z[1] and $A^{[1]}$A[1] are (4,1)

○ ○

$Z^{[1]}$Z[1] and $A^{[1]}$A[1] are (4,2)

✓
맞습니다