Practical aspects of Deep Learning

Quiz20 minutes • 20 min

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Practical aspects of Deep Learning

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1.

Question 1
If you have 10,000 examples, how would you split the train/dev/test set? Choose the best option.
1 / 1 point

33% train. 33% dev. 33% test.

60% train. 20% dev. 20% test.

98% train. 1% dev. 1% test.

Correct
Yes. This might be considered a small data set, not in the range of big data. Thus a more classical (old) best practice should be used.

2.

Question 2
When designing a neural network to detect if a house cat is present in the picture, 500,000 pictures of cats were taken by their owners. **These are used to make the training, dev and test sets.** It is decided that

to increase the size of the test set, 10,000 new images of cats taken from security cameras are going to be used in the test set. Which of the following is true?

1 / 1 point

This will reduce the bias of the model and help improve it.

This will increase the bias of the model so the new images shouldn't be used.

This will be harmful to the project since now dev and test sets have different distributions.

Correct

Yes. The quality and type of images are quite different thus we can't consider that the dev and the test sets came from the same distribution.

3.

Question 3

A model developed for a project is presenting high bias. One of the sponsors of the project offers some resources that might help reduce the bias. Which of the following additional resources has a better chance to help reduce the bias?

1 / 1 point

Gather more data for the project.

Give access to more computational resources like GPUs.

Use different sources to gather data and better test the model.

Correct

Yes. This can allow the developers to try bigger networks, train for more cycles, and test different architectures.

4.

Question 4

You are working on an automated check-out kiosk for a supermarket, and are building a classifier for apples, bananas and oranges. Suppose your classifier obtains a training set error of 0.5%, and a dev set error of 7%. Which of the following are promising things to try to improve your classifier? (Check all that apply.)

1 / 1 point

Increase the regularization parameter lambda

Correct

Decrease the regularization parameter lambda

Get more training data

Correct

Use a bigger neural network

5.

Question 5

In every case it is a good practice to use dropout when training a deep neural network because it can help to prevent overfitting. True/False?

1 / 1 point

- (•) False
- ( ) True

Correct

Correct. In most cases, it is recommended to not use dropout if there is no overfit. Although in computer vision, due to the nature of the data, it is the default practice.

6.

Question 6

To reduce high variance, the regularization hyperparameter lambda must be increased. True/False?

1 / 1 point

- (•) True
- ( ) False

Correct

Correct. By increasing the regularization parameter the magnitude of the weight parameters is reduced. This helps reduce the variance.

7.

Question 7

Which of the following are true about dropout?

1 / 1 point

- [ ] In practice, it eliminates units of each layer with a probability of keep_prob.
- [x] In practice, it eliminates units of each layer with a probability of 1- keep_prob.

Correct

Correct. The probability that dropout doesn't eliminate a neuron is keep_prob.

- [ ] It helps to reduce the bias of a model.
- [x] It helps to reduce overfitting.

Correct

Correct. The dropout is a regularization technique and thus helps to reduce the overfit.

8.

Question 8

Decreasing the parameter keep_prob from (say) 0.6 to 0.4 will likely cause the following:

1 / 1 point

- (•) Increasing the regularization effect.
- ( ) Reducing the regularization effect.

Causing the neural network to have a higher variance.

Correct

Correct. This will make the dropout have a higher probability of eliminating a node in the neural network, increasing the regularization effect.

9.

Question 9

Which of the following actions increase the regularization of a model? (Check all that apply)

0.6 / 1 point

☑ Increase the value of the hyperparameter lambda.

Correct

Correct. When increasing the hyperparameter lambda, we increase the effect of the L_2 penalization.

☐ Decrease the value of keep_prob in dropout.

☑ Use Xavier initialization.

This should not be selected

Incorrect. Xavier doesn't have any effect on reducing the variance of the model, thus it's not a regularization technique.

☐ Increase the value of keep_prob in dropout.

☐ Decrease the value of the hyperparameter lambda.

10.

Question 10

Why do we normalize the inputs x?

0 / 1 point

◉ Normalization is another word for regularization--It helps to reduce variance

○ It makes the parameter initialization faster

○ It makes it easier to visualize the data

○ It makes the cost function faster to optimize

Incorrect