Congratulations! You passed!

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1. If you have 20,000,000 examples, how would you split the train/dev/test set? Choose the best option. **1 / 1 point**

- ○ 60% train. 20% dev. 20% test.
- ○ 90% train. 5% dev. 5% test.
- ◉ 99% train. 0.5% dev. 0.5% test.

Expand

Correct
Yes. Given the size of the dataset, 0.5% of the samples are enough to get a good estimate of how well the model is doing.

2. In a personal experiment, an M.L. student decides to not use a test set, only train-dev sets. In this case which of the following is true? **1 / 1 point**

- ◉ He might be overfitting to the dev set.
- ○ He won't be able to measure the bias of the model.
- ○ He won't be able to measure the variance of the model.
- ○ Not having a test set is unacceptable under any circumstance.

Expand

Correct
Yes. Although not recommended, if a more accurate measure of the performance is not necessary it is ok to not use a test set. However, this might cause an overfit to the dev set.

3. If your Neural Network model seems to have high bias, what of the following would be promising things to try? (Check all that apply.) **1 / 1 point**

- ☐ Add regularization
- ☑ Make the Neural Network deeper

Correct

- ☐ Get more training data
- ☑ Increase the number of units in each hidden layer

Correct

Expand

Correct
Great, you got all the right answers.

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 19% and a dev set error of 21%. Which of the following are promising things to try to improve your classifier? (Check all that apply, suppose the human error is approximately 0%) 1 / 1 point

- (•) Use a bigger network.
- ( ) Increase the regularization parameter lambda.
- ( ) Get more training data.

Expand

Correct
Yes. This can be helpful to reduce the bias of the model, and then we can start trying to reduce the high variance if this happens.

5. Which of the following are regularization techniques? 1 / 1 point

- [ ] Increase the number of layers of the network.
- [x] Dropout.

Correct
Correct. Using dropout layers is a regularization technique.

- [ ] Gradient Checking.
- [x] Weight decay.

Correct
Correct. Weight decay is a form of regularization.

Expand

Correct
Great, you got all the right answers.

6. To reduce high variance, the regularization hyperparameter lambda must be increased. True/False? 1 / 1 point

- ( ) False
- (•) True

Expand

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

7. Which of the following are true about dropout? 1 / 1 point

- [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.
- [ ] In practice, it eliminates units of each layer with a probability of keep_prob.
- [x] It helps to reduce overfitting.

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

Expand

Correct
Great, you got all the right answers.

8. Increasing the parameter keep_prob from (say) 0.5 to 0.6 will likely cause the following: (Check the two that apply) 1 / 1 point

- [ ] Increasing the regularization effect
- [x] Reducing the regularization effect

  Correct

- [ ] Causing the neural network to end up with a higher training set error
- [x] Causing the neural network to end up with a lower training set error

  Correct

Expand

Correct
Great, you got all the right answers.

9. Which of the following actions increase the regularization of a model? (Check all that apply) 1 / 1 point

- [ ] Normalizing the data.
- [ ] Decrease the value of the hyperparameter lambda.

- [x] Make use of data augmentation.

Correct
Correct. Data augmentation has a way to generate "new" data at a relatively low cost. Thus making use of data augmentation can reduce the variance.

- [ ] Increase the value of keep_prob in dropout.

- [x] Increase the value of the hyperparameter lambda.

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

Expand

Correct
Great, you got all the right answers.

10. Which of the following is the correct expression to normalize the input $\mathbf{x}$?

1 / 1 point

- $x = \frac{x}{\sigma}$
- $x = \frac{x - \mu}{\sigma}$
- $x = \frac{1}{m}\sum_{i=1}^{m} x^{(i)}$
- $1 \sum^{m}$

Expand

Correct
Correct. This shifts the mean of the input to the origin and makes the variance one in each coordinate of the input examples.