Practical aspects of deep learning

Quiz, 10 questions

1. If you have 10,000,000 examples, how would you split the train/dev/test set?

- [ ] 60% train . 20% dev . 20% test
- [ ] 33% train . 33% dev . 33% test
- [x] 98% train . 1% dev . 1% test

Correct

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2. The dev and test set should:

- [x] Come from the same distribution

Correct

- [ ] Come from different distributions
- [ ] Be identical to each other (same (x,y) pairs)
- [ ] **Have the same number of examples**

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.)

- [ ] Get more training data

Un-selected is correct

- [ ] Get more test data

Un-selected is correct

- [ ] Add regularization

Un-selected is correct

- [x] Increase the number of units in each hidden layer

Correct

- [x] Make the Neural Network deeper

Correct

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.)

- [x] Increase the regularization parameter lambda

Correct

- [ ] Decrease the regularization parameter lambda

Un-selected is correct

- [x] Get more training data

Correct

- [ ] Use a bigger neural network

Un-selected is correct

5. What is weight decay?

- ( ) Gradual corruption of the weights in the neural network if it is trained on noisy data.
- ( ) The process of gradually decreasing the learning rate during training.
- ( ) A technique to avoid vanishing gradient by imposing a ceiling on the values of the weights.
- (•) A regularization technique (such as L2 regularization) that results in gradient descent shrinking the weights on every iteration.

Correct

6. What happens when you increase the regularization hyperparameter lambda?

- [x] Weights are pushed toward becoming smaller (closer to 0)

Correct

- [ ] Weights are pushed toward becoming bigger (further from 0)
- [ ] Doubling lambda should roughly result in doubling the weights
- [ ] Gradient descent taking bigger steps with each iteration (proportional to lambda)

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7. With the inverted dropout technique, at test time:

- [ ] You apply dropout (randomly eliminating units) and do not keep the 1/keep_prob factor in the calculations used in training
- [x] You do not apply dropout (do not randomly eliminate units) and do not keep the 1/keep_prob factor in the calculations used in training

Correct

- [ ] You do not apply dropout (do not randomly eliminate units), but keep the 1/keep_prob factor in the calculations used in training.
- [ ] You apply dropout (randomly eliminating units) but keep the 1/keep_prob factor in the calculations used in training.

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

- [ ] Increasing the regularization effect

Un-selected is correct

- [x] Reducing the regularization effect

Correct

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

Un-selected is correct

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

Correct

9. Which of these techniques are useful for reducing variance (reducing overfitting)? (Check all that apply.)

- [ ] Xavier initialization

Un-selected is correct

- [x] Data augmentation

Correct

- [x] L2 regularization

Correct

- [ ] Exploding gradient

Un-selected is correct

- [ ] Gradient Checking

Un-selected is correct

- [ ] Vanishing gradient

Un-selected is correct

- [x] Dropout

Correct

10. Why do we normalize the inputs x?

- It makes the parameter initialization faster
- It makes the cost function faster to optimize

Correct

- Normalization is another word for regularization--It helps to reduce variance
- It makes it easier to visualize the data