

11-485/11-685/11-785
Introduction to Deep Learning
Lab - 2 MCQs

January 27, 2024

The following are questions that will help you become more proficient at debugging and performing ablations in homework P2s. Some of them can have multiple correct options. Try to solve them on your own first without looking at the answers!

1. The training loss is nan. What hyperparameter adjustment might help stabilize the training?
 - (a) Increase learning rate
 - (b) Decrease learning rate
 - (c) Increase dropout rate
 - (d) Try changing optimizer

Ans:

2. The model is training too slowly. What hyperparameter adjustment can help speed up the training process?
 - (a) Increase batch size
 - (b) Decrease learning rate
 - (c) Remove dropout layers
 - (d) Use a larger model architecture

Ans:

3. During training, the model's performance improves initially but starts to degrade later. Which hyperparameter might need adjustment?
 - (a) Learning rate scheduler
 - (b) Dropout rate

- (c) Batch size
- (d) Weight initialization

Ans:

4. During training, you notice sudden spikes in the loss function. What hyperparameter should you investigate to address these spikes?
- (a) Learning rate
 - (b) Batch size
 - (c) Dropout rate
 - (d) Weight decay

Ans:

5. You notice that both your training and validation loss stops decreasing despite being fairly high (underfitting), what adjustment might help?
- (a) Increase the learning rate
 - (b) Increase regularization
 - (c) Increase model complexity
 - (d) Decrease batch size

Ans:

6. When working with a deep neural network, and the network experiences unstable training from vanishing/exploding gradients, what could help?
- (a) Increase the learning rate
 - (b) Implement batch normalization layers
 - (c) Decrease the dropout rate
 - (d) Use a simpler learning rate scheduler

Ans:

7. Why should one consider lowering the learning rate over time using a scheduler?

- (a) To increase the training speed
- (b) To avoid overshooting the minimum loss
- (c) To prevent model from overfitting
- (d) To reduce the computational load

Ans:

8. During training, you see that your model's performance deteriorates rapidly after an initial phase of improvement. The deterioration coincides with a sharp drop in learning rate. What scheduler adjustment is most likely to help?
- (a) To increase the training speed
 - (b) To avoid overshooting the minimum loss
 - (c) To prevent model from overfitting
 - (d) To reduce the computational load

Ans:

9. You observe that from the beginning of training, your model's train loss quickly diverges. What could this mean about your learning rate?
- (a) Initial LR is too high
 - (b) Initial LR is too low
 - (c) It is optimally set
 - (d) It is irrelevant to the observed issue

Ans:

10. What strategy can help prevent a model from getting stuck in local minima during training?
- (a) Using a smaller model architecture
 - (b) Implementing a momentum optimizer
 - (c) Decreasing the learning rate
 - (d) Reducing the dropout rate

Ans:

11. When a model has high training accuracy but low validation accuracy, which hyperparameter should be adjusted to reduce overfitting?
- (a) Increase the learning rate
 - (b) Decrease the batch size
 - (c) Implement more dropout layers
 - (d) Increase the number of training epochs

Ans:

12. How can you improve a model's ability to generalize from the training data to unseen data?
- (a) Increase the batch size
 - (b) Decrease the learning rate
 - (c) Implement data augmentation
 - (d) Decrease the model complexity

Ans:

13. What technique can help in reducing the effect of noisy data on the model's performance?
- (a) Decreasing the model complexity
 - (b) Implementing weight regularization
 - (c) Increasing the dropout rate
 - (d) Using a smaller batch size

Ans:

14. What approach can help in dealing with the "exploding gradients" problem in deep learning models?
- (a) Implementing dropout layers

- (b) Using batch normalization
- (c) Applying gradient clipping
- (d) Decreasing the learning rate

Ans:

Answers

1. b, d
2. a
3. a
4. a
5. c
6. b
7. b
8. a
9. a
10. b
11. c
12. c
13. b
14. c