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# Week 7: Assignment 7

**The due date for submitting this assignment has passed.**

**Due on 2022-09-14, 23:59 IST.**

## Assignment submitted on 2022-09-14, 23:36 IST

1) Bias enables shifting the activation function by adding a constant to the input. How is it related to model complexity? Select all that apply. ***1 point***

- [x] Complex model has a low bias
- [ ] Simple model has a low bias
- [ ] Complex model has a high bias
- [x] Simple model has a high bias

Yes, the answer is correct.
Score: 1

Accepted Answers:
*Complex model has a low bias*
*Simple model has a high bias*

2) What are the preferred values for Bias and Variance to yield a low Mean Squared Error? ***1 point***

- ( ) Low bias and high variance
- ( ) Low variance and high bias
- ( ) Low bias and low variance
- (•) Optimal value for both bias and variance

Yes, the answer is correct.
Score: 1

Accepted Answers:

**Week 11 ()**

**Week 12 ()**

**Download Videos ()**

**Books ()**

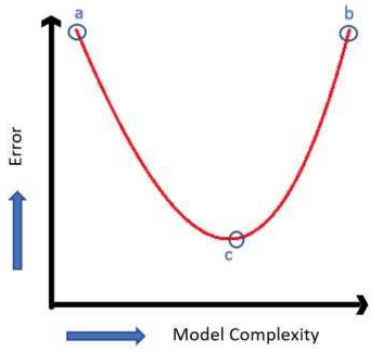
**Text Transcripts ()**

**Live Sessions ()**

**Problem Solving Session ()**

*Optimal value for both bias and variance*

3) Given the relation between Validation Error and Model complexity for a Deep Neural Network to classify dogs and cats, Which of the points correspond to underfitting? ***1 point***




- (●) a
- ( ) b
- ( ) c
- ( ) both a and b

Yes, the answer is correct.
Score: 1

Accepted Answers:
*a*

4) Consider the Deep Neural Network as described in Question 3, Which of the following instances marked on graph marks the preferred optimal complexity? ***1 point***

- ( ) a
- ( ) b
- (●) c
- ( ) both a and b

Yes, the answer is correct.
Score: 1

Accepted Answers:
*c*

5) Which of the following statements are True? ***1 point***

**Statement I**. Training a model to drive the training error to zero ensures high model performance.
**Statement II.** Tuning for Validation error ensures that the model does not overfit

- ( ) Only I
- (●) Only II
- ( ) Both I and II
- ( ) None

Yes, the answer is correct.
Score: 1

Accepted Answers:
*Only II*

6) Pick out the strategies to prevent overfitting. ***1 point***

- [x] Reduce the number of hidden layers
- [ ] Decrease the number of samples
- [x] Switch off some of the neurons in the neural network
- [ ] Increase the number of hidden layers

Yes, the answer is correct.
Score: 1
Accepted Answers:
*Reduce the number of hidden layers*
*Switch off some of the neurons in the neural network*

7) Which of the following is CORRECT for Bagging? ***1 point***

- [x] Combines predictions from different neural network models on same data
- [ ] Used to reduce variance within the dataset
- [ ] Leads to Overfitting
- [x] Ensemble on models trained on same classifier using different instances

No, the answer is incorrect.
Score: 0
Accepted Answers:
*Used to reduce variance within the dataset*
*Ensemble on models trained on same classifier using different instances*

8) Suppose there are 20 nodes in a Deep Neural network and we implement Dropout by removing few nodes to obtain a thinned network. What is total number of such thinned networks that can be formed? ***1 point***

- $20$
- $2^{20}$
- $20^2$
- $2^{2^{20}}$

Yes, the answer is correct.
Score: 1
Accepted Answers:
$2^{20}$

9) Identify the need for regularization. Select all that apply. ***1 point***

- [x] Deep Neural networks are complex
- [x] Involves non-linearities
- [x] High possibility of overfitting
- [x] Involves many Parameters

Yes, the answer is correct.
Score: 1

Accepted Answers:
*Deep Neural networks are complex*
*Involves non-linearities*
*High possibility of overfitting*
*Involves many Parameters*

10) You are training a neural network model using Early stopping technique.Given that the patience parameter is 2, When will you stop training? ***1 point***

| Epochs | Training loss | Validation loss |
|---|---|---|
| 1 | 3.4 | 2.0 |
| 2 | 2.0 | 1.9 |
| 3 | 1.9 | 1.8 |
| 4 | 1.8 | 1.8 |
| 5 | 1.7 | 1.9 |
| 6 | 1.6 | 2.1 |

- 3
- 4
- 5
- 6

No, the answer is incorrect.
Score: 0

Accepted Answers:
*5*