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Assignment 6

The due date for submitting this assignment has passed.

Due on 2021-03-03, 23:59 IST.

Assignment submitted on 2021-03-03, 16:21 IST

1) In an autoencoder, if the dim (h) < dim (x_i) and if we can reconstruct $\hat{x}_i$perfectly from 'h' then which of the following is false. ***1 point***

- h is loss-free encoding of x_i
- It captures only a few characteristics of x_i
- This type of encoder is known as under complete auto encoder
- None of the above

Yes, the answer is correct.
Score: 1

Accepted Answers:
It captures only a few characteristics of x_i

2) In an over complete autoencoder, the dimension of the hidden layer is greater than or equal to the dimension of the input layer. ***1 point***

- True
- False

Yes, the answer is correct.
Score: 1

Accepted Answers:
True

3) When using an autoencoder with binary inputs, which decoder function can be used? ***1 point***

- Hyperbolic tangent function
- Logistic function
- Linear function
- None of these

Yes, the answer is correct.
Score: 1
Accepted Answers:
Logistic function

4) Which decoder function is used in an autoencoder which works on real inputs? ***1 point***

- Hyperbolic tangent function
- Logistic function
- Linear function
- None of these

Yes, the answer is correct.
Score: 1
Accepted Answers:
Linear function

5) In an autoencoder with binary inputs, both squared error loss and cross-entropy loss functions can be used, however, cross-entropy is preferred over squared error because of the probabilistic representation of the output values. ***1 point***

- True
- False

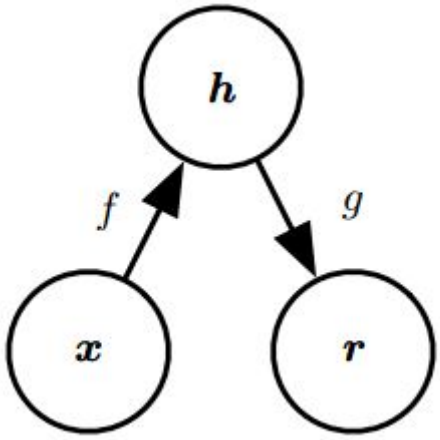
Yes, the answer is correct.
Score: 1
Accepted Answers:
True

6) An autoencoder is equivalent to Principal Component Analysis under which of the following conditions? ***1 point***

- Linear encoder is used.
- Linear decoder is used.
- Squared error loss function is used.
- All of these.

Yes, the answer is correct.
Score: 1
Accepted Answers:
All of these.

7) Consider an autoencoder as shown below. ***1 point***



Where, ‘x’ is the input, ‘r’ is the reconstruction output and ‘h’ is the internal representation. Which of the following is true?

- ‘f’ is the encoder and ‘g’ is the decoder.
- ‘f’ is the decoder and ‘g’ is the encoder.
- Both ‘f’ and ‘g’ are encoder functions.
- Both ‘f’ and ‘g’ are decoder functions.

Yes, the answer is correct.
Score: 1

Accepted Answers:
‘f’ is the encoder and ‘g’ is the decoder.

8) The problem of poor generalization can happen in _____ ***1 point***

- Under complete autoencoders
- Over complete autoencoders
- Both under and over complete autoencoders
- Autoencoder does not suffer from poor generalization

Yes, the answer is correct.
Score: 1

Accepted Answers:
Both under and over complete autoencoders

9) S_1 and S_2 are two statements related to Regularization. Choose the correct answer: ***1 point***

S_1: Regularization works on the assumption that smaller weights generate simpler models and hence helps avoid overfitting.

S_2: It is a technique to discourage the complexity of the model. It does this by penalizing the loss function.

- S_1 is true and S_2 is false.
- S_1 is false and S_2 is true.
- Both S_1 and S_2 are true.
- Both S_1 and S_2 are false.

Yes, the answer is correct.
Score: 1

Accepted Answers:
Both S_1 and S_2 are true.

10) L2 regularization is not robust to outliers because square terms blow up the error differences of the outliers and the regularization term tries to fix it by penalizing the weights. ***1 point***

- (selected) True
- False

Yes, the answer is correct.
Score: 1

Accepted Answers:
True