X

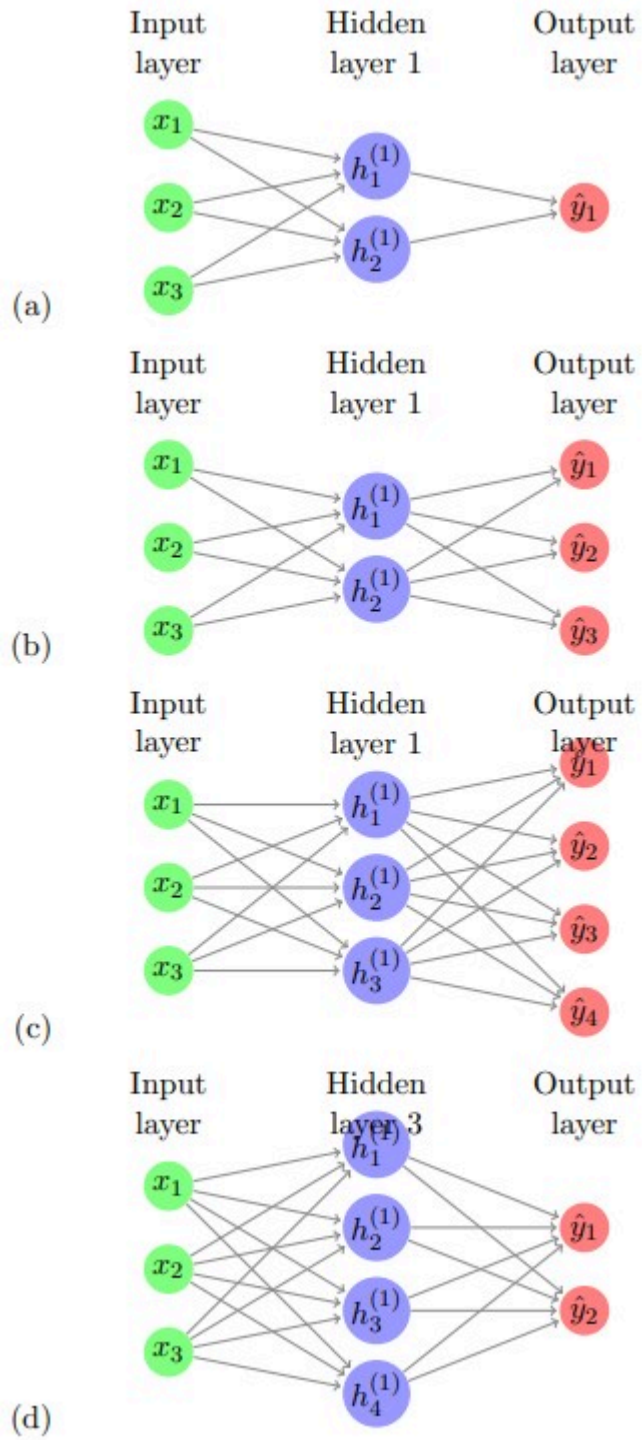
Week 6 : Assignment 6

The due date for submitting this assignment has passed.

Due on 2024-09-04, 23:59 IST.

Assignment submitted on 2024-09-03, 20:45 IST

1) Which of the following networks represents an autoencoder? ***1 point***



- a
- b
- c
- d

Yes, the answer is correct.
Score: 1

Accepted Answers:
b

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2) Suppose we build a neural network for a 5-class classification task. Suppose for a single training example, the true label is [0 1 0 0 1] while the predictions by the neural network are [0.25 0.3 0.2 0.1 0.2]. What would be the value of cross-entropy loss for this example? (Answer up to two decimal places, Use base 2 for log-related calculations)

0.01

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 4.0,4.1

1 point

3) If an under-complete autoencoder has an input layer with a dimension of 7, what could be the possible dimension of the hidden layer? ***1 point***

- [ ] 6
- [ ] 8
- [x] 0
- [ ] 7
- [x] 2

No, the answer is incorrect.
Score: 0

Accepted Answers:
6
2

4) Which of the following statements about overfitting in overcomplete autoencoders is true? ***1 point***

- [ ] Reconstruction error is very low while training
- [x] Reconstruction error is very high while training
- [ ] Network fails to learn good representations of input
- [x] Network learns good representations of input

No, the answer is incorrect.
Score: 0

Accepted Answers:
Reconstruction error is very low while training
Network fails to learn good representations of input

5) We are given an autoencoder A. The average activation value of neurons in this network is 0.06. The given autoencoder is: ***1 point***

- ( ) Contractive autoencoder
- ( ) Overcomplete neural network
- (•) Sparse autoencoder
- ( ) Denoising autoencoder

Yes, the answer is correct.
Score: 1

Accepted Answers:
Sparse autoencoder

6) If the dimension of the input layer in an over-complete autoencoder is 5, what is the possible dimension of the hidden layer? ***1 point***

- 4
- 2
- 8
- 0

Yes, the answer is correct.
Score: 1

Accepted Answers:
8

7) What are the possible applications of autoencoders? ***0 points***

- Data Compression
- Extraction of important features
- Reducing noise
- All of these

Yes, the answer is correct.
Score: 0

Accepted Answers:
All of these

8) Which of the following problems prevents us from using autoencoders for the task of Image compression? ***1 point***

- Images are not allowed as input to autoencoders
- Difficulty in training deep neural networks
- Loss of image quality due to compression
- Auto encoders are not capable of producing image output

Yes, the answer is correct.
Score: 1

Accepted Answers:
Loss of image quality due to compression

9) Which of the following is a potential disadvantage of using autoencoders for dimensionality reduction over PCA? ***1 point***

- Autoencoders are computationally expensive and may require more training data than PCA.
- Autoencoders are bad at capturing complex relationships in data
- Autoencoders may overfit the training data and generalize poorly to new data.
- Autoencoders are unable to handle linear relationships between data.

Yes, the answer is correct.
Score: 1

Accepted Answers:
Autoencoders are computationally expensive and may require more training data than PCA.
Autoencoders may overfit the training data and generalize poorly to new data.

10) If the dimension of the hidden layer representation is more than the dimension of the input layer, then what kind of autoencoder do we have? ***1 point***

- (•) Complete autoencoder
- ( ) Under-complete autoencoder
- ( ) Overcomplete autoencoder
- ( ) Sparse autoencoder

No, the answer is incorrect.
Score: 0

Accepted Answers:
Overcomplete autoencoder