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NPTEL (https://swayam.gov.in/explorer?ncCode=NPTEL) » Deep Learning - IIT Ropar (course)

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Course outline

About NPTEL ()

How does an NPTEL online course work? ()

Week 1 ()

Week 2 ()

Week 3 ()

week 4 ()

Week 5 ()

Week 6 ()

○ Introduction to Autoncoders (unit? unit=83&lesson=84)

○ Link between PCA and Autoencoders (unit?
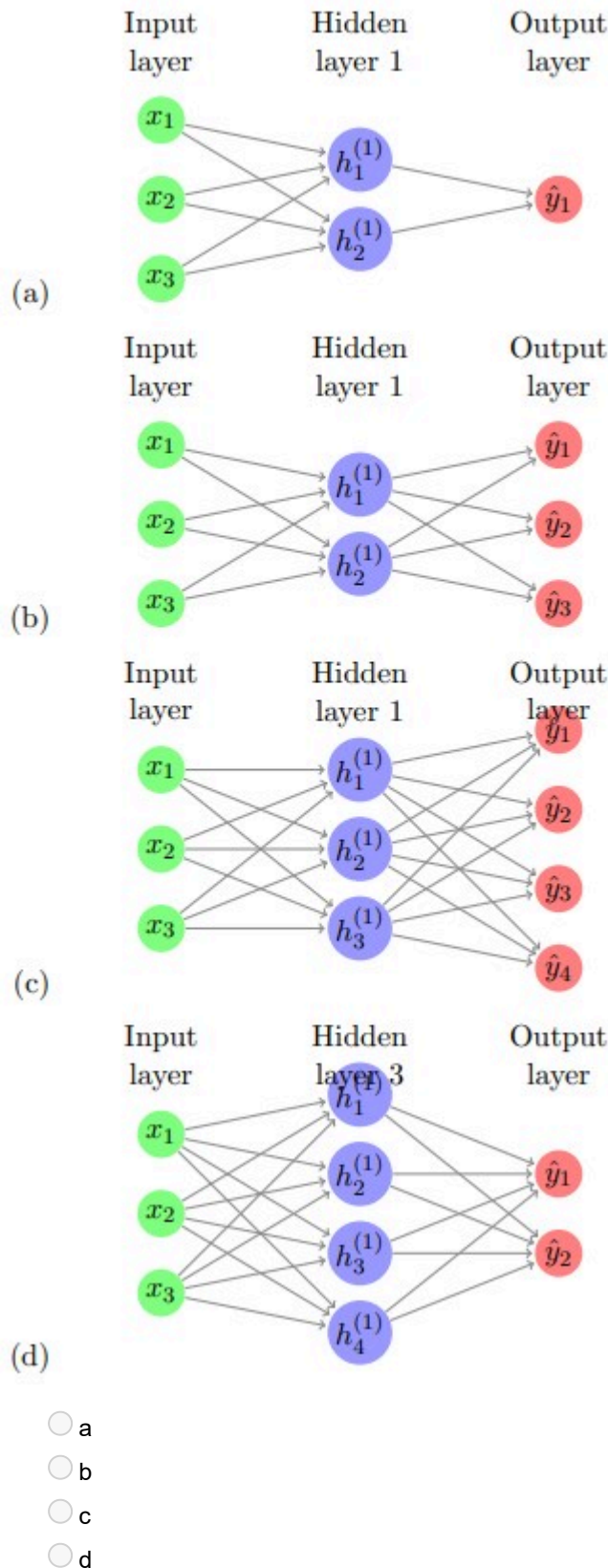
Week 6 : Assignment 6

The due date for submitting this assignment has passed.

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

As per our records you have not submitted this assignment.

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

(a)

(b)

(c)

(d)

○ a

○ b

○ c

○ d

No, the answer is incorrect.
Score: 0

Accepted Answers:
b

2) What is/are the primary advantages of Autoencoders over PCA?   **1 point**

○ Autoencoders are less prone to overfitting than PCA.

○ Autoencoders are faster and more efficient than PCA.

○ Autoencoders can capture nonlinear relationships in the input data.

○ Autoencoders require fewer input data than PCA.

No, the answer is incorrect.
Score: 0

Accepted Answers:
Autoencoders can capture nonlinear relationships in the input data.

3) What type of autoencoder is it when the hidden layer's dimensionality is less than *1 point* that of the input layer?

○ Under-complete autoencoder

○ Complete autoencoder

○ Overcomplete autoencoder

○ Sparse autoencoder

No, the answer is incorrect.
Score: 0

Accepted Answers:
Under-complete autoencoder

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

☐ Reconstruction error is very low while training

☐ Reconstruction error is very high while training

☐ Network fails to learn good representations of input

☐ 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) Which of the following statements about regularization in autoencoders is always *1 point* true?

☐ Regularisation reduces the search space of weights for the network.

☐ Regularisation helps to reduce the overfitting in overcomplete autoencoders.

☐ Regularisation shrinks the size of weight vectors learned.

☐ All of these.

No, the answer is incorrect.
Score: 0

Accepted Answers:
Regularisation reduces the search space of weights for the network.
Regularisation helps to reduce the overfitting in overcomplete autoencoders.

6) We are using the following autoencoder with linear encoder and linear decoder. The *1 point* eigenvectors associated with the covariance matrix of our data X is $(V_1, V_2, V_3, V_4, V_5)$. What

are the representations most likely to be learned by our hidden layer H? (Eigenvectors are written in decreasing order to the eigenvalues associated with them)
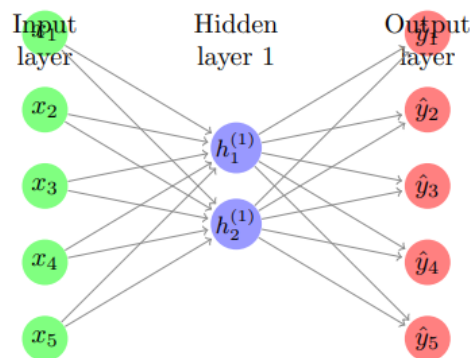
○ V_1, V_2

○ V_4, V_5

○ V_1, V_3

○ V_1, V_2, V_3, V_4, V_5

No, the answer is incorrect.
Score: 0

Accepted Answers:
V_1, V_2

7) What is the purpose of a decoder in an autoencoder?   **1 point**

○ To reconstruct the input data

○ To generate new data

○ To compress the input data

○ To extract features from the input data

No, the answer is incorrect.
Score: 0

Accepted Answers:
To reconstruct the input data

8) Which of the following is a potential advantage of using an overcomplete autoencoder?   **1 point**

○ Reduction of the risk of overfitting

○ Ability to learn more complex and nonlinear representations

○ Faster training time

○ To compress the input data

No, the answer is incorrect.
Score: 0

Accepted Answers:
Ability to learn more complex and nonlinear representations

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.

No, the answer is incorrect.
Score: 0

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   **1 point**
the input layer, then what kind of autoencoder do we have?

○ Complete autoencoder

○ Under-complete autoencoder

○ Overcomplete autoencoder

○ Sparse autoencoder

No, the answer is incorrect.
Score: 0

Accepted Answers:
Overcomplete autoencoder