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



## 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&lesso n=84)
- C 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.

## Assignment submitted on 2024-09-03, 20:52 IST

- 1) We are given an autoencoder A. The average activation value of neurons in this **1 point** network is 0.01. The given autoencoder is
  - Contractive autoencoder
  - Overcomplete neural network
  - Denoising autoencoder
  - Sparse autoencoder

Yes, the answer is correct.

Score: 1

Accepted Answers:

Sparse autoencoder

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 **1 point** could be the possible dimension of the hidden layer?

unit=83&lesso n=85)	6	
Regularization	8	
in	<b>✓</b> 0	
autoencoders	7	
(Motivation)	☑ 2	
(unit? unit=83&lesso	No, the answer is incorrect. Score: 0	
n=86)	Accepted Answers:	
<ul><li>Denoising</li></ul>	6	
Autoencoders	2	
(unit? unit=83&lesso	4) What is the primary reason for adding corruption to the input data in a denoising	1 point
n=87)	autoencoder?	
Sparse	To increase the complexity of the model.	
Autoencoders (unit?	To improve the model's ability to generalize to unseen data.	
unit=83&lesso	To reduce the size of the training dataset.	
n=88)	○ To increase the training time.	
<ul><li>Contractive</li></ul>	No, the answer is incorrect.	
Autoencoders	Score: 0	
(unit? unit=83&lesso	Accepted Answers:  To improve the model's ability to generalize to unseen data.	
n=89)	To improve the moder's ability to generalize to anseen data.	
O Lecture	5) What is the purpose of a decoder in an autoencoder?	1 point
Material for		
Week 6 (unit?	To reconstruct the input data	
unit=83&lesso	To generate new data	
n=90)	To compress the input data	
Quiz: Week 6	○ To extract features from the input data	
: Assignment 6	Yes, the answer is correct. Score: 1	
(assessment?	Accepted Answers:	
name=294)	To reconstruct the input data	
Week 6		
Feedback	6) If the dimension of the input layer in an over-complete autoencoder is 5, what is the	1 point
Form: Deep Learning - IIT	possible dimension of the hidden layer?	
Ropar (unit?	O 4	
unit=83&lesso	$\bigcirc$ 2	
n=235)	<ul><li>8</li></ul>	
Week 7 ()	0	
Week 8 ()	Yes, the answer is correct.	
	Score: 1 Accepted Answers:	
Week 9 ()	8	
week 10 ()	7) Which of the following problems prevents us from using autoencoders for the task of	of <b>1 point</b>
Week 11 ()	Image compression?	

Week 12 ()	Images are not allowed as input to autoencoders	
	Difficulty in training deep neural networks	
Download	Loss of image quality due to compression	
Videos ()	Auto encoders are not capable of producing image output	
Books ()	Yes, the answer is correct. Score: 1	
Text	Accepted Answers:	
Transcripts	Loss of image quality due to compression	
()	8) Which of the following is a potential disadvantage of using autoencoders for	1 point
Darklan.	dimensionality reduction over PCA?	
Problem Solving Session -	Autoencoders are computationally expensive and may require more training data PCA.	than
July 2024 ()	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 that Autoencoders may overfit the training data and generalize poorly to new data.	ı PCA.
	9) 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	
	10) Suppose for one data point we have features $x_1, x_2, x_3, x_4, x_5$ as $-2, 12, 4.2, 7.6, 0$ then, which of the following function should we use on the output layer(decoder)?	1 point
	Logistic	
	Relu	
	Tanh	
	© Linear	
	Yes, the answer is correct. Score: 1	
	Accepted Answers:	
	Linear	