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

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Course outline

How does an NPTEL online course work? ()

Week 0 ()

Week 1 ()

Week 2 ()

Week 3 ()

week 4 ()

Week 5 ()

Week 6 ()

Week 7 ()

Week 8 ()

Week 9 ()

week 10 ()

Week 5: Assignment 5

The due date for submitting this assignment has passed.

Due on 2022-08-31, 23:59 IST.

Assignment submitted on 2022-08-31, 15:14 IST

1) What is the largest dominant eigen value for a stochastic matrix? **1 point**

- ○ -1
- ○ 0
- ● 1
- ○ 2

Yes, the answer is correct.
Score: 1

Accepted Answers:
1

2) Consider λ_d to be the dominant eigen value of a matrix and $\lambda_d > 1$, comment on the **1 point** given sequence: $x_0, Ax_0, A^2x_0, ..$

- ○ will vanish
- ● will explode
- ○ will reach its maximum
- ○ will reach a steady state

Yes, the answer is correct.
Score: 1

Accepted Answers:
will explode

Find the Eigen values a & b of the given matrix.

$$A = \begin{bmatrix} 5 & 4 \\ 1 & 2 \end{bmatrix}$$

3) a = _____ (Enter the minimum eigen value)

> -6

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Numeric) 1

1 point

4) b = _____ (Enter the maximum eigen value)

> 1

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Numeric) 6

1 point

5)   The eigen vectors of a matrix having distinct eigen values are   *1 point*

- ○ orthogonal
- ○ stochastic
- ○ scalar
- ◉ linearly independent

Yes, the answer is correct.
Score: 1

Accepted Answers:
linearly independent

6)   *1 point*

Given the vectors, $\begin{bmatrix} 1 \\ 1 \\ 0 \end{bmatrix}$, $\begin{bmatrix} 2 \\ 3 \\ 0 \end{bmatrix}$, $\begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}$

check if they form a basis for $\mathbb{R}^3$?

- ◉ Yes
- ○ No

Yes, the answer is correct.
Score: 1

Accepted Answers:
Yes

7)   Comment on the number of Eigen vectors of a n x n matrix.   *1 point*

- ○

Less than or equal to n^2

⊙

Less than or equal to n

○

At least n

○

At least $n/2$

Yes, the answer is correct.
Score: 1
Accepted Answers:
Less than or equal to n

8) Principal Component Analysis helps in representing data using fewer dimensions.   ***1 point***
Which of the following is TRUE for the selected dimensions?

☐ data has low variance along these dimensions

☑ dimensions are linearly independent

☐ dimensions are linearly dependent

☑ dimensions are orthogonal

Yes, the answer is correct.
Score: 1
Accepted Answers:
dimensions are linearly independent
dimensions are orthogonal

9) Pick out the one that best describes the given matrix where a and b are probabilities of ***1 point***
two independent events,

$$\begin{bmatrix} a & (1-b) \\ (1-a) & b \end{bmatrix}$$

○ row stochastic

⊙ column stochastic

○ doubly stochastic

○ Identity

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

10) Consider the set of features in a Cancer dataset: Name, DateofBirth, age, contact   ***1 point***
number, city, Weight in Kg, Height in cm, Height in inches etc. Identify the attribute(s) that can be
excluded in the representation of the dataset. Select all that apply.

☑ Height in cm or Height in inches

☐ Weight in Kg or Height in inches

☑ Date of Birth or Age

☐ Age or Height in cms

Yes, the answer is correct.
Score: 1
Accepted Answers:
Height in cm or Height in inches
Date of Birth or Age

11) Which of the following statements are TRUE for Eigen vectors of a square matrix? **1 point**
Statement I. Eigen vectors having distinct eigen valules are linearly dependent Statement II. Eigen vectors of a square matrix are orthogonal

○ Only I
◉ Only II
○ Both
○ None

No, the answer is incorrect.
Score: 0
Accepted Answers:
None