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bhandarishivay2001@gmail.com ✓

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

## 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 9: Assignment 9

The due date for submitting this assignment has passed.

Due on 2022-09-28, 23:59 IST.

### Assignment submitted on 2022-09-28, 21:02 IST

 1) Given the following metrics based on one hot representation of cat, dog and Truck as **1 point** mentioned in the Lecture, select all the options that hold True.

```
euclid_dist(cat, dog) =  $\sqrt{2}$ 
euclid_dist(dog, truck) =  $\sqrt{2}$ 
cosine_sim(cat, dog) = 0
cosine_sim(dog, truck) = 0
```

- ☐ Cosine similarity captures the fact that both cat and dog are domestic animals
- ☐ Euclidean distance captures the fact that Truck is different from the domestic animals
- ☒ Both measures do not capture the similarity or difference between the words.
- ☒ Cosine similarity between any two words in the corpus is always zero

Yes, the answer is correct.

Score: 1

Accepted Answers:

*Both measures do not capture the similarity or difference between the words.*
*Cosine similarity between any two words in the corpus is always zero*

 2) What is the maximum size of the co-occurrence matrix, given the number of words in corpus being 'n'? **1 point**

☒  $n \times n$

☐

**Week 11 ()**

**Week 12 ()**

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**Live Sessions  
()**

**Problem  
Solving  
Session ()**

$$n - 1 \times n - 1$$



$$n/2 \times n/2$$



$$2n \times 2n$$

Yes, the answer is correct.

Score: 1

Accepted Answers:

$$n \times n$$

3) Select all the drawbacks of distributed representation of words.

**1 point**

☒ sparse

☒ high dimension

☒ size of co-occurrence matrix increases with vocabulary size

☐ size of co-occurrence matrix is very high even for a very small vocabulary size

Yes, the answer is correct.

Score: 1

Accepted Answers:

*sparse*

*high dimension*

*size of co-occurrence matrix increases with vocabulary size*

4) Pick out the stop word among the following options.

**1 point**

☒ an

☐ common

☐ data

☐ stop

Yes, the answer is correct.

Score: 1

Accepted Answers:

*an*

5) Given the quantity  $\text{count}(w, c) = 0$ , this drives the value of  $PMI(w, c)$  to  $-\infty$ . Which of the following can be a possible solution to this issue?

**1 point**

☐ Ignore high frequency stop words

☒ PPMI - restricts the value of PMI to 0 and above

☐ PPMI - restricts the value of PMI to -1 and above

☐ Ignore low frequency stop words

Yes, the answer is correct.

Score: 1

Accepted Answers:

*PPMI - restricts the value of PMI to 0 and above*

6) Which of the following is True for SVD?

**1 point**

☐ gives best rank k approximation of given data

☐ discovers latent semantics in the corpus

- ☐ SVD reduces the number of dimensions
- ☒ all the above

Yes, the answer is correct.

Score: 1

Accepted Answers:

*all the above*

7) In learning word representations using prediction based models, the softmax function is **1 point** computationally expensive. Which of the following are alternate solution for the above problem?

- I. Use negative sampling
- II. Use contrastive estimation
- III. Use hierarchical softmax

- ☐ I and II
- ☐ II and III
- ☐ I and III
- ☒ I, II and III

Yes, the answer is correct.

Score: 1

Accepted Answers:

*I, II and III*

8) Pick out the model that is NOT Count-based.

**1 point**

- ☐ PMI
- ☐ Word count
- ☐ PPMI
- ☒ Continuous bag of words

Yes, the answer is correct.

Score: 1

Accepted Answers:

*Continuous bag of words*

9) Which of the following models directly learn word representations?

**1 point**

- ☐ Count-based model
- ☒ Prediction-based model
- ☐ Both
- ☐ None

Yes, the answer is correct.

Score: 1

Accepted Answers:

*Prediction-based model*

10) Given a term and  $k$  different words, select a candidate out of  $k$  which has the largest similarity with the term. Which of the following methods follows the above approach in evaluation of word representation? **1 point**

- ☐ Semantic relatedness
- ☒ Synonym detection
- ☐ Semantic analogy
- ☐ Any of the above

Yes, the answer is correct.

Score: 1

Accepted Answers:

*Synonym detection*