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NPTEL (<https://swayam.gov.in/explorer?ncCode=NPTEL>) » Introduction to Large Language Models (LLMs)  
(course)

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Course  
outline

About NPTEL  
( )

How does an  
NPTEL online  
course work?  
( )

Week 1 ( )

Week 2 ( )

Week 3 ( )

Week 4 ( )

● Lec 07 : Word  
Representation:  
Word2Vec &  
fastText (unit?  
unit=36&lesson  
=37)

● Lec 08 : Word  
Representation:  
GloVe (unit?

# Week 4 : Assignment 4

The due date for submitting this assignment has passed.

Due on 2025-02-19, 23:59 IST.

Assignment submitted on 2025-02-18, 22:45 IST

1) What is the main drawback of representing words as one-hot vectors? 1 point

- ☒ They cannot capture semantic similarity between words.
- ☐ They are computationally inefficient.
- ☐ They cannot incorporate word order effectively.
- ☐ They are not robust to unseen words.

Yes, the answer is correct.  
Score: 1

Accepted Answers:  
*They cannot capture semantic similarity between words.*

2) What is the key concept underlying Word2Vec? 1 point

- ☐ Ontological semantics
- ☐ Decompositional semantics
- ☒ Distributional semantics
- ☐ Morphological analysis

Yes, the answer is correct.  
Score: 1

Accepted Answers:  
*Distributional semantics*

3) Why is sub-sampling frequent words beneficial in Word2Vec? 1 point

- ☐ It increases the computational cost.
- ☒ It helps reduce the noise from high-frequency words.
- ☐ It helps eliminate redundancy.
- ☐ It prevents the model from learning embeddings for common words.

Yes, the answer is correct.

unit=36&lesson=38)

● Lec 09 :  
Tokenization  
Strategies  
(unit?  
unit=36&lesson=39)

● Lecture Material  
(unit?  
unit=36&lesson=40)

● Feedback Form  
(unit?  
unit=36&lesson=41)

● Quiz: Week 4 :  
Assignment 4  
(assessment?  
name=42)

Week 5 ()

Week 6 ()

Week 7 ()

Week 8 ()

Week 9 ()

Week 10 ()

Week 11 ()

Week 12 ()

Year 2025  
Solutions ()

Score: 1

Accepted Answers:

*It helps reduce the noise from high-frequency words.*

4) Which word relations cannot be captured by word2vec?

1 point

- ☒ Polysemy  
☒ Antonymy  
☐ Analogy  
☐ All of the these

Yes, the answer is correct.

Score: 1

Accepted Answers:

*Polysemy*

*Antonymy*

For Question 5 to 6, Consider the following word-word matrix:

	$w_6$	$w_7$	$w_8$	$w_9$	$w_{10}$	$w_{11}$	$w_{12}$
$w_1$	1	5	3	0	1	5	7
$w_2$	4	2	4	1	6	2	0
$w_3$	2	1	9	2	5	1	5
$w_4$	5	0	7	4	2	0	4
$w_5$	3	5	1	0	1	2	1

5) Compute the cosine similarity between  $w_2$  and  $w_5$ .

1 point

- ☐ 0.516  
☐ 0.881  
☐ 0.705  
☒ 0.641

Yes, the answer is correct.

Score: 1

Accepted Answers:

*0.641*

6) Which word is most similar to  $w_1$  based on cosine similarity?

4 points

- ☐  $w_2$   
☐  $w_3$   
☐  $w_4$   
☒  $w_5$

Yes, the answer is correct.

Score: 4

Accepted Answers:

*$w_5$*

7) What is the difference between CBOW and Skip-Gram in Word2Vec?

1 point

- ☐ CBOW predicts the context word given the target word, while Skip-Gram predicts the target word given the context words.  
☒ CBOW predicts the target word given the context words, while Skip-Gram predicts the context words given the target word.  
☐ CBOW is used for generating word vectors, while Skip-Gram is not.  
☐ Skip-Gram uses a thesaurus, while CBOW does not.

Yes, the answer is correct.

Score: 1

Accepted Answers:

*CBOW predicts the target word given the context words, while Skip-Gram predicts the context words given the target word.*