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Week 4 : Assignment 4

The due date for submitting this assignment has passed.

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

Assignment submitted on 2025-02-10, 22:41 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.
Score: 1

Accepted Answers:

It helps reduce the noise from high-frequency words.

4) Which word relations cannot be captured by word2vec? ***1 point***

- [x] Polysemy
- [ ] Antonymy
- [ ] Analogy
- [ ] All of the these

Partially Correct.
Score: 0.5

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.

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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.