Natural Language Processing & Word Embeddings Quiz, 10 questions

10/10 points (100%)

✓ Congratulations! You passed!	Next Item
1/1 point	
1. Suppose you learn a word embedding for a vocabulary of 10000 words. Then the e be 10000 dimensional, so as to capture the full range of variation and meaning in t	
True	
False	
Correct The dimension of word vectors is usually smaller than the size of the vocabulary for word vectors ranges between 50 and 400.	. Most common sizes
1/1 point	
2. What is t-SNE?	
A linear transformation that allows us to solve analogies on word vectors	
A non-linear dimensionality reduction technique	
Correct Yes	
A supervised learning algorithm for learning word embeddings	
An open-source sequence modeling library	

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3.

Suppose you download a pre-trained word embedding which has been trained on a huge corpus of text. You then use this word embedding to train an RNN for a language task of recognizing if someone is happy from a short snippet of text, using a small training set.

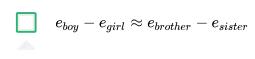
x (input text)	y (happy?)
I'm feeling wonderful today!	1
I'm bummed my cat is ill.	0
Really enjoying this!	1

Then even if the word "ecstatic" does not appear in your small training set, your RNN might reasonably be expected to recognize "I'm ecstatic" as deserving a label y=1.

0	True
wou	rect word vectors empower your model with an incredible ability to generalize. The vector for "ecstatic uld contain a positive/happy connotation which will probably make your model classified the tence as a "1".
	False
~	1 / 1 point

4

Which of these equations do you think should hold for a good word embedding? (Check all that apply)



Correct

Yes!

$$igcup_{boy} - e_{girl} pprox e_{sister} - e_{brother}$$

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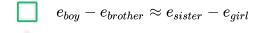
10/10 points (100%)

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 $igcup_{boy} - e_{brother} pprox e_{girl} - e_{sister}$

Correct

Yes!



Un-selected is correct



1/1 point

5.

Let E be an embedding matrix, and let o_{1234} be a one-hot vector corresponding to word 1234. Then to get the embedding of word 1234, why don't we call $E*o_{1234}$ in Python?

0

It is computationally wasteful.

Correct

Yes, the element-wise multiplication will be extremely inefficient.

- The correct formula is $E^T * o_{1234}$.
- This doesn't handle unknown words (<UNK>).
- None of the above: calling the Python snippet as described above is fine.



1/1 point

6.

When learning word embeddings, we create an artificial task of estimating $P(target \mid context)$. It is okay if we do poorly on this artificial prediction task; the more important by-product of this task is that we learn a useful set of word embeddings.



True

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10/10 points (100%)

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False



1/1 point

7.

In the word2vec algorithm, you estimate $P(t \mid c)$, where t is the target word and c is a context word. How are t and c chosen from the training set? Pick the best answer.

 $igcup_c$ and t are chosen to be nearby words.

Correct

- c is the sequence of all the words in the sentence before t.
- c is a sequence of several words immediately before t.
- igcap c is the one word that comes immediately before t.



1/1 point

8

Suppose you have a 10000 word vocabulary, and are learning 500-dimensional word embeddings. The word2vec model uses the following softmax function:

$$P(t \mid c) = rac{e^{ heta_t^T e_c}}{\sum_{t'=1}^{10000} e^{ heta_{t'}^T e_c}}$$

Which of these statements are correct? Check all that apply.

 θ_t and e_c are both 500 dimensional vectors.

Correct

 $igcap_t$ and e_c are both 10000 dimensional vectors.

Un-selected is correct

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10/10 points (100%)

	-	
or		

After training, we should expect $heta_t$ to be very close to e_c when t and c are the same word.

Un-selected is correct



1/1 point

9

Suppose you have a 10000 word vocabulary, and are learning 500-dimensional word embeddings. The GloVe model minimizes this objective:

$$\min \sum_{i=1}^{10,000} \sum_{j=1}^{10,000} f(X_{ij}) (heta_i^T e_j + b_i + b_j' - log X_{ij})^2$$

Which of these statements are correct? Check all that apply.

 $igcup_i$ and e_j should be initialized to 0 at the beginning of training.

Un-selected is correct

 θ_i and e_i should be initialized randomly at the beginning of training.

Correct

 X_{ij} is the number of times word i appears in the context of word j.

Correct

The weighting function f(.) must satisfy f(0)=0.

Correct

The weighting function helps prevent learning only from extremely common word pairs. It is not necessary that it satisfies this function.

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10.

You have trained word embeddings using a text dataset of m_1 words. You are considering using these word embeddings for a language task, for which you have a separate labeled dataset of m_2 words. Keeping in mind that using word embeddings is a form of transfer learning, under which of these circumstance would you expect the word embeddings to be helpful?



 $m_1 >> m_2$





 $m_1 << m_2$

