

강좌 내에서 검색

검색

rsera



Sequence Models

>

2주 차

>

Natural Language Processing & Word Embeddings

< 이전 다음 >




• Introduction to Word Embeddings



- 동영상: 강의Word Representation
Duration: 10 minutes10 min
- 동영상: 강의Using Word Embeddings
Duration: 9 minutes9 min
- 동영상: 강의Properties of Word Embeddings
Duration: 11 minutes11 min
- 동영상: 강의Embedding Matrix
Duration: 3 minutes3 min

• Learning Word Embeddings: Word2vec & GloVe

- 동영상: 강의Learning Word Embeddings
Duration: 10 minutes10 min
- 동영상: 강의Word2Vec
Duration: 12 minutes12 min
- 동영상: 강의Negative Sampling
Duration: 11 minutes11 min
- 동영상: 강의GloVe Word Vectors
Duration: 11 minutes11 min

-  [읽기 자료: GloVe Word Vectors *CORRECTION*](#)
[. Duration: 1 minute1 min](#)

• Applications Using Word Embeddings

-  [동영상: 강의Sentiment Classification](#)
[. Duration: 7 minutes7 min](#)
-  [동영상: 강의Debiasing Word Embeddings](#)
[. Duration: 11 minutes11 min](#)

• Lecture Notes (Optional)


• Quiz

-  [테스트: Natural Language Processing & Word Embeddings](#)
[10개의 질문](#)


• Programming Assignments

테스트테스트 • 30 min30 minutes

Natural Language Processing & Word Embeddings

 과제 제출
기한년 8월 30일 오후 3:59 KST년 8월 30일 오후 3:59 KST
시도하기8 hours당 3회

[다시 시도해주시시오](#)

 성적 받기
통과 점수:80% 이상
성적
100%

[피드백 보기](#)

최고 점수가 유지됩니다.



탐색 확인

이 페이지에서 나가시겠습니까?


[이 페이지에 머물기](#)

[이 페이지에서 나가기](#)



Natural Language Processing & Word Embeddings
성적 평가 퀴즈 • 30 min

만료 년 8월 30일 오후 3:59 KST

 축하합니다! 통과하셨습니다!
통과 점수: 80% 이상

[학습 계속하기](#)

성적
100%

Natural Language Processing & Word Embeddings

최신 제출물 성적
100%

1.
질문 1

Suppose you learn a word embedding for a vocabulary of 10000 words. Then the embedding vectors should be 10000 dimensional, so as to capture the full range of variation and meaning in those words.

1 / 1점

☐

True

☒

False



맞습니다

The dimension of word vectors is usually smaller than the size of the vocabulary. Most common sizes for word vectors range between 50 and 400.

2.
질문 2

What is t-SNE?

1 / 1점

☒

A non-linear dimensionality reduction technique

☐

An open-source sequence modeling library

☐

A linear transformation that allows us to solve analogies on word vectors

☐

A supervised learning algorithm for learning word embeddings



맞습니다

Yes

3.
질문 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 $y = 1$ $y = 1$.

1 / 1점

☒

True

☐

False



맞습니다

Yes, word vectors empower your model with an incredible ability to generalize. The vector for “ecstatic” would contain a positive/happy connotation which will probably make your model classify the sentence as a “1”.

4.

질문 4

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

1 / 1점

☐ ☐

$e_{boy} - e_{girl} \approx e_{sister} - e_{brother}$ eboy – egirl ≈ esister – ebrother

☒ ☐

$e_{boy} - e_{brother} \approx e_{girl} - e_{sister}$ eboy – ebrother ≈ egirl – esister



맞습니다

Yes!

☐ ☐

$e_{boy} - e_{brother} \approx e_{sister} - e_{girl}$ eboy – ebrother ≈ esister – egirl

☒ ☐

$e_{boy} - e_{girl} \approx e_{brother} - e_{sister}$ eboy – egirl ≈ ebrother – esister



맞습니다

Yes!

5. 질문 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?

1 / 1점

☐ ☐

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.

☒ ☐

It is computationally wasteful.



맞습니다

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

6. 질문 6

When learning word embeddings, we create an artificial task of estimating $P(\text{target} \mid \text{context})$. 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.

1 / 1점

☐ ☐

False

☒ ☐

True



맞습니다

7. 질문 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.

1 / 1점



c is the one word that comes immediately before t .



c is the sequence of all the words in the sentence before t .



c is a sequence of several words immediately before t .



c and t are chosen to be nearby words.



맞습니다
8.
질문 8

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

$$P(t \mid c) = \frac{e^{\theta_t^T e_c}}{\sum_{t'=1}^{10000} e^{\theta_{t'}^T e_c}} P(t \mid c) = \sum_{t'=1}^{10000} e^{\theta_{t'}^T e_c} e^{\theta_t^T e_c}$$

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



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



θ_t and e_c are both 500 dimensional vectors.



맞습니다
☐ ☐

θ_t and e_c are both 10000 dimensional vectors.



θ_t and e_c are both trained with an optimization algorithm such as Adam or gradient descent.



맞습니다
9.
질문 9

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

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

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



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



The weighting function $f(\cdot)$ must satisfy $f(0) = 0$.



맞습니다

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



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



맞습니다
☒ ☐

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



맞습니다

10.

질문 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 circumstances would you expect the word embeddings to be helpful?

1 / 1

☐

$m_1 \ll m_2$

☒

$m_1 \gg m_2$



맞습니다