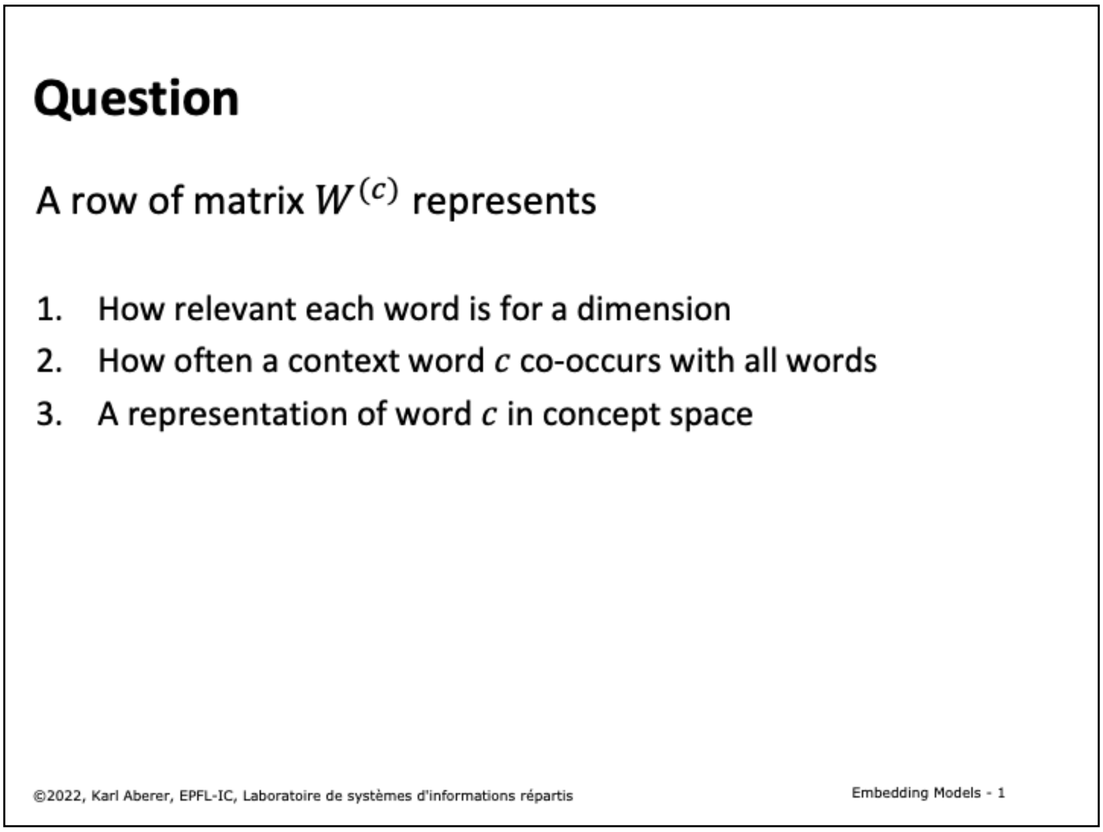


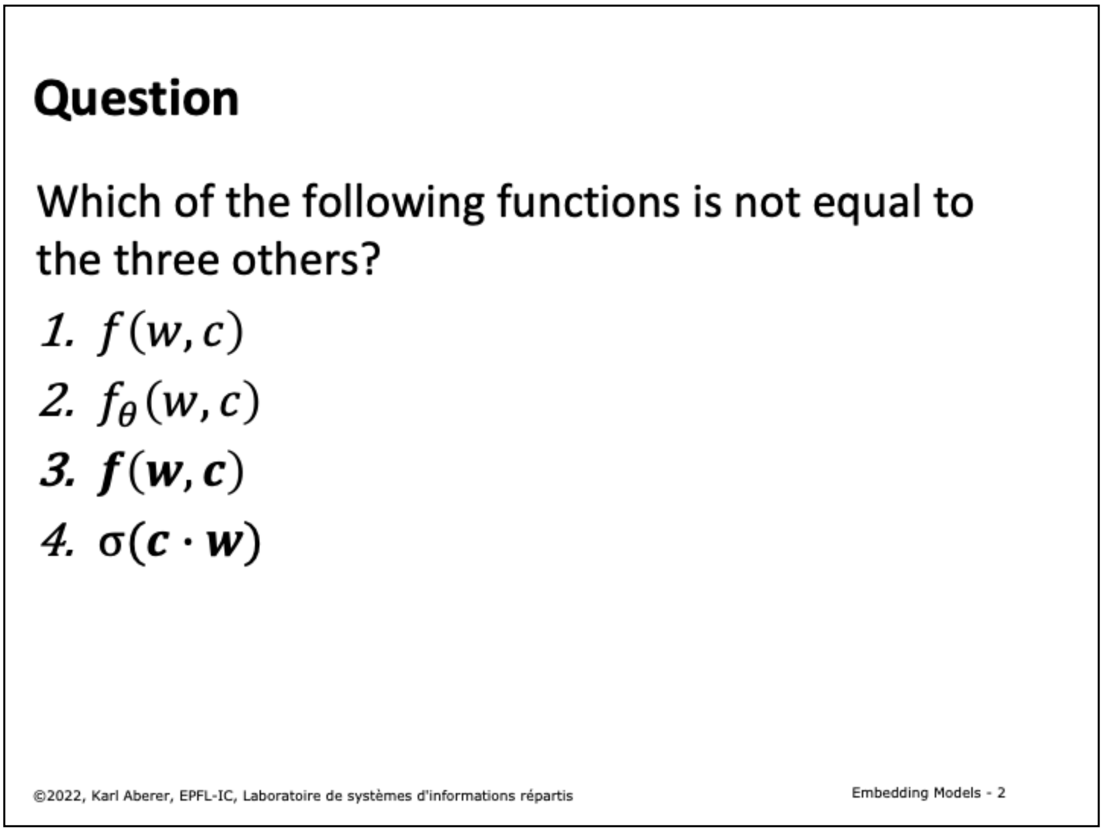
Question

A row of matrix $W^{(c)}$ represents

1. How relevant each word is for a dimension
2. How often a context word c co-occurs with all words
3. A representation of word c in concept space

Answer 1

The rows of the matrix correspond to the dimensions of the embedding. Each entry in the row corresponds to a word from the vocabulary. Therefore the row represents the importance of each word for a given dimension.



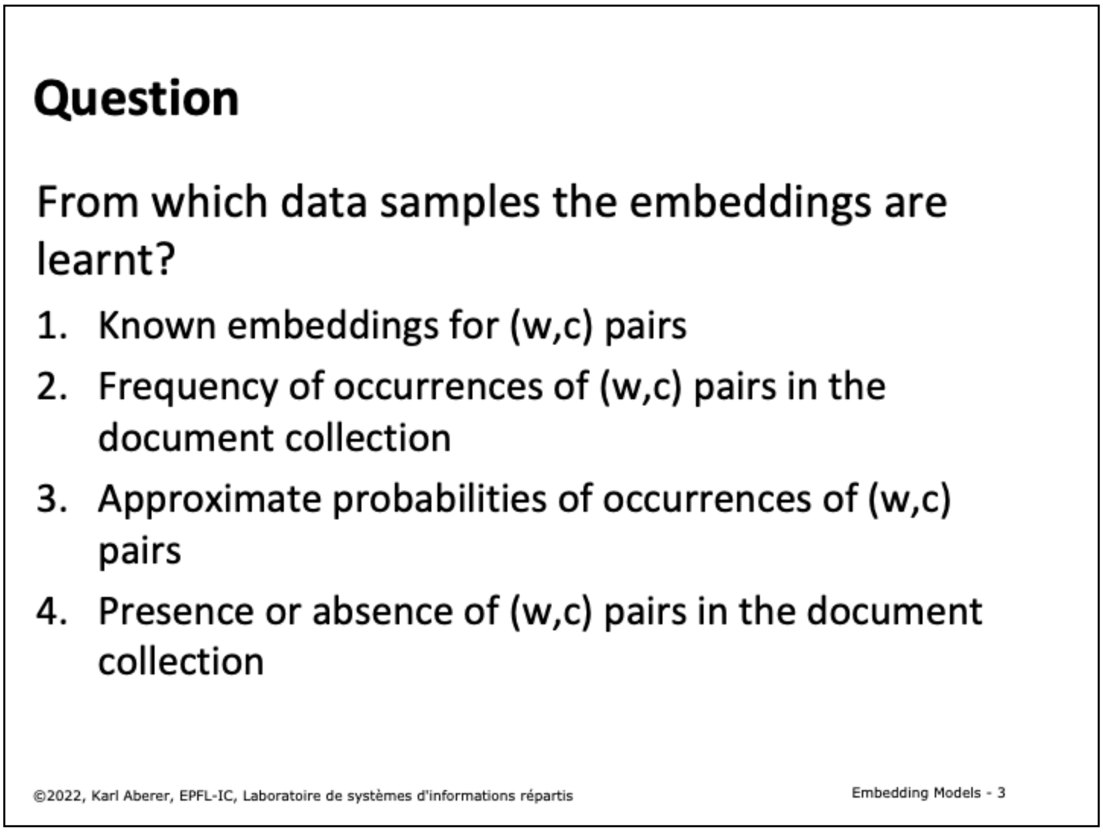
Question

Which of the following functions is not equal to the three others?

1. $f(w, c)$
2. $f_\theta(w, c)$
3. $\boldsymbol{f}(\boldsymbol{w}, \boldsymbol{c})$
4. $\sigma(\boldsymbol{c} \cdot \boldsymbol{w})$

Answer 1

$f(w, c)$ is the function to be approximated. The three other functions are the same, with a more detailed specification for answers 2, 3 and 4.



Question

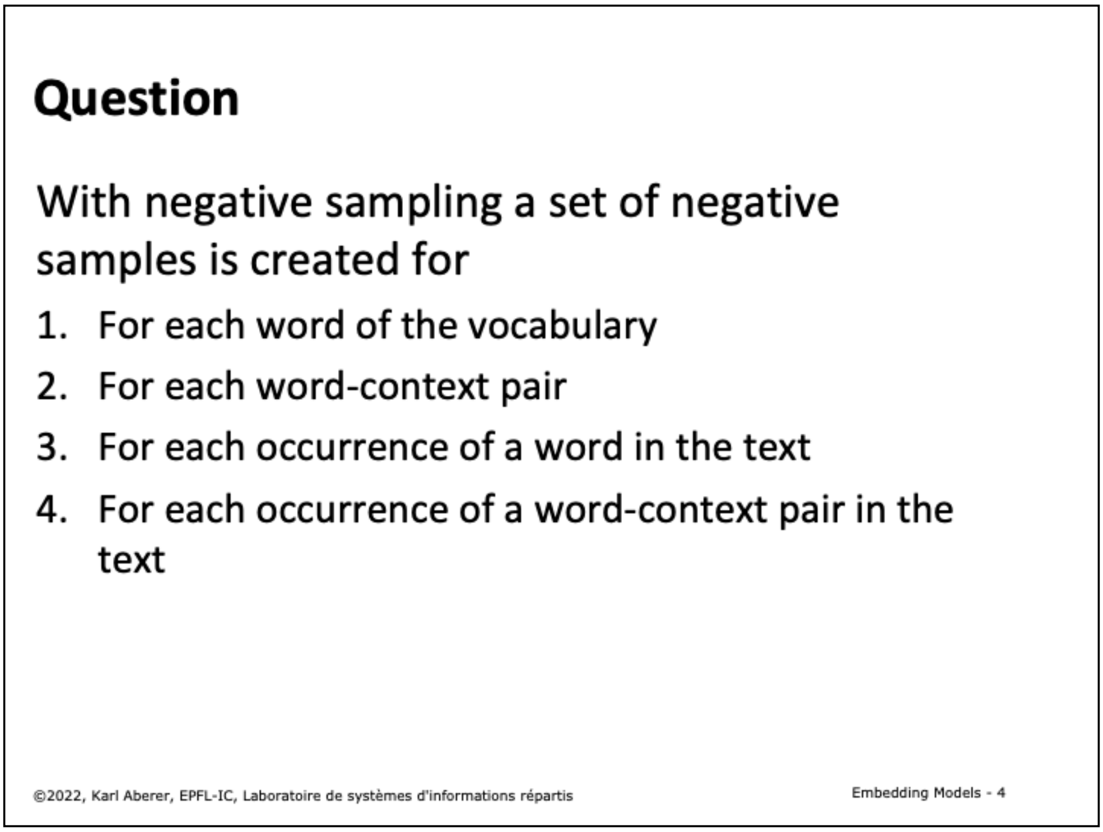
From which data samples the embeddings are learnt?

1. Known embeddings for (w,c) pairs
2. Frequency of occurrences of (w,c) pairs in the document collection
3. Approximate probabilities of occurrences of (w,c) pairs
4. Presence or absence of (w,c) pairs in the document collection

Embedding Models - 3

Answer 4

In the skipgram model the sample data consists of word-context pairs that are present or absent in the document collection.



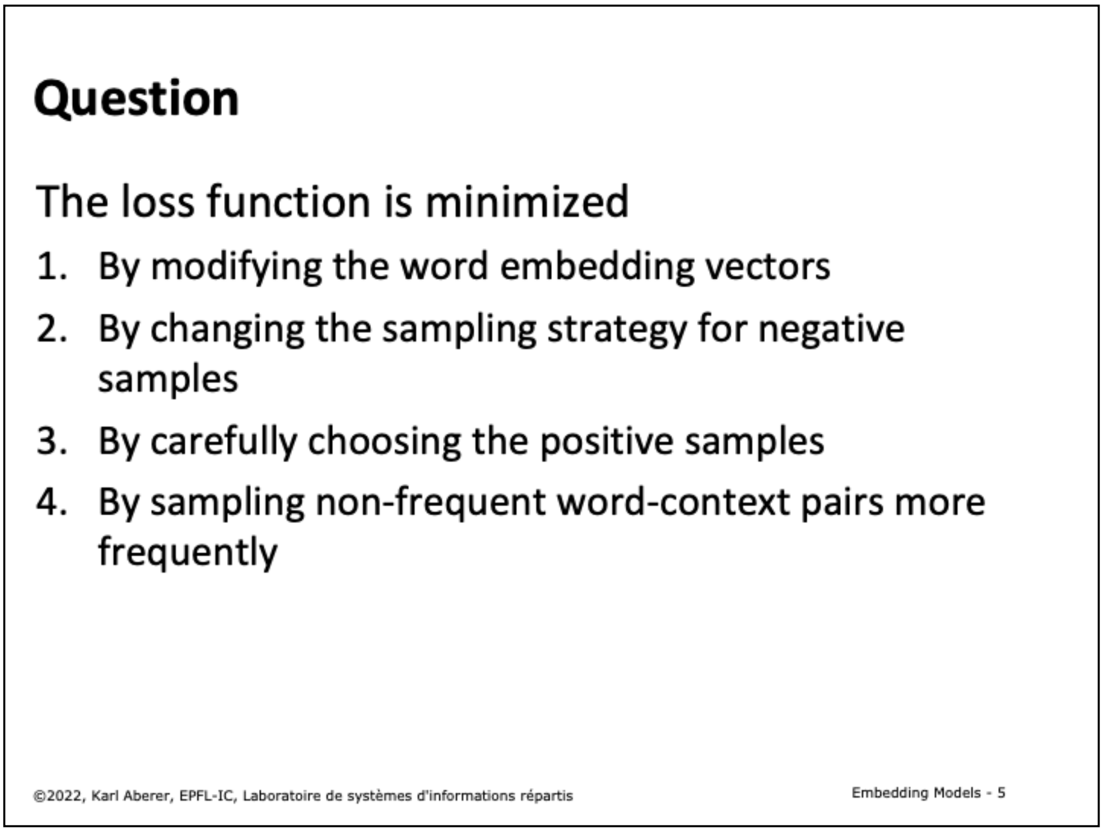
Question

With negative sampling a set of negative samples is created for

1. For each word of the vocabulary
2. For each word-context pair
3. For each occurrence of a word in the text
4. For each occurrence of a word-context pair in the text

Answer 4

For each occurrence of a word-context pair, a set of negative samples is produced. Note that this is also different from creating a set of negative samples for each word-context pair, since the same word-context pair can occur multiple times in the document collection.



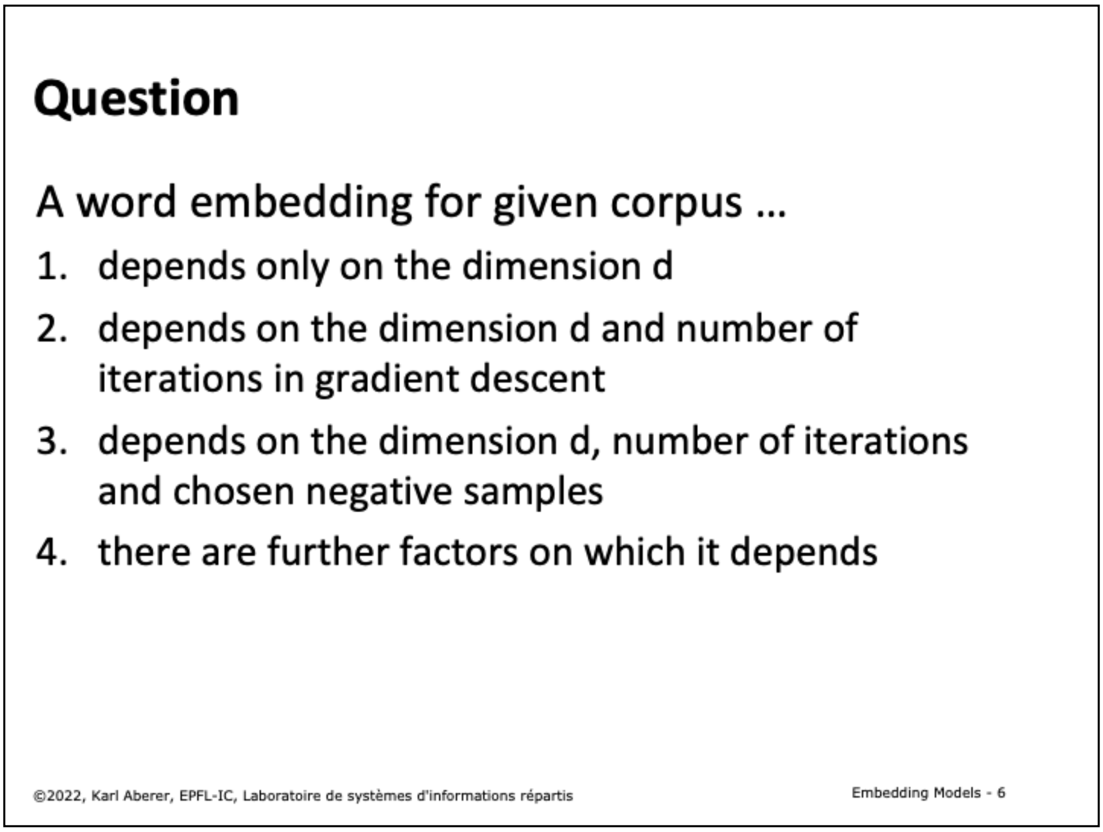
Question

The loss function is minimized

1. By modifying the word embedding vectors
2. By changing the sampling strategy for negative samples
3. By carefully choosing the positive samples
4. By sampling non-frequent word-context pairs more frequently

Answer 1

The loss function is minimized by incrementally modifying the word embedding vectors. Answer 4 refers to an approach to improve the quality of the word embeddings achieved, but not to minimize the loss function.



Question

A word embedding for given corpus …

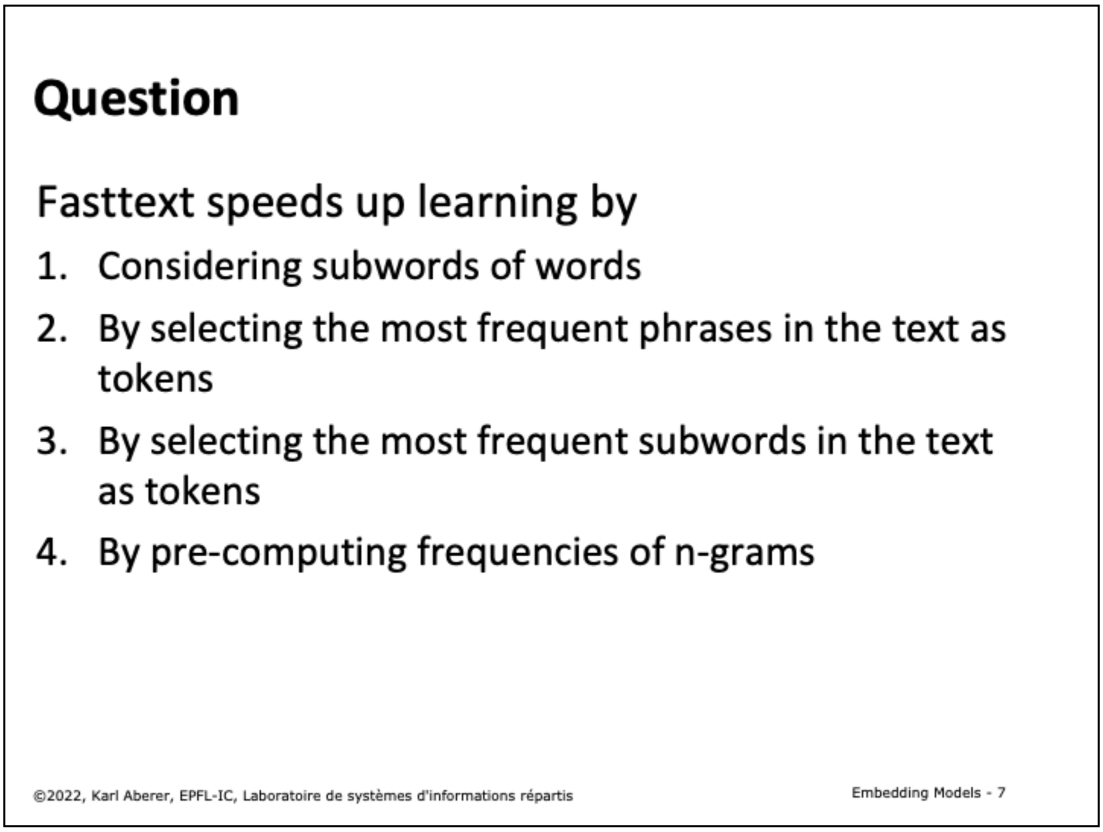
1. depends only on the dimension d
2. depends on the dimension d and number of iterations in gradient descent
3. depends on the dimension d, number of iterations and chosen negative samples
4. there are further factors on which it depends

Embedding Models - 6

Answer 4

Other factors that can influence the outcome of the optimization are

- The order in which the documents are processed
- The initialization of the word embedding vectors



Question

Fasttext speeds up learning by

1. Considering subwords of words
2. By selecting the most frequent phrases in the text as tokens
3. By selecting the most frequent subwords in the text as tokens
4. By pre-computing frequencies of n-grams

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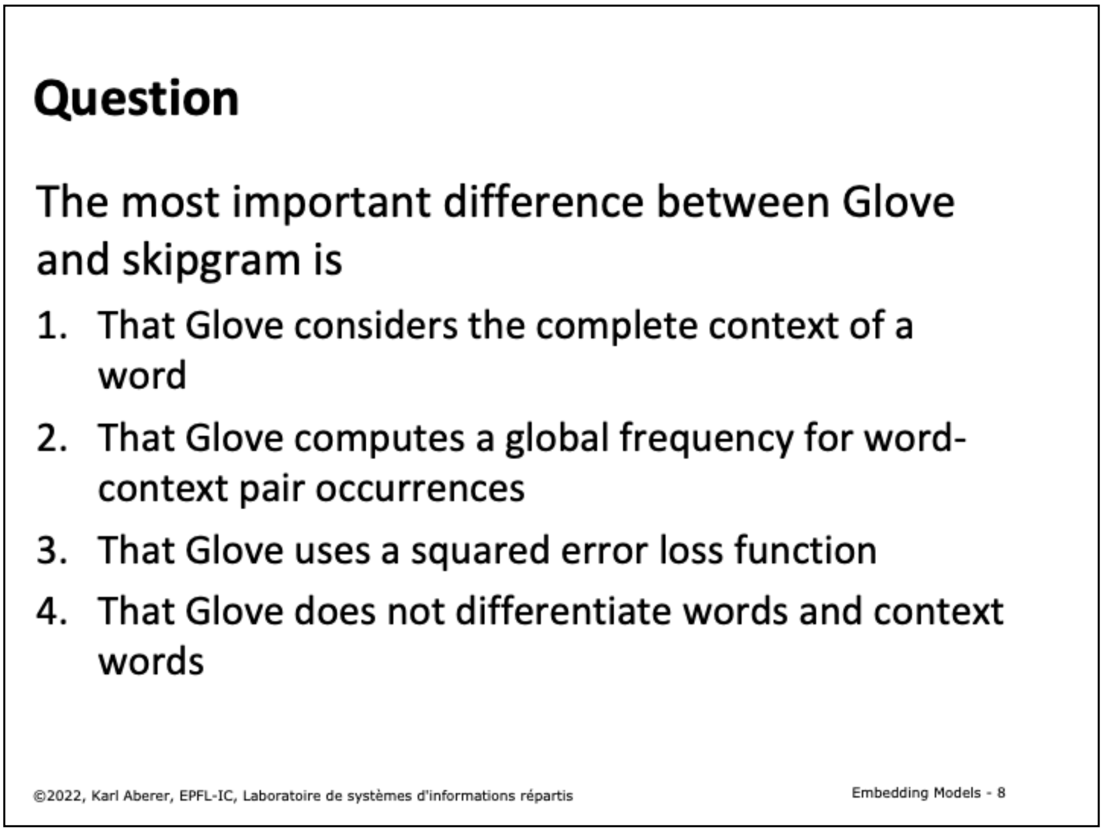
Embedding Models - 7

Answer 3

Answer 1 improves the quality of embeddings, but may slow down learning.
Answer 4 speeds up the selection of frequent phrases, but not learning.



Question

The most important difference between Glove and skipgram is

1. That Glove considers the complete context of a word
2. That Glove computes a global frequency for word-context pair occurrences
3. That Glove uses a squared error loss function
4. That Glove does not differentiate words and context words

Embedding Models - 8

Answer 2

The main difference between Glove and earlier methods, including skipgram and CBOW, is the computation of global co-occurrence counts. This is an additional processing step, but provides additional information on the global statistics. Answer 3 refers to a difference that is rather a consequence of using a global statistics. As for answer 4, in a sense also skipgram does not really distinguish between words and context words.