Encoder-decoder architectures [Solution by Karthikeyan.S]

LATEST SUBMISSION GRADE

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1.Question 1

In the lecture as well as in this test we will have lots of formulas. Let us first make sure that we remember the used notation.

Please, name the following objects: II, JJ, x $_ix_i$, y $_jy_j$, h $_ih_i$, v $_jv_j$, s $_js_j$

0

length of target, length of source, encoder state, decoder state, source word, target word, context vector

0

length of source, length of target, source word, target word, encoder state, decoder state, context vector

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length of source, length of target, source word, target word, encoder state, context vector, decoder state

Correct

1 / 1 point

2.Question 2

How do we compute the context (thought) vector $\mathbf{V}\mathbf{V}$ for the decoder position $\mathbf{j}\mathbf{j}$ in a seq2seq model without attention?

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 h_Ih_I , where h_Ih_I is the last encoder state

0

 $\sum_i \alpha_{ij} h_i \sum_i \alpha_{ij} h_i$, where $\alpha_i \beta_i \alpha_{ij}$ are some weights

0

h jh_j , where h_ jh_j is the jj-th state of the encoder

Correct

Correct!

1 / 1 point

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How many new parameters for the network are introduced to calculate **multiplicative attention** weights? (Just to calculate, we are not yet looking into how we use them afterwards).

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The length of the source, multiplied by the length of the target

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The dimension of an encoder state, multiplied by the dimension of a decoder state

0

No new parameters

Correct

Exactly! This is the number of parameters for **multiplicative** attention.

1 / 1 point

4. Question 4

Which of the following formulas stand for the **additive attention**? Note that h_ih_i is the ii-th encoder state, $s_ih_ih_i$ is the ij-th decoder state, and we are interested in the similarity between them.

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w^T tanh (W [h_i, s_j])w $tanh(W[h_i,s_j])$, where the brackets denote concatenation of the vectors, and ww and ww are a vector and a matrix of parameters respectively.

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h_i^T W s_j*hiTWsj*, where W is a matrix of parameters

Ö

h i^T s jhiTSj

Correct

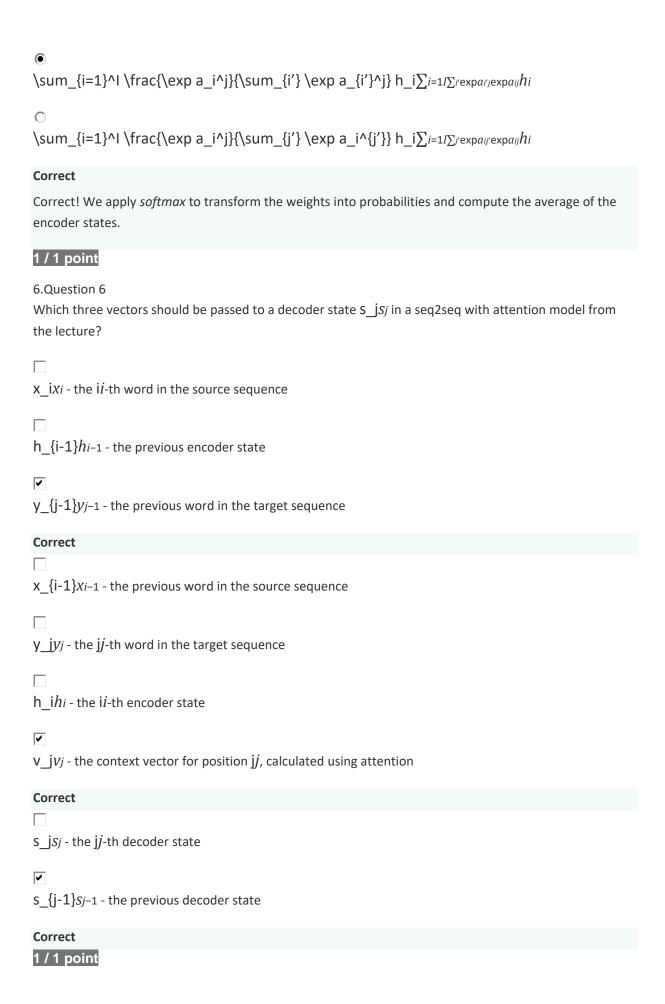
Exactly! Take a moment to see, that this is just a different form of the same additive attention formula that was introduced at the lecture.

1 / 1 point

5.Question 5

Let us denote encoder states by h_ih_i with ii going from 11 to II. Lets us denote by a_ih_i the similarities computed using the additive attention formula from the previous question. How should we compute the context vector $\mathbf{v}_j\mathbf{v}_j$ for the decoder position \mathbf{j}_j ?

 \bigcirc \sum_{i=1}^I a_i^j h_i\sum_{i=1}^{i=1}a_{ij}h_i



7. Question 7 Which techniques would help if the data has rich morphology, informal spelling, and other sources of OOV tokens?
▼ Byte-pair encoding
Correct
Negative sampling
Sub-word modeling
Correct
Hierarchical softmax
Copy mechanism
Correct
1 / 1 point
8. Question 8 Let us imagine we have trained a conversational chat-bot as a seq2seq model on Harry Potter movies subtitles. What problems could we expect?
The bot suggests to use a time-turner or probably some spell if you say you do not have enough time for your Coursera studies
Correct
Dramatic/unrealistic topics, influenced by the training corpus!
The bot makes lots of spelling mistakes
The bot doesn't remember what has already been decided in your dialogue
Correct
No memory of the context / history!
When asked "What's your name?" the hot is not sure and says Harry, or Ron, or Hermione from time to

time.

Correct No personality problem!

If asked in English, the bot replies in French or some other language

1/1p