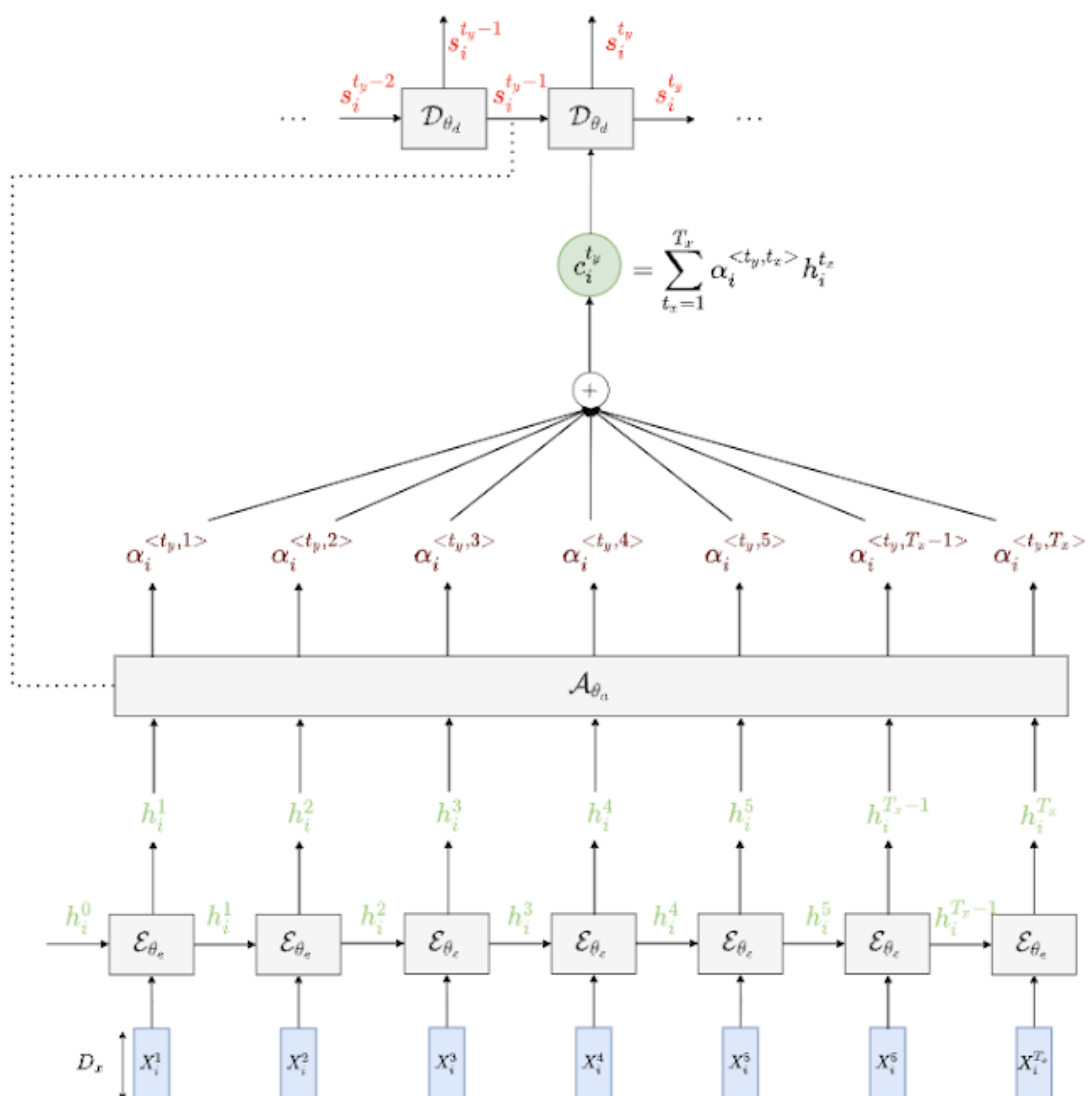


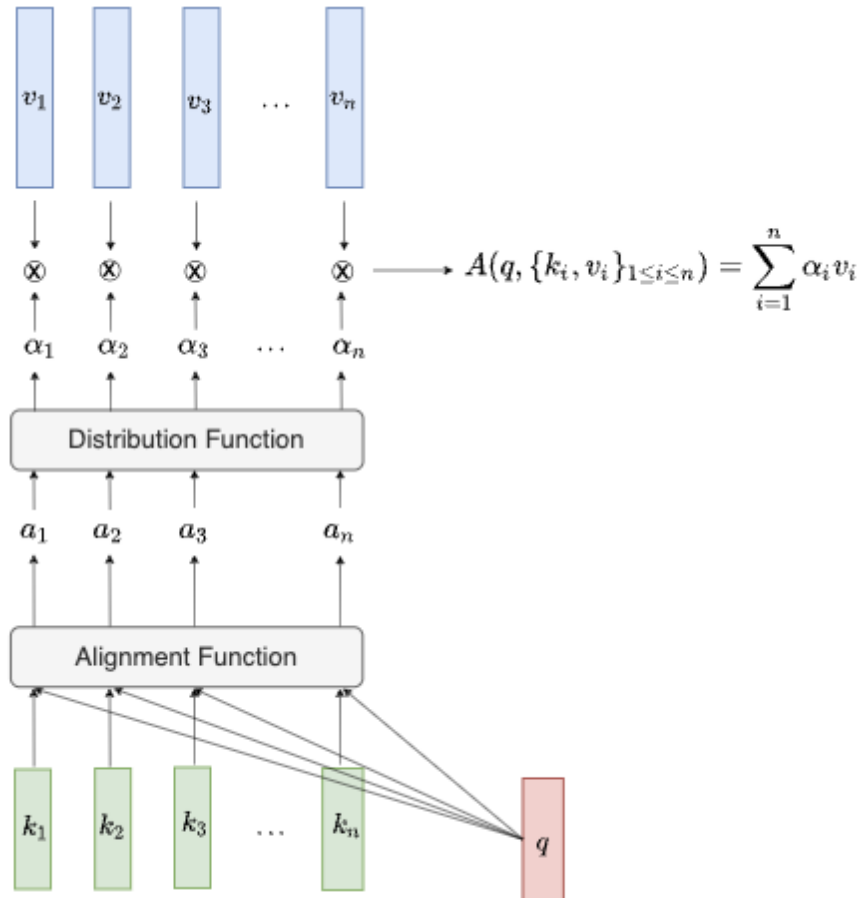
Attention Weights

1. Name

The following figure represents the Sequence to Sequence Model with Attention Mechanisms (S2SWA)



The following figure represents the soft query retrieval problem (SQRP):



Let us compare the context vector in (S2SWA) and the attention vector in (SQRP):

$$A(q, \{k_i, v_i\}_{1 \leq i \leq n}) = \sum_{i=1}^n \alpha_i v_i$$

$$c_i^{t_y} = \sum_{t_x=1}^{T_x} \alpha_i^{<t_y, t_x>} h_i^{t_x}$$

2. Which elements of the architecture (S2SWA) represent the values $(v_i)_i$ in the (SQRP) ? 2 points

(a) $(h_i^{t_x})_{1 \leq t_x \leq T_x}$

(b) $(h_i^{t_x})_{1 \leq i \leq N}$

(c) $(s_i^{t_y})_{1 \leq t_y \leq T_y}$

Mark only one oval.

☐ (a)

☐ (b)

☐ (c)

3. Let us use the dot scalar as an "alignment function" and the Softmax as a "distribution function" in the (SQRP). Which equation is correct ? 2 points

(a) $\alpha_i = \frac{q \cdot k_i}{\sum_{j=1}^n q \cdot k_j}$

(b) $\alpha_i = \frac{\exp(q \cdot k_i)}{\sum_{j=1}^n \exp(q \cdot k_j)}$

(c) $\alpha_i = q \cdot k_i$

Mark only one oval.

☐ (a)

☐ (b)

☐ (c)

4. In the (S2SWA) architecture

2 points

What is the interpretation of $\alpha_i^{<t_y, t_x>}$?

- (a) The weight associated with the hidden state $h_i^{t_x}$ to generate the context vector $c_i^{t_y}$
- (b) The weight associated with the hidden state $s_i^{t_y}$ to generate the context vector $c_i^{t_y}$
- (c) The weight associated with the hidden state $h_i^{T_x}$ to generate the context vector $c_i^{t_y}$

Mark only one oval.

- ☐ (a)
- ☐ (b)
- ☐ (c)

5. Which element in the (S2SWA) could be a good candidate to represent the query in the (SQRP) ?

2 points

- (a) $s_i^{t_y}$
- (b) $s_i^{t_y-1}$
- (c) $h_i^{t_x}$

Mark only one oval.

- ☐ (a)
- ☐ (b)
- ☐ (c)

6. Which elements in the (S2SWA) could be good candidates to represent the keys in the (SQRP) ? 2 points

(a) $(s_i^{t_y})_{1 \leq t_y \leq T_y}$

(b) $(h_i^{t_x})_{1 \leq t_x \leq T_x}$

(c) $(h_i^{t_x})_{1 \leq i \leq N}$

Mark only one oval.

☐ (a)

☐ (b)

☐ (c)

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