Self Attention

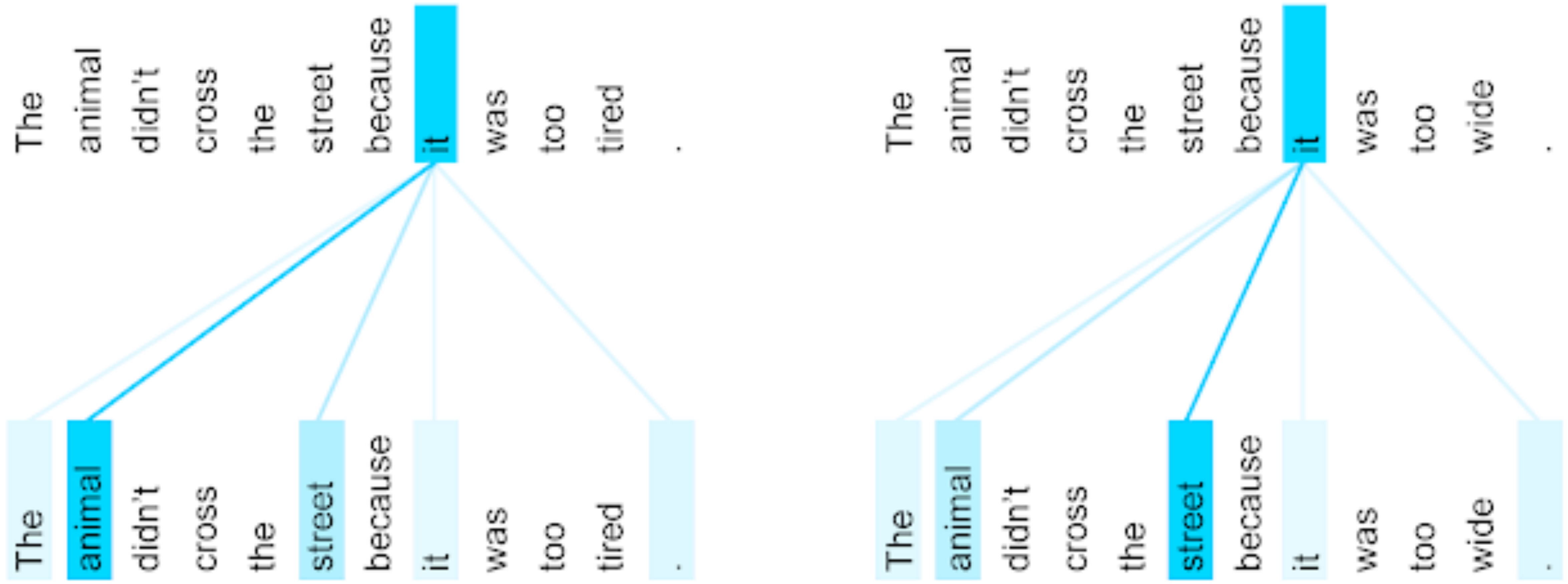
Explicit representation of the pair-wise similarities between tokens in a sequence.

Similarity measures in include inner product, either between raw features or learnable transformations of them (i.e. with a small FFNN).

Interestingly, SA encodes the distributional hypothesis in the same way as word2vec.

In principle we can consider arbitrary amount of context, no “memory” required, all computation is parallelizable w.r.t. to sequence

But, attention of this form considers the input as a set, not a sequence … this problem has been addressed with transformer models.


The animal didn't cross the street because it was too tired .
The animal didn't cross the street because it was too tired .
The animal didn't cross the street because it was too wide .
The animal didn't cross the street because it was too wide .

Taken from this Google AI blog post

The transformer architecture

Definition: A neural network architecture that uses self-attention (between layers) as a primary means of expressing relationships between the random variables in the sequence.