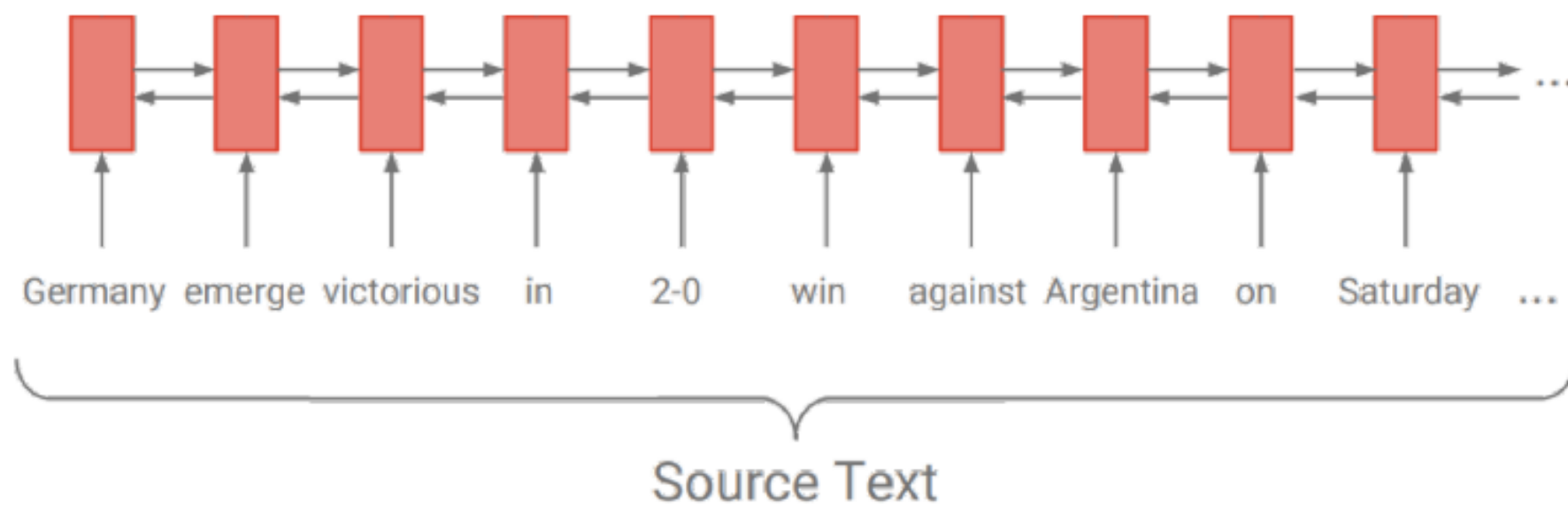


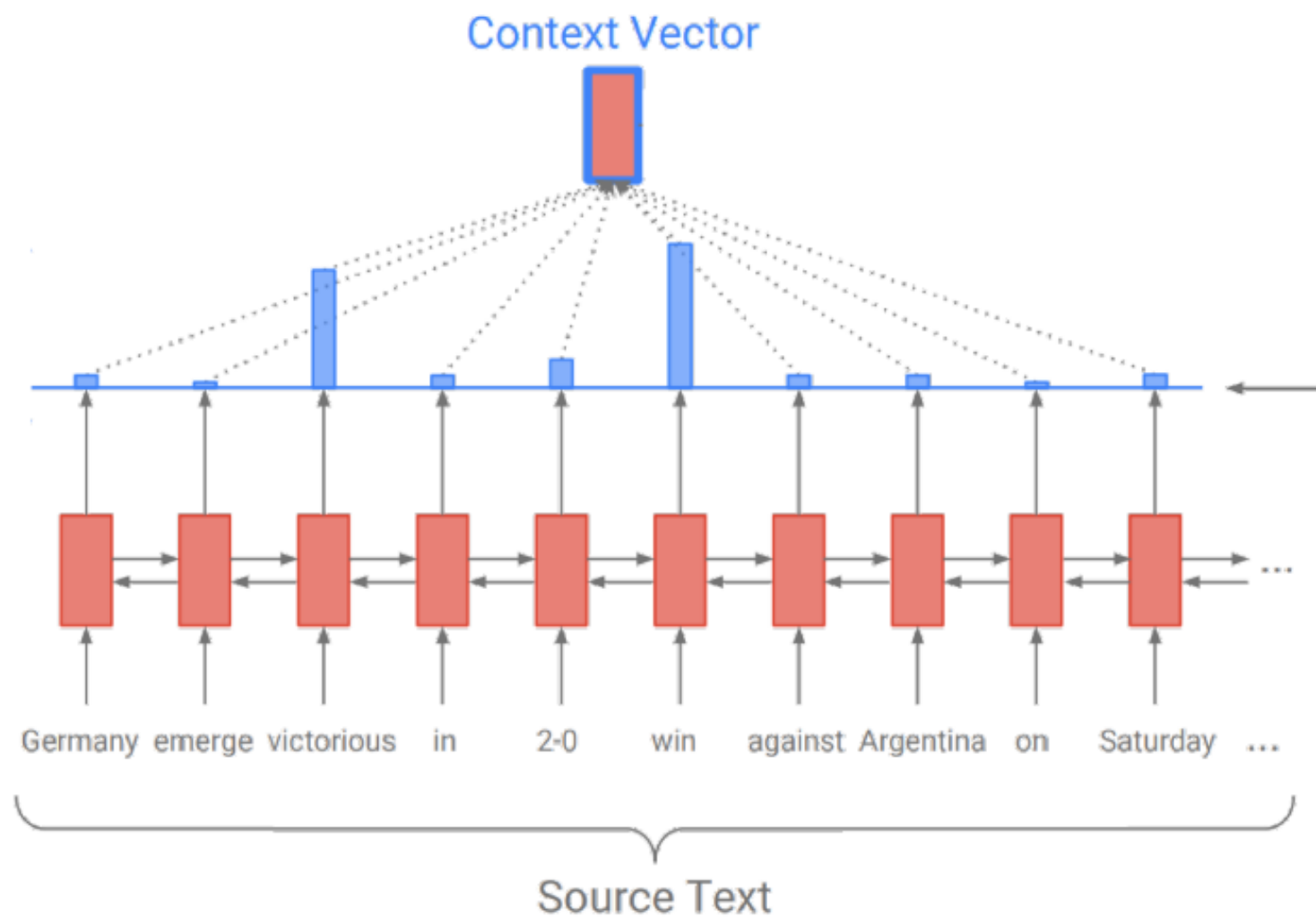
Deep Abstractive Summarization

Summarizing with Pointer-Generator Networks

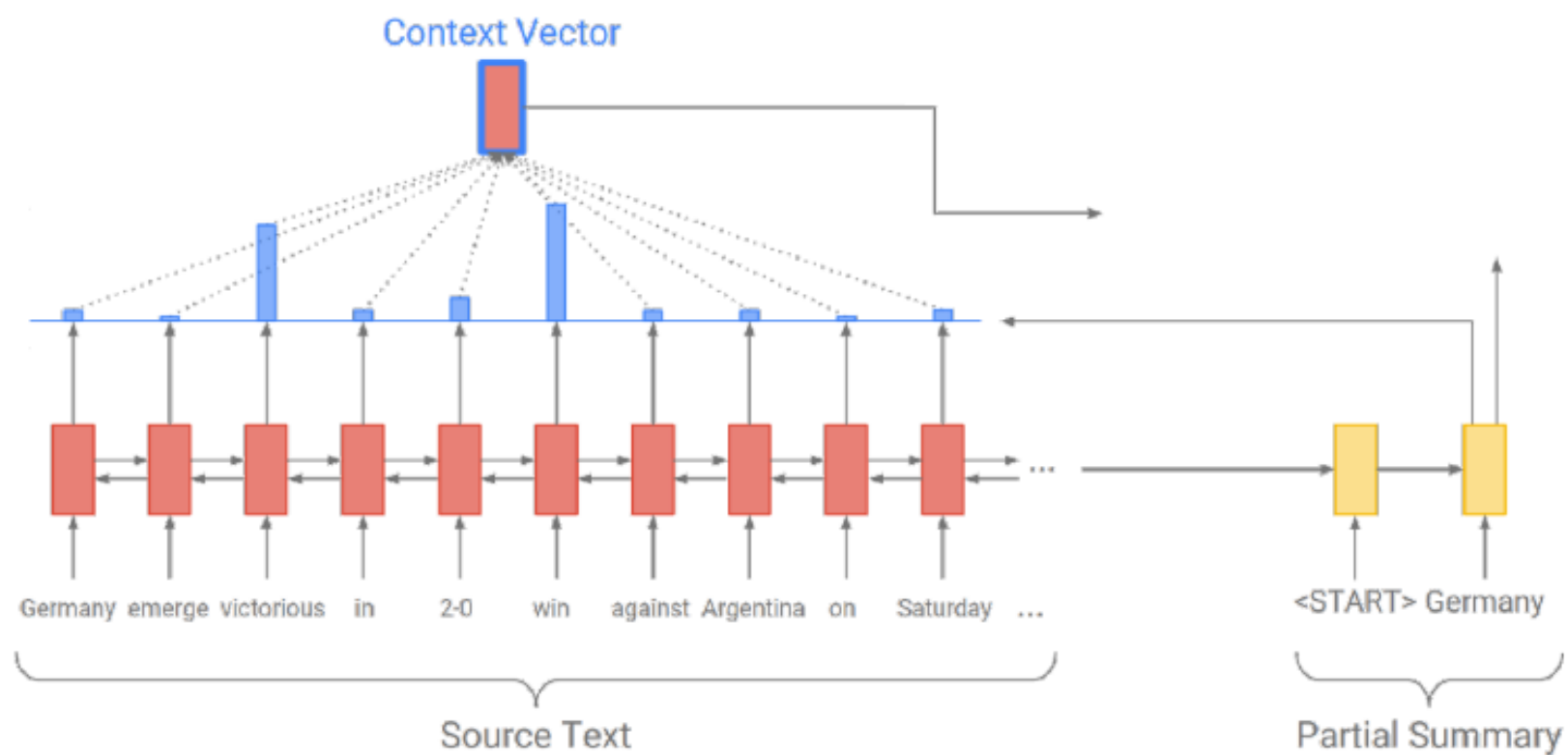
Seq2seq + attention



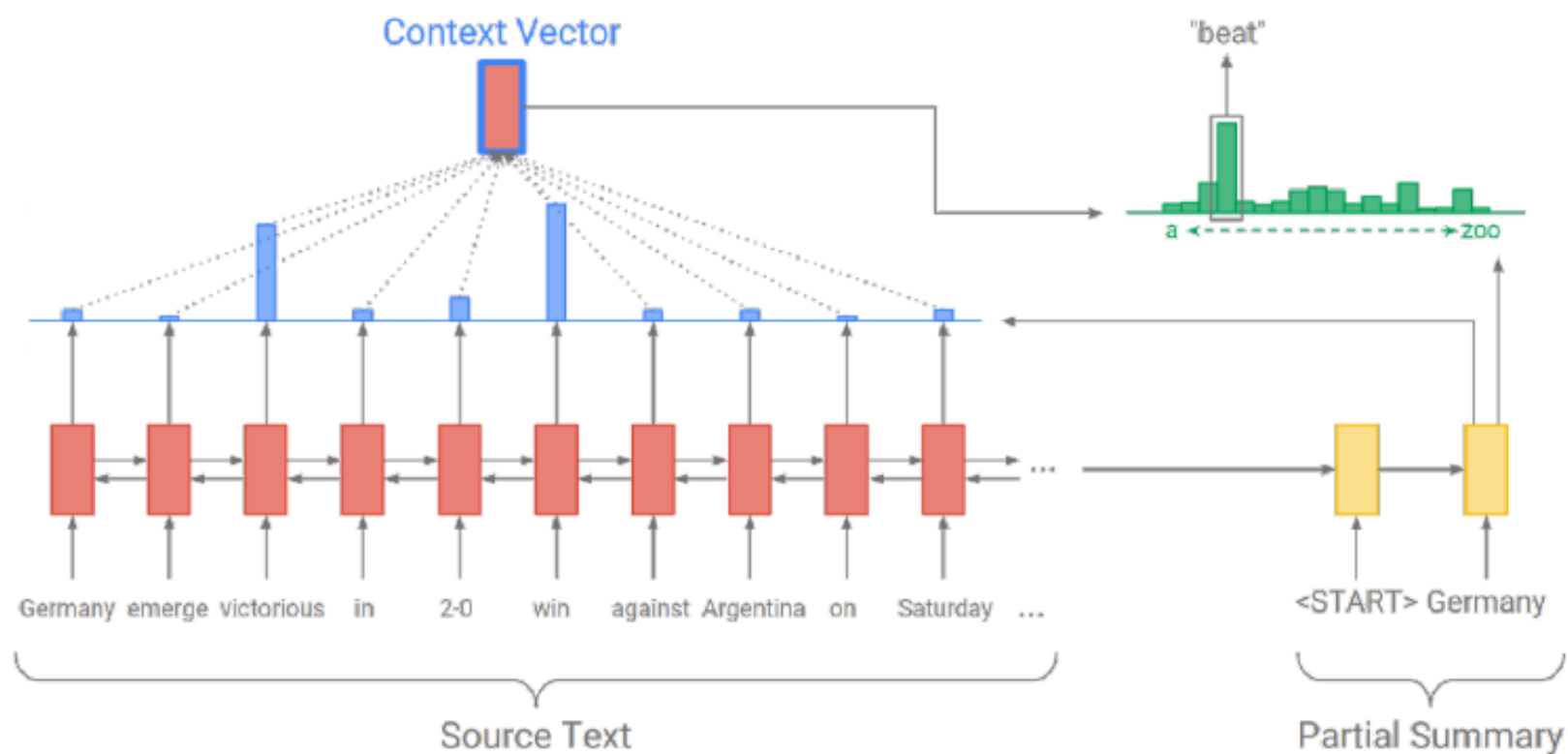
Seq2seq + attention



Seq2seq + attention



Seq2seq + attention



Original Text (truncated): lagos, nigeria (cnn) a day after winning nigeria's presidency, *muhammadu buhari* told cnn's christiane amanpour that he plans to aggressively fight corruption that has long plagued nigeria and go after the root of the nation's unrest. buhari said he'll "rapidly give attention" to curbing violence in the northeast part of nigeria, where the terrorist group boko haram operates. by cooperating with neighboring nations chad, cameroon and niger, he said his administration is confident it will be able to thwart criminals and others contributing to nigeria's instability. for the first time in nigeria's history, the opposition defeated the ruling party in democratic elections. buhari defeated incumbent goodluck jonathan by about 2 million votes, according to nigeria's independent national electoral commission. the win comes after a long history of military rule, coups and botched attempts at democracy in africa's most populous nation.

Seq2Seq + Attention: UNK UNK says his administration is confident it will be able to destabilize nigeria's economy. UNK says his administration is confident it will be able to thwart criminals and other nigerians. he says the country has long nigeria and nigeria's economy.

1. Attention distribution (over source positions):

$$e_i^j = w^T \tanh(W_h h_i + W_s s_j + b_{attn})$$

$$p^j = softmax(e^j)$$

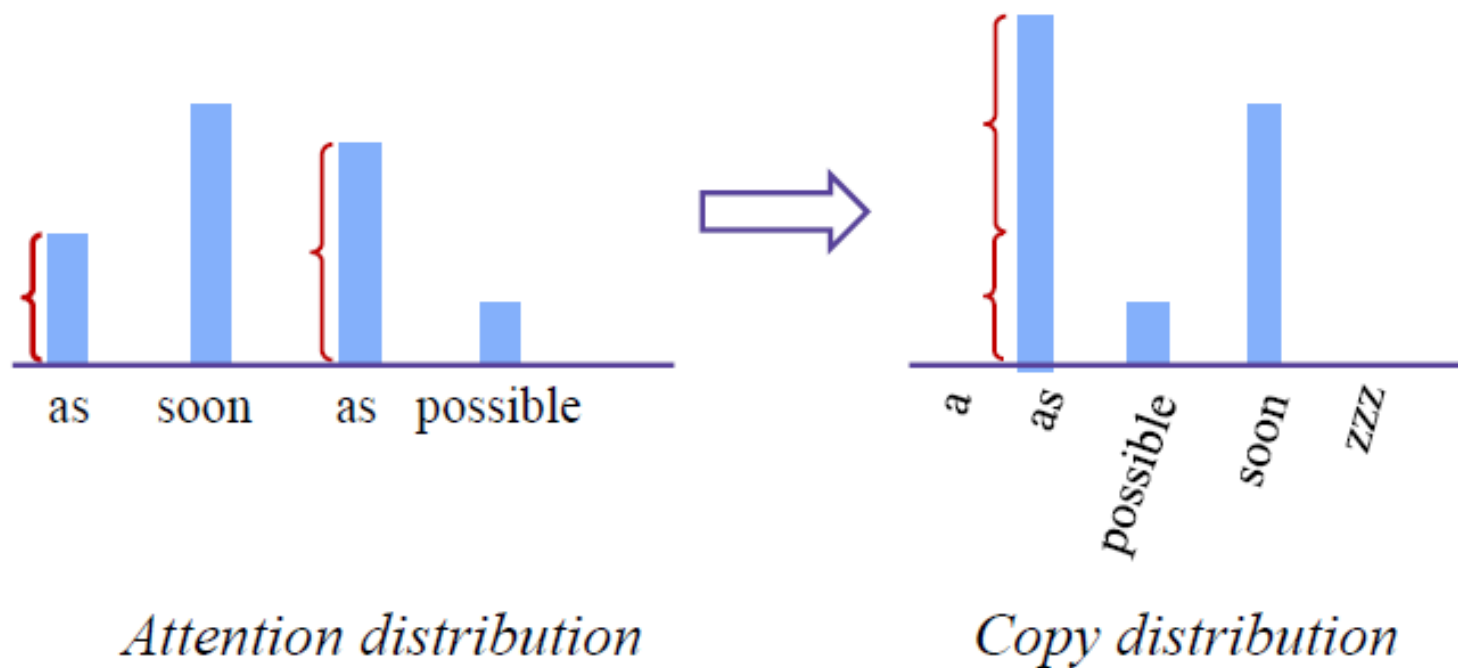
2. Vocabulary distribution (generative model):

$$v_j = \sum_i p_i^j h_i$$

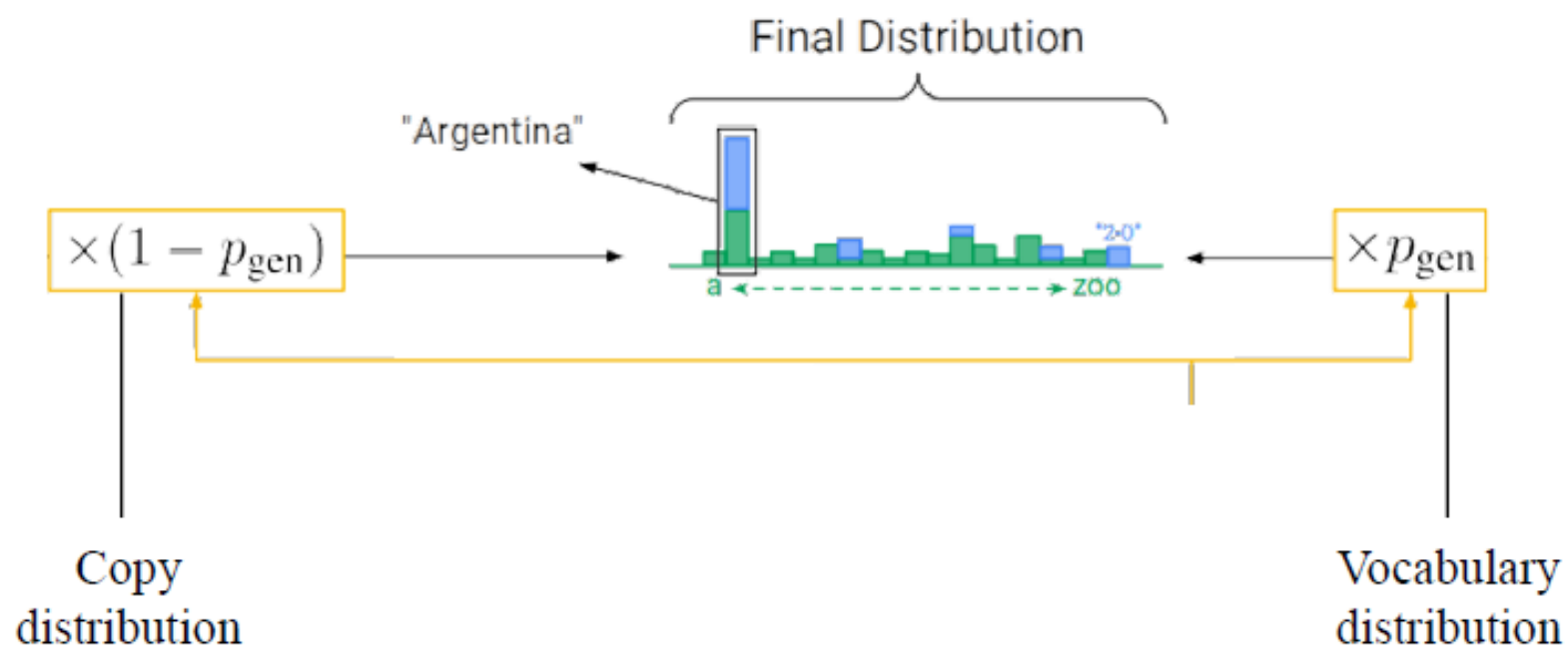
$$p_{vocab} = softmax(V'(V[s_j, v_j] + b) + b')$$

3. Copy distribution (over words from source):

$$p_{copy}(w) = \sum_{i: x_i=w} p_i^j$$



Pointer-generator network



4. Final distribution:

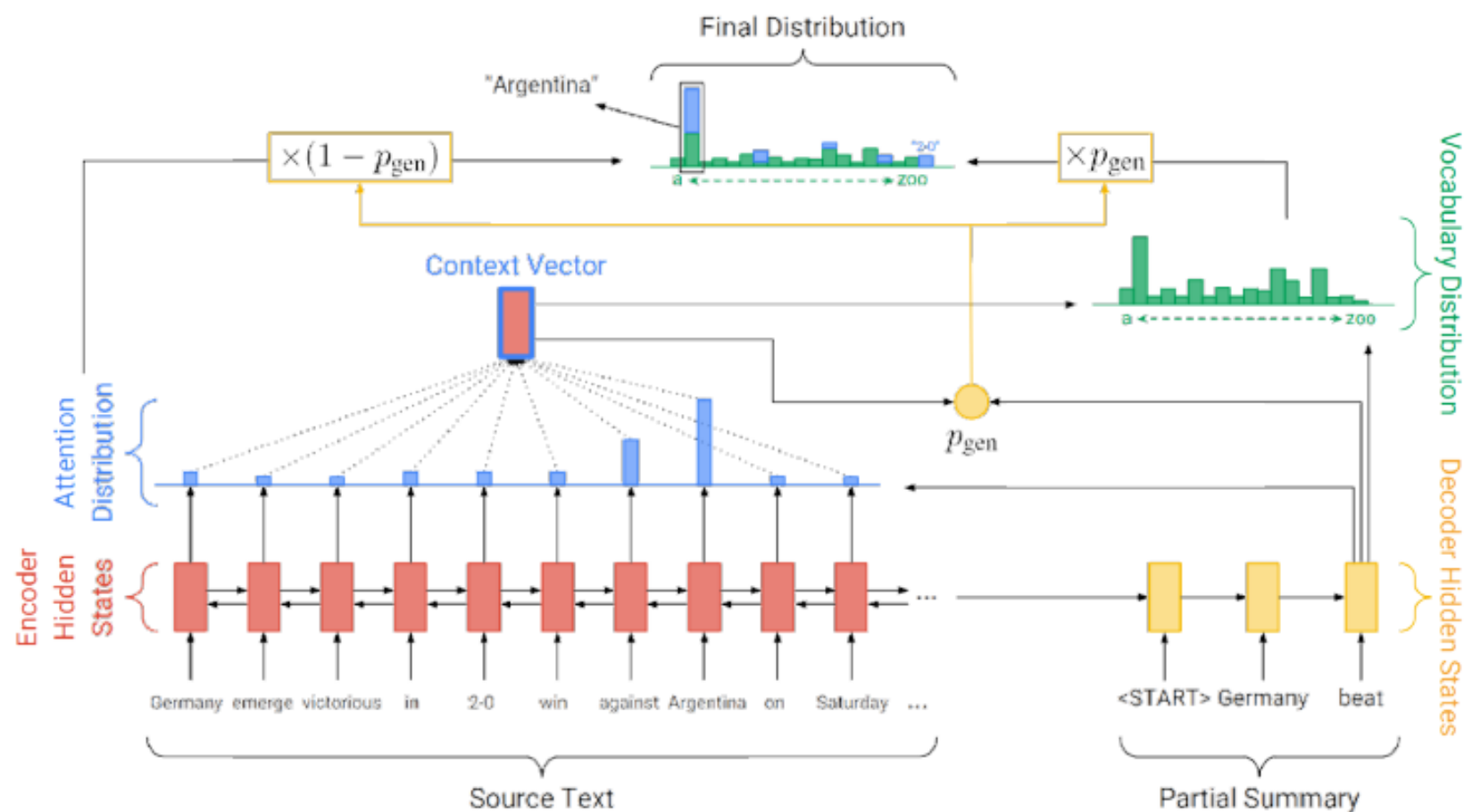
$$p_{final} = p_{gen} p_{vocab} + (1 - p_{gen}) p_{copy}$$

$$p_{gen} = \sigma(w_v^T v_j + w_s^T s_j + w_x^T y_{j-1} + b_{gen})$$

5. Training:

$$\text{Loss} = -\frac{1}{J} \sum_{j=1}^J \log p_{final}(y_j)$$

Pointer-generator network



Pointer-Gen: *muhammadu buhari* says he plans to aggressively fight corruption **in the northeast part of nigeria.** he says he'll "rapidly give attention" to curbing violence **in the northeast part of nigeria.** he says his administration is confident it will be able to thwart criminals.

Coverage mechanism

Coverage vector:

$$c^j = \sum_{j'=0}^{j-1} p^{j'}$$

Modified attention:

$$e_i^j = w^T \tanh(W_h h_i + W_s s_j + w_c c_i^j + b_{attn})$$

Coverage loss:

$$\text{covloss}_j = \sum_i \min(p_i^j, c_i^j)$$

Pointer-Gen + Coverage: *muhammadu buhari* says he plans to aggressively fight corruption that has long plagued nigeria. he says his administration is confident it will be able to thwart criminals. the win comes after a long history of military rule, coups and botched attempts at democracy in africa's most populous nation.

Original Text (truncated): lagos, nigeria (cnn) a day after winning nigeria's presidency, *muhammadu buhari* told cnn's christiane amanpour that **he plans to aggressively fight corruption that has long plagued nigeria** and go after the root of the nation's unrest. buhari said he'll "rapidly give attention" to curbing violence in the northeast part of nigeria, where the terrorist group boko haram operates. by cooperating with neighboring nations chad, cameroon and niger, **he said his administration is confident it will be able to thwart criminals** and others contributing to nigeria's instability. for the first time in nigeria's history, the opposition defeated the ruling party in democratic elections. buhari defeated incumbent goodluck jonathan by about 2 million votes, according to nigeria's independent national electoral commission. **the win comes after a long history of military rule, coups and botched attempts at democracy in africa's most populous nation.**