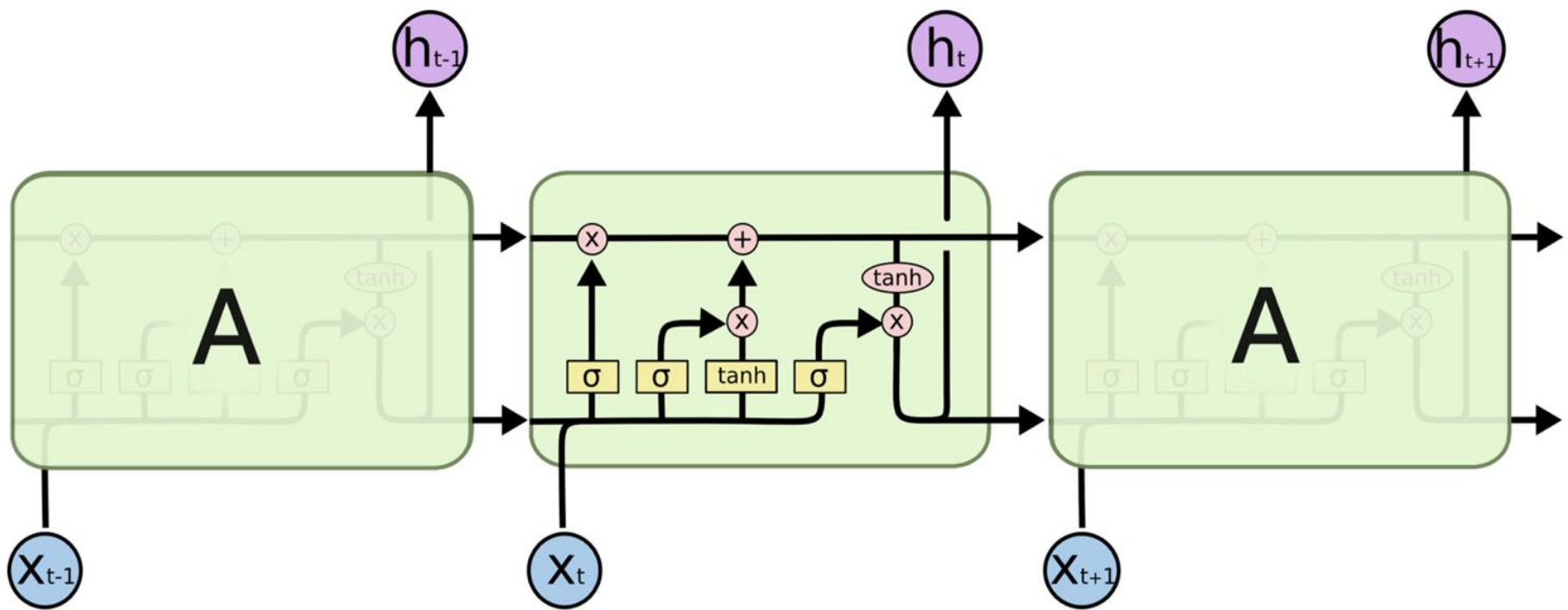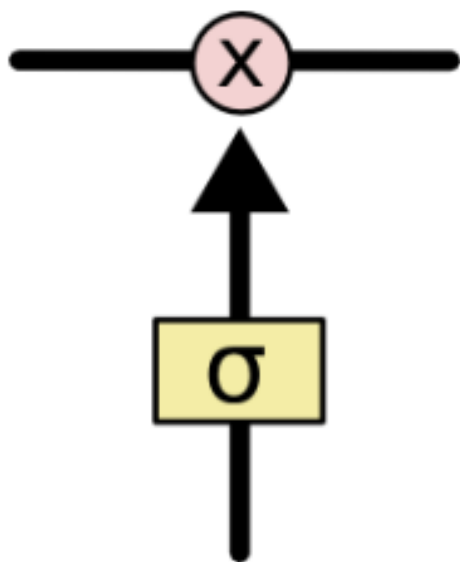# LSTM

Long-short term memory Unit

LSTM
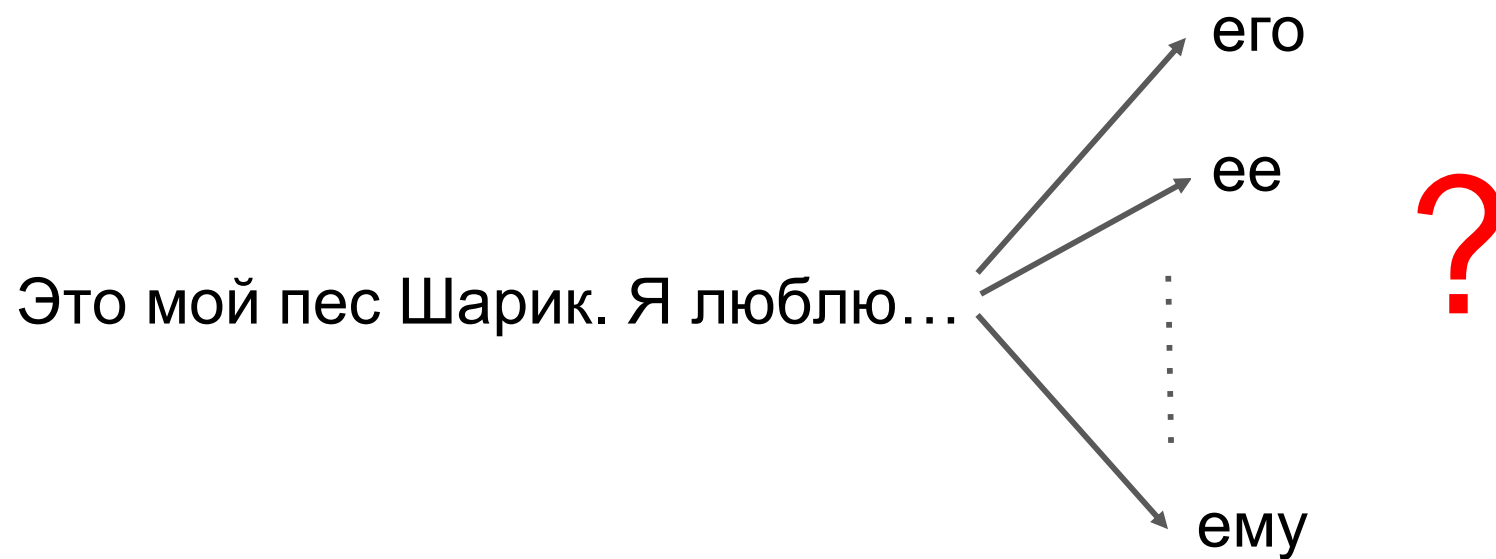
LSTM Gates
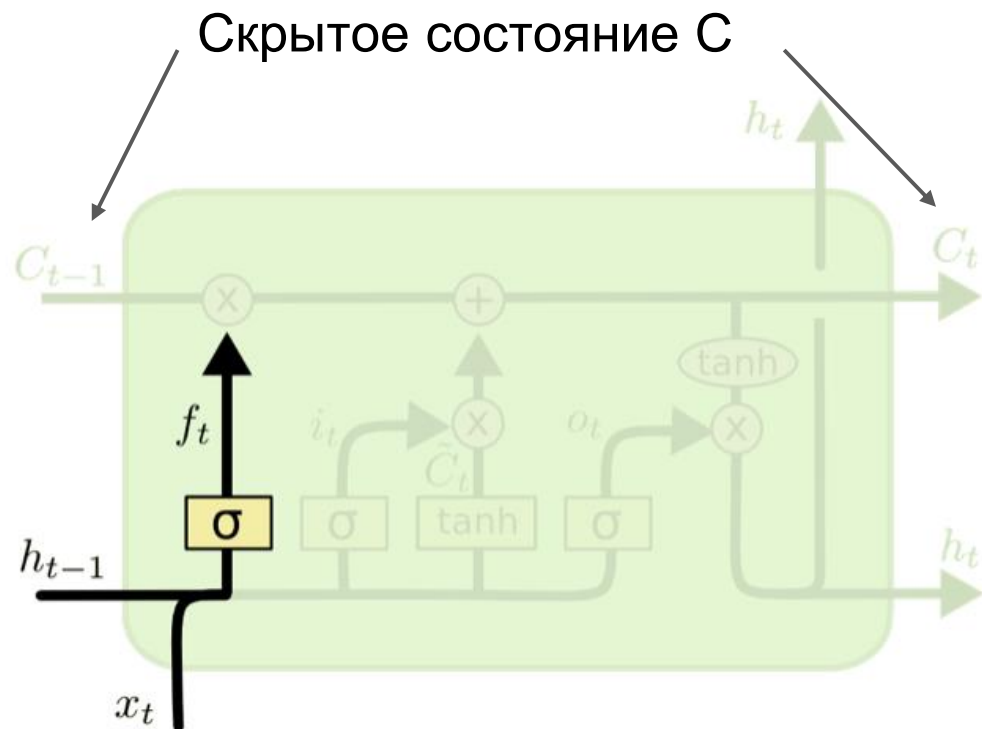
$$f_t = \sigma(W_f \cdot [h_{t-1}, x_t] + b_f)$$

LSTM Gates

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ее

Это мой пес Шарик. Я люблю…
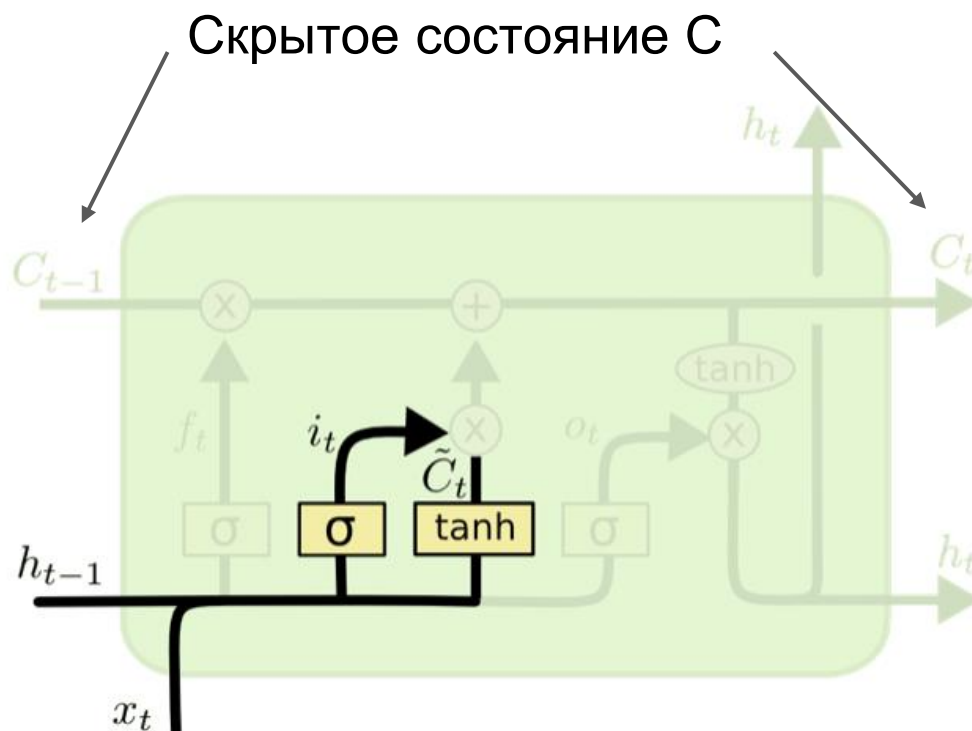
ему

?

LSTM Forget gate

Скрытое состояние C

$$f_t = \sigma(W_f \cdot [h_{t-1}, x_t] + b_f)$$

LSTM Update gate

Скрытое состояние С

$$i_t = \sigma(W_i \cdot [h_{t-1}, x_t] + b_i)$$

update gate:

$$\tilde{C}_t = tanh(W_C \cdot [h_{t-1}, x_t] + b_C)$$

new information:

LSTM Hidden state

Скрытое состояние C
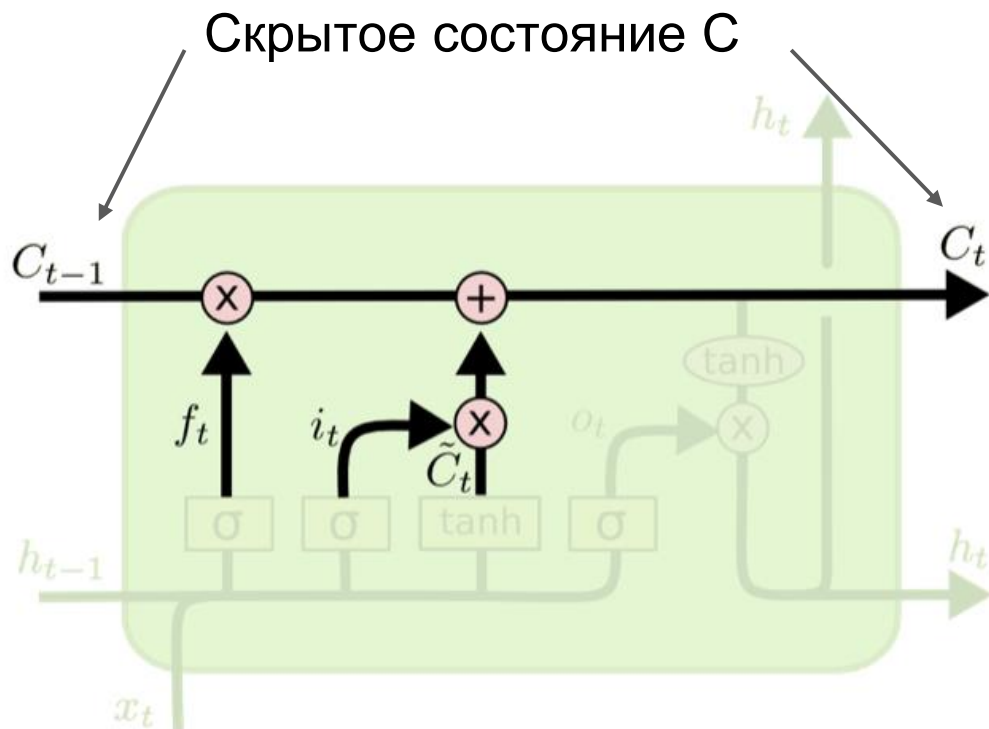
$$C_t = f_t \cdot C_{t-1} + i_t \cdot \tilde{C}_t$$

LSTM Output

Скрытое состояние C
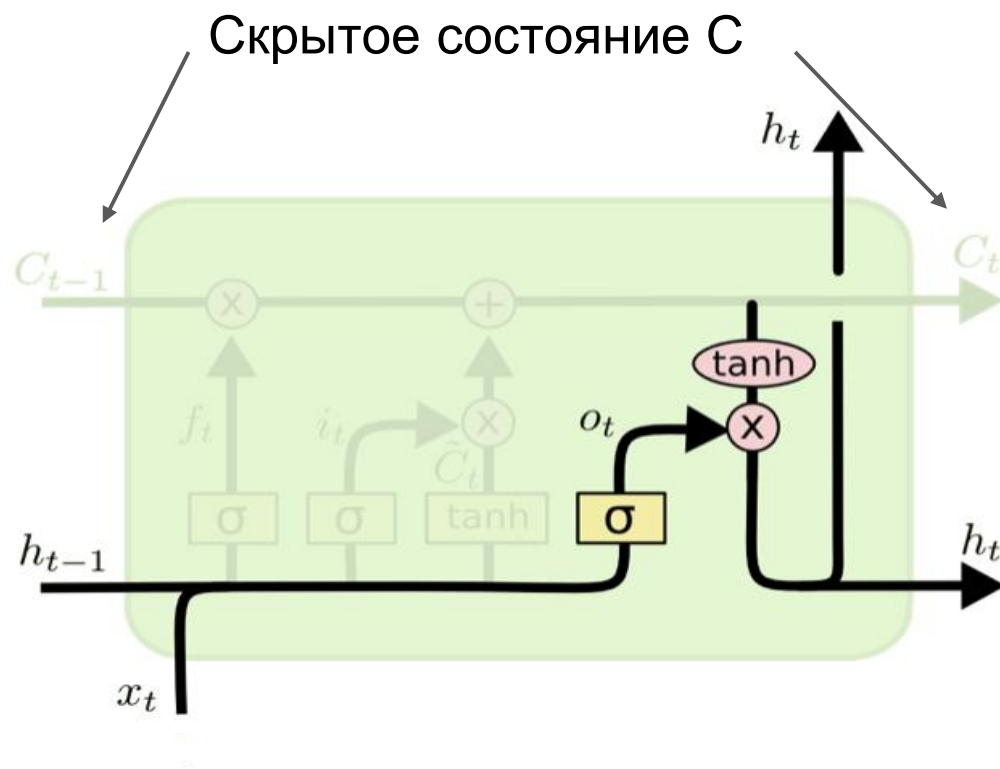
$$o_t = \sigma(W_o \cdot [h_{t-1}, x_t] + b_o)$$

$$h_t = o_t \cdot tanh(C_t)$$

LSTM

$$f_t = \sigma(W_f \cdot [h_{t-1}, x_t] + b_f)$$

$$i_t = \sigma(W_i \cdot [h_{t-1}, x_t] + b_i)$$
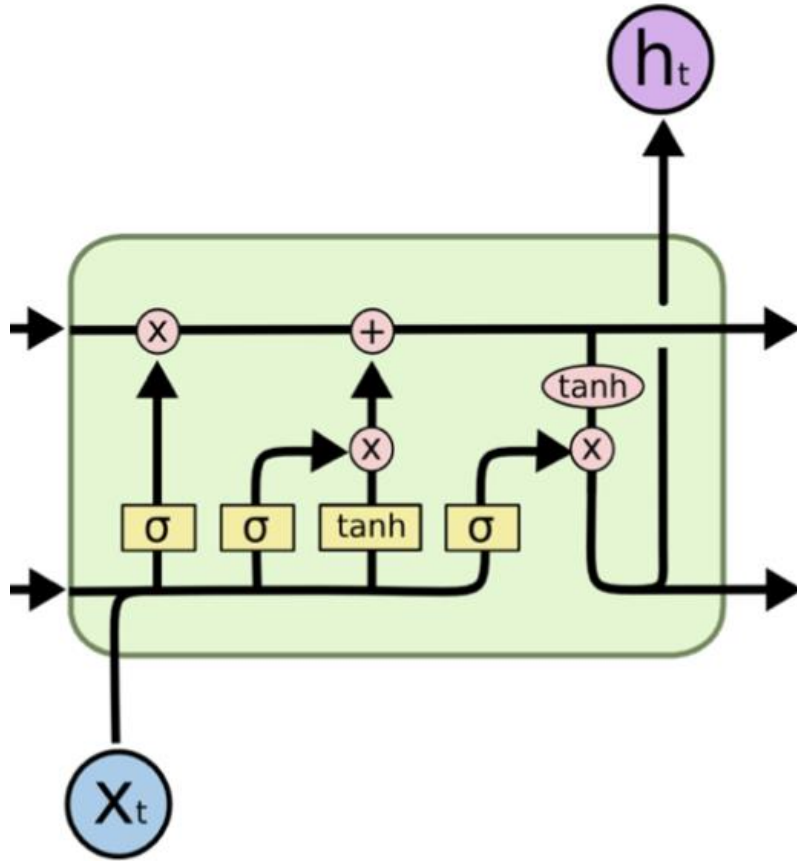
$$\tilde{C}_t = tanh(W_C \cdot [h_{t-1}, x_t] + b_C)$$

$$C_t = f_t \cdot C_{t-1} + i_t \cdot \tilde{C}_t$$

$$o_t = \sigma(W_o \cdot [h_{t-1}, x_t] + b_o)$$

$$h_t = o_t \cdot tanh(C_t)$$