

1) Sentiment Analysis (LSTM)

1) Tokenization/padding

Review must be 250 words. If shorter than padded with 0 and if greater than padded & cut to 250 words.

2) Input dim = 10,000 # Embedding Layer

$$\begin{aligned} \text{Parameters} &= 10,000 \times 64 \\ \text{output dim} &= 64 \end{aligned}$$

$$\text{Input length} = 250$$

LSTM 3) 64 neurons \rightarrow 3 gates

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

w_f = forget gate weight matrix

h_{t-1} = Previous hidden state
(output from last word)

x_t = Current Input (current word)

b_f = Forget gate bias

2)

Input gate

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

W_i = Input gate weight matrix

b_i = Input bias gates

Candidate cell state

$$C_t = \tanh(W_c \cdot [h_{t-1}, x_t] + b_c)$$

W_c = weight matrix

b_c = bias

Cell update Equation

$$C_t = f_t * C_{t-1} + i_t * C_t$$

C_{t-1} = previous cell state

Output Gate Equation

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

hidden state

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