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$$visScore = p(S|vid)*p(V_{orig}|vid)*sim(V_{sim},V_{orig})*p(O|vid)$$

(1)

$$score = w_1*visScore + w_2*nlpScore$$

(2)

??
 V_{sim}
?
?
??
?

$$k \in \{S,V,O,P\}$$

(3)

$$\phi_k(t) = C_k(t) \quad , \quad \phi_{k,l}(t,s) = p(l=s|k=t) = \alpha p_0(l=s|k=t) + (1-\alpha)p_i(l=s|k=t)$$

k
 k
 t
 k
 $SVOP$

$$\begin{aligned} & \tilde{h}_t = \\ & g(W_{xh}x_t + \\ & W_{hh}h_t + \\ & b_h) \\ & v_t \\ & \phi_v(v_t) \end{aligned}$$

$$\begin{aligned} & V \\ & \phi_t \in \\ & \mathbb{R}^d \\ & W \\ & x_t \\ & h_{t-1} \\ & z_t \\ & h_t \\ & z_t = \\ & c) = \end{aligned}$$

$$\frac{\exp(W_{zc}z_{t,c}+b_c)}{\sum_{c' \in C} \exp(W_{zc}z_{t,c}+b_c)}$$

$$\begin{aligned} & W \\ & ?? \\ & ?? \\ & ? \\ & ?? \\ & \sigma \\ & \phi_t = \\ & \sigma(W_{xi}x_t + \\ & W_{hi}h_{t-1} + \\ & b_i)f_t = \\ & \sigma(W_{xf}x_t + \\ & W_{hf}h_{t-1} + \\ & b_f)o_t = \\ & \sigma(W_{xo}x_t + \\ & w_{ho}h_{t-1} + \\ & b_o) \\ & g_t = \\ & \phi(W_{xc}x_t + \\ & W_{hc}h_{t-1} + \\ & b_c)c_t = \end{aligned}$$

$$\begin{aligned} & f_t^* \\ & c_{t-1} + \\ & i_t^* \\ & g_t h_t = \\ & o_t^* \\ & \phi(c_t) \\ & ?? \\ & f^{c_7} \\ & f^{c_6} \end{aligned}$$

$$\begin{aligned} & d \\ & x_t \\ & ? \\ & i \\ & T + \\ & T' \\ & T \\ & T' \\ & V \\ & W \end{aligned}$$

$$\begin{aligned} & y_t \\ & \log P_{V,W}(y_t|x_{1:t},y_{1:t-1}) \\ & ?? \\ & ? \\ & ? \\ & V \end{aligned}$$