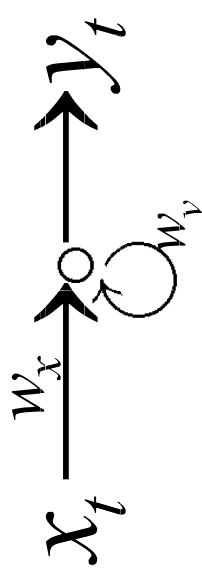


Recurrent Neural Networks(RNN)

- $y_t = \phi(v_t)$

$$v_t = w_v y_{t-1} + w_x x_t$$



$$\frac{\partial E}{\partial w_v} = \sum_{t=1}^s \frac{\partial E_t}{\partial w_v}$$

$$\frac{\partial E}{\partial w_v} = \sum_{k=1}^t \frac{\partial E_t}{\partial y_t} \cdot \frac{\partial y_t}{\partial v_t} \cdot \frac{\partial v_t}{\partial v_k} \cdot \frac{\partial v_k}{\partial \theta}$$

