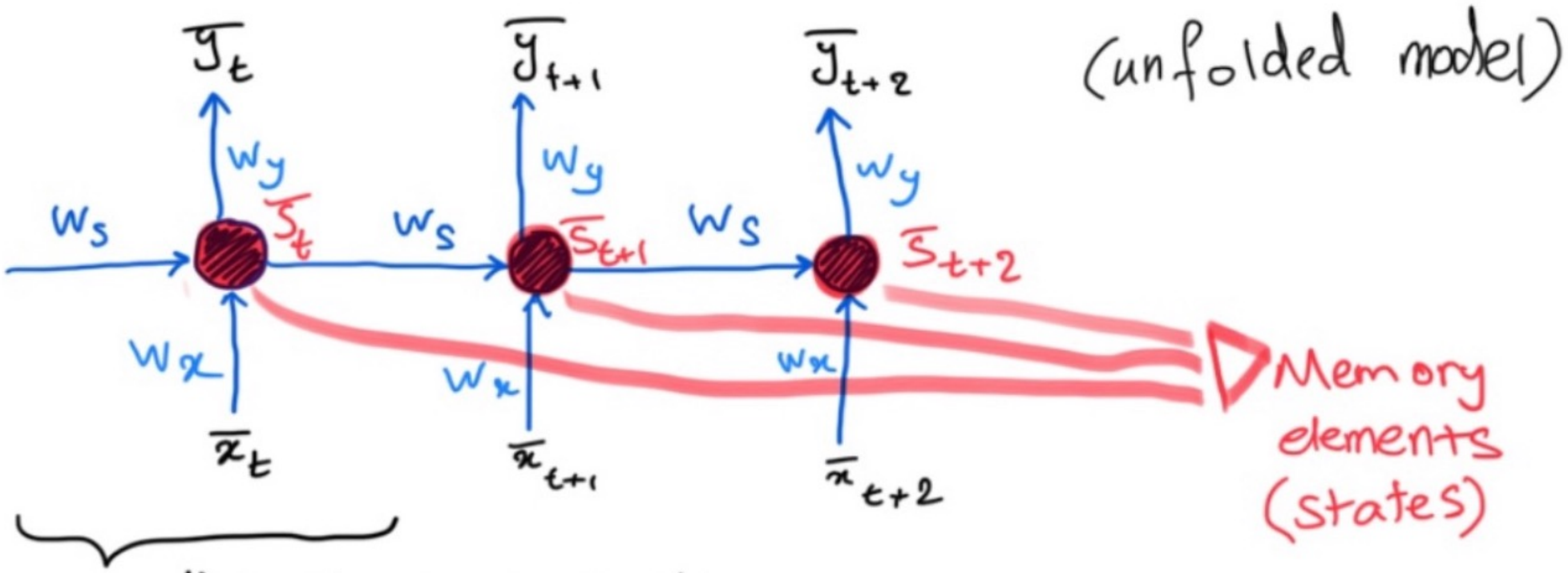
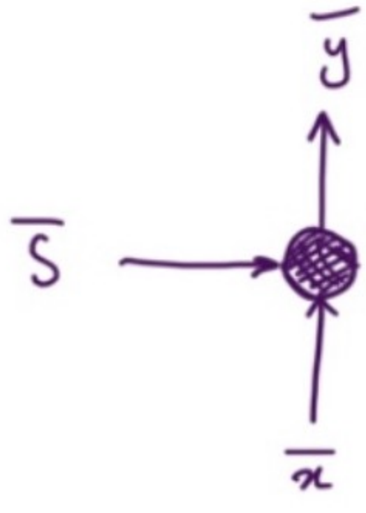
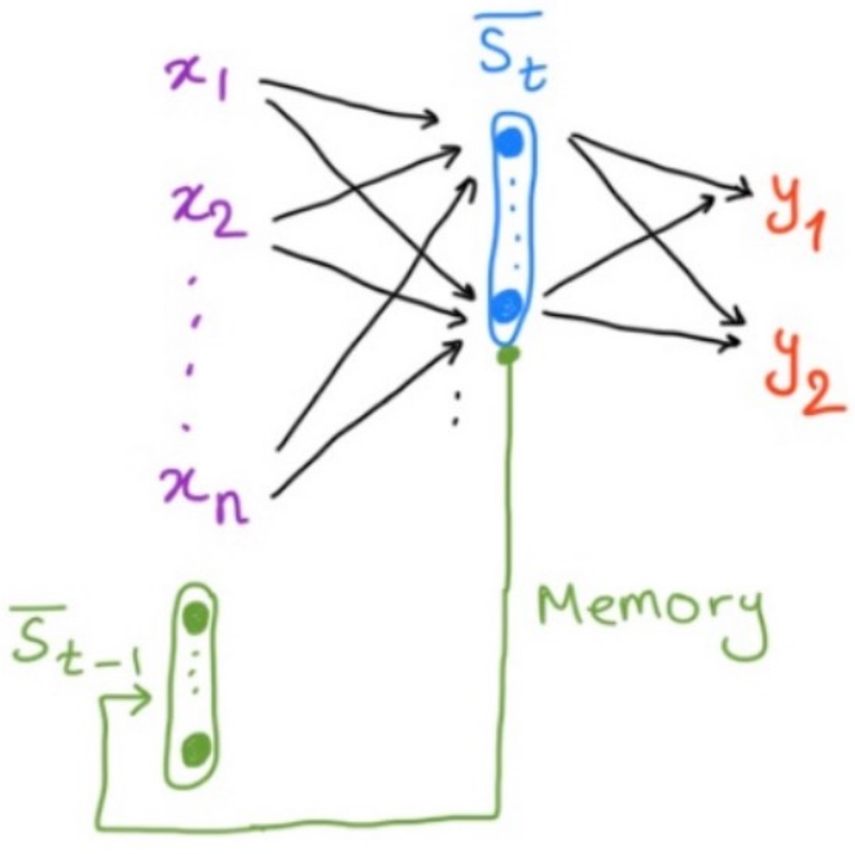
Recurrent Neural Nets





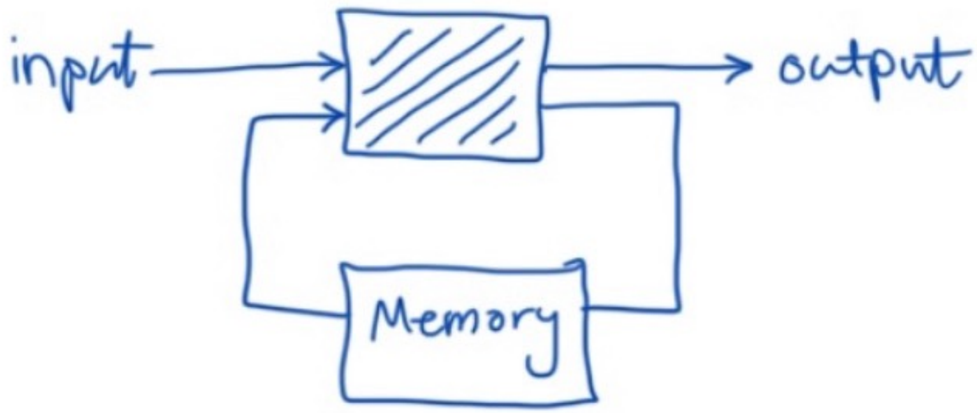
$\bar{y}$ depends on both { $\bar{x}$ input; $\bar{s}$ memory (past input)

RNN illustrated differently:

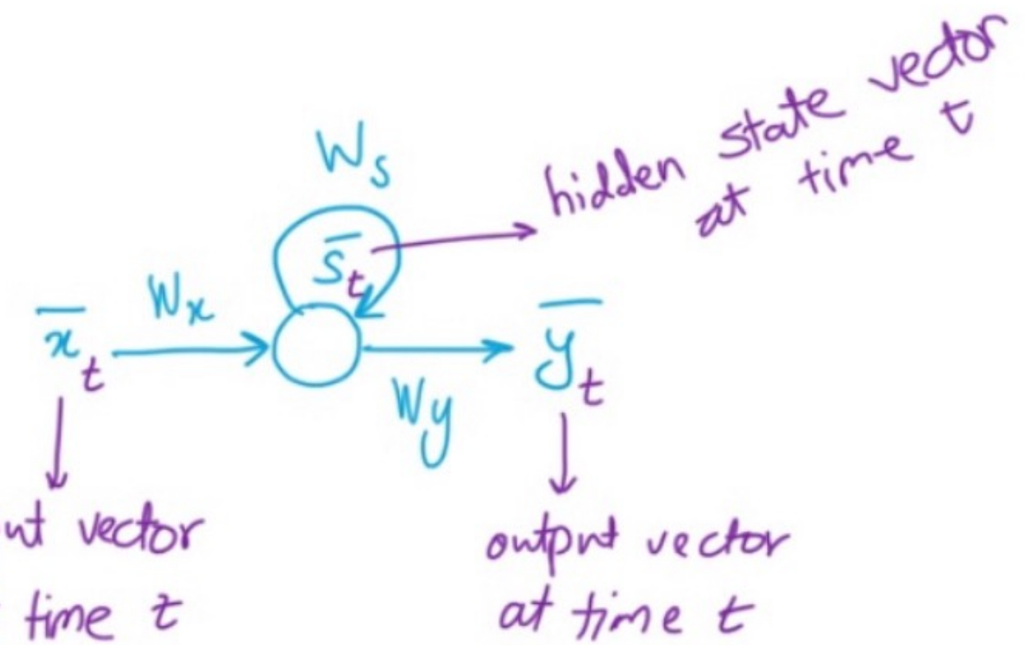


← Simple (Elman) RNN

RNN as State Machine



or, more simply:
(folded model)

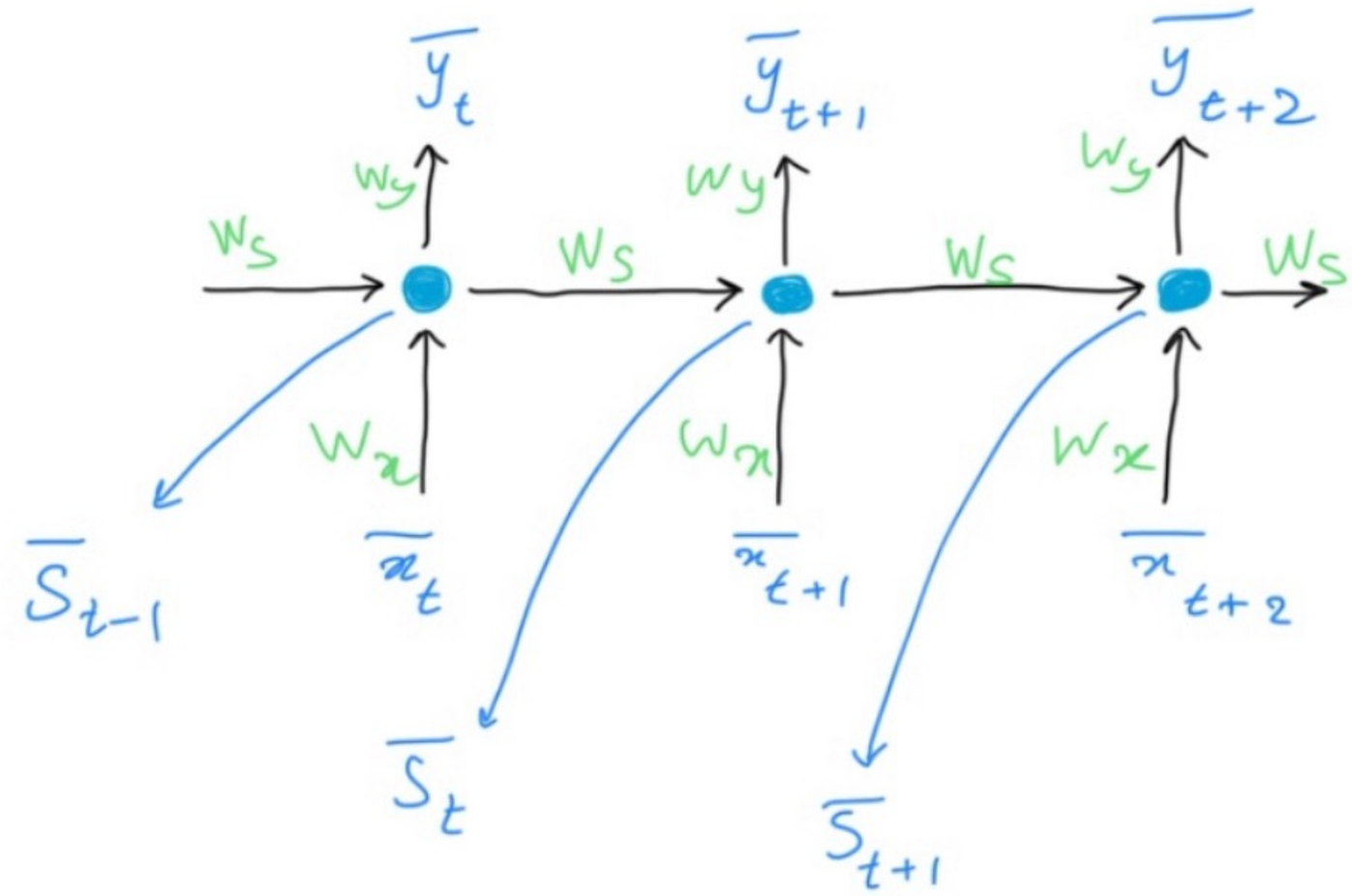


activation function

$$\overline{S_t} = \Phi(\overline{x_t} \cdot W_x + \overline{S_{t-1}} \cdot W_S)$$

$$\overline{y_t} = \overline{S_t} \cdot W_y$$

Unfolded representation is cleaner and easier to understand.



* RNNs can handle varying lengths of inputs.