



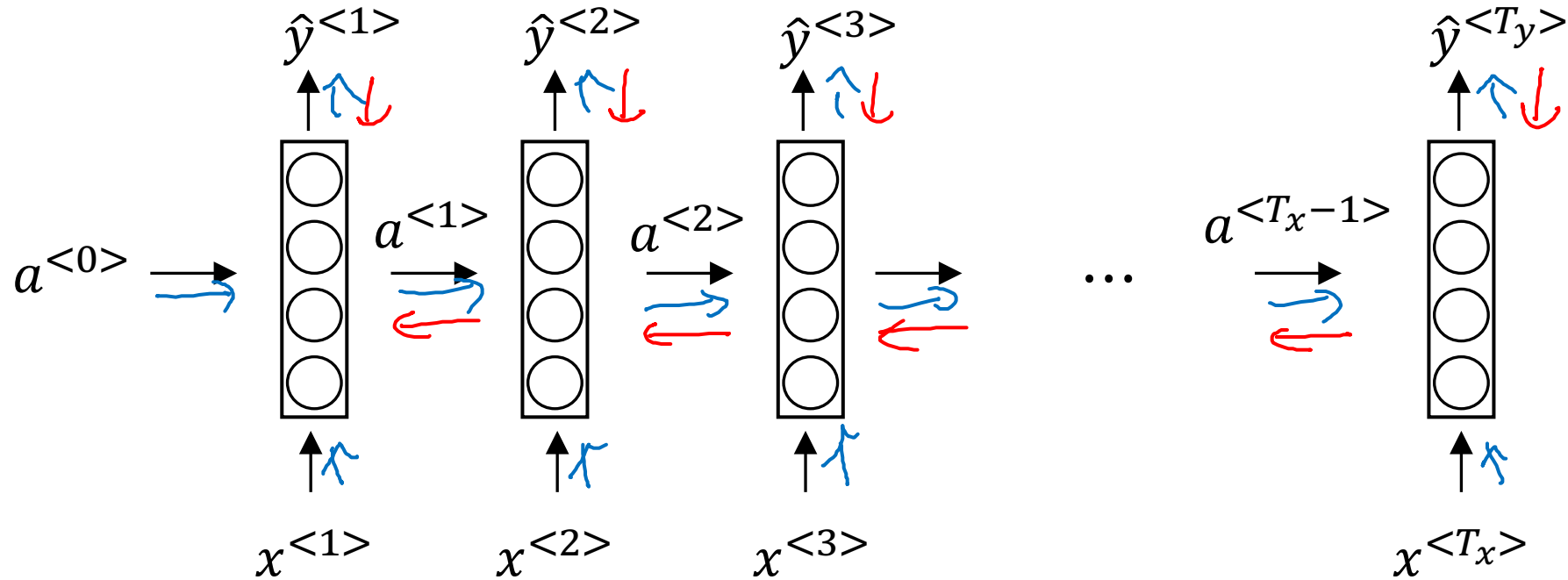
deeplearning.ai

# Recurrent Neural Networks

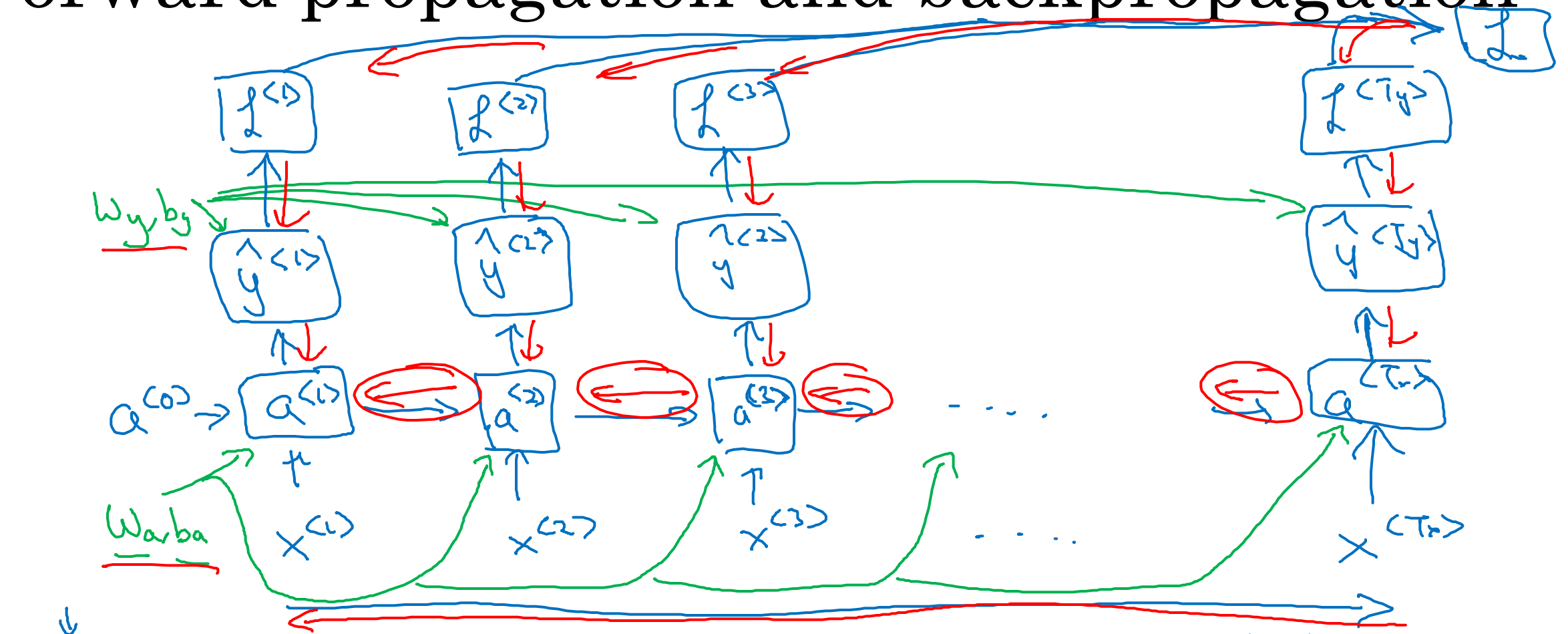
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Backpropagation  
through time

# Forward propagation and backpropagation



# Forward propagation and backpropagation



$$\mathcal{L}^{(t)}(\hat{y}^{(t)}, y^{(t)}) = -y^{(t)} \log \hat{y}^{(t)} - (1 - y^{(t)}) \log (1 - \hat{y}^{(t)})$$

$$\mathcal{L}(\hat{y}, y) = \sum_{t=1}^{T_{\text{tr}}} \mathcal{L}^{(t)}(\hat{y}^{(t)}, y^{(t)})$$

Backpropagation through time