## Recurrent Neural Nets

Handling sequential data

## RNN diagram

$$F(x, y) =$$

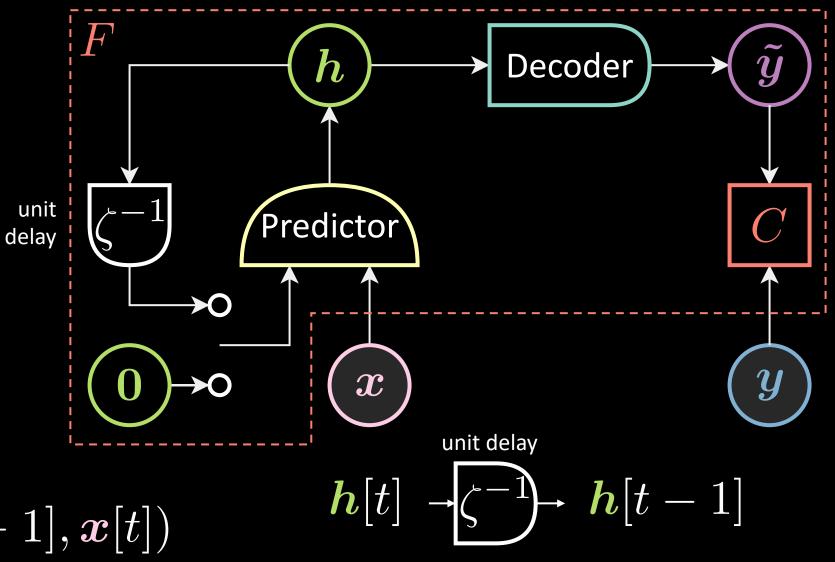
$$\sum_{t=1}^{T} oldsymbol{C}(oldsymbol{y}[t], ilde{oldsymbol{y}}[t])$$

**RNN** equations

$$h[0] \doteq 0$$

$$\boldsymbol{h}[t] = \operatorname{Pred}(\boldsymbol{h}[t-1], \boldsymbol{x}[t])$$

$$\tilde{\boldsymbol{y}}[t] = \operatorname{Dec}(\boldsymbol{h}[t])$$



## RNN training

- backprop through time
- SGD wrt model's params to match x and y

## RNN training

$$egin{aligned} m{h}[t] &= \operatorname{Pred}(m{h}[t-1], m{x}[t]) \ & ilde{m{y}}[t] &= \operatorname{Dec}(m{h}[t]) \end{aligned}$$

