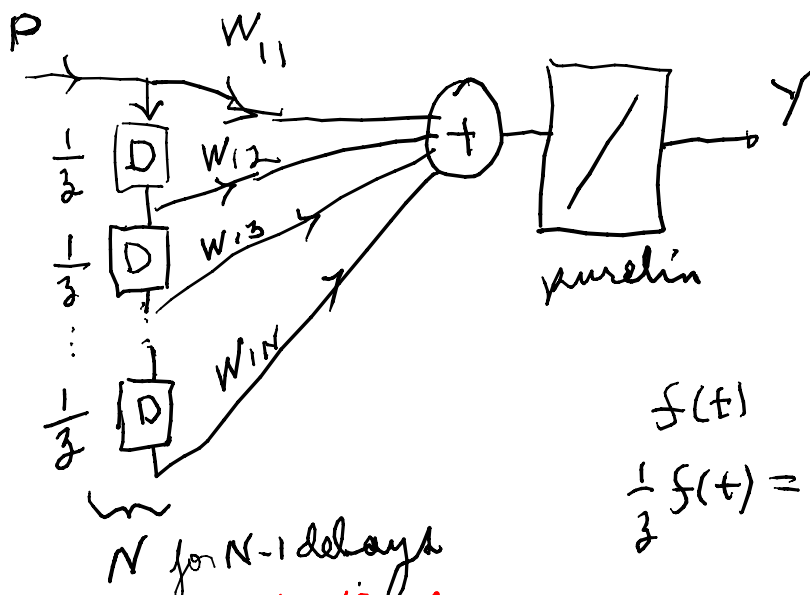


EE 434
02/22/05
(corrected 03/02/05)



allows no feedback

$f(t)$ $t = \text{integer}$
 $\frac{1}{z} f(t) = f(t-1) \Rightarrow \frac{1}{z} = \text{unit delay}$

For systems with feedback:

z transform transfer function

$$H(z) = \frac{y(m)}{u(m)}$$

$$H(z) = \frac{\sum_{i=0}^N a_i z^{-i}}{\sum_{i=0}^N b_i z^{-i}} = \frac{N(z)}{D(z)} ; \quad N(z) = \sum_{i=0}^N a_i z^{-i} = \text{degree } N \text{ in } z^{-1} \text{ if } a_N \neq 0$$

normalize $b_0 = 1$; $D(z) = 1 + \sum_{i=1}^N b_i z^{-i}$

$$N(z) = a_0 + \sum_{i=1}^N a_i z^{-i}$$

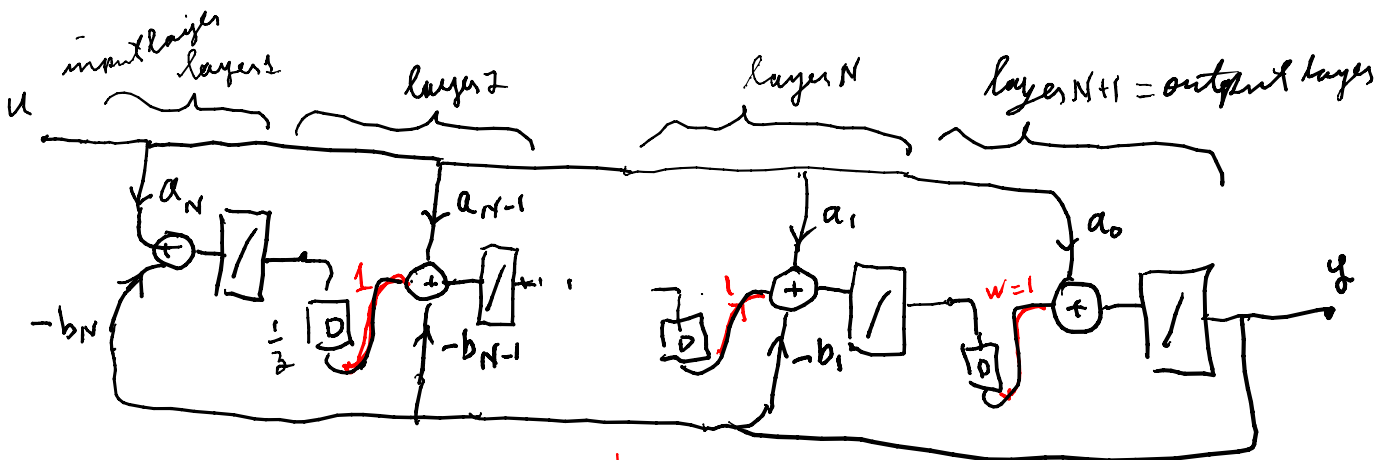
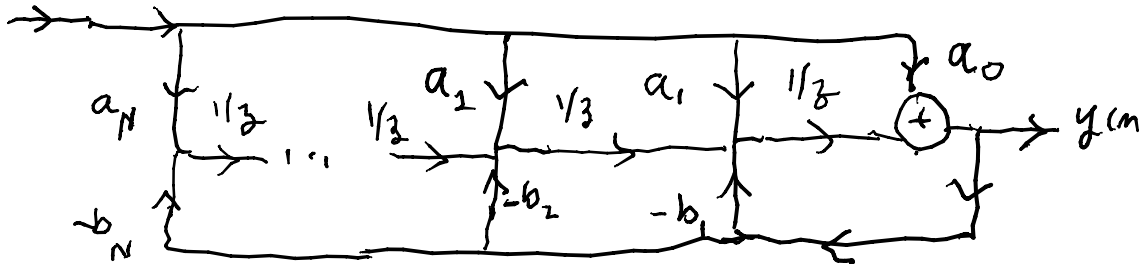
$$D(z) y(m) = N(z) u(m)$$

$$y_m + \sum_{i=1}^N b_i z^{-i} y(m) = a_0 u(m) + \sum_{i=1}^N a_i z^{-i} u(m)$$

$$y(m) = a_0 u(m) + \sum_{i=1}^N z^{-i} (a_i u(m) - b_i y(m))$$

↑ feedback terms

$u(m)$



net H. $LW \{k, 1\} = a_{N-k+1}$ $k=1, \dots, N+1$ 03/01/05

net H. $LW \{k+1, k\} = 1$ $k=1, \dots, N$ " "

net H. layer Weights $\{k+1, k\}$. delays = [1] $k=1, \dots, N$ " "

net H. $LW \{k, N+1\} = -b_{N-k+1}$ 03/01/05

↑