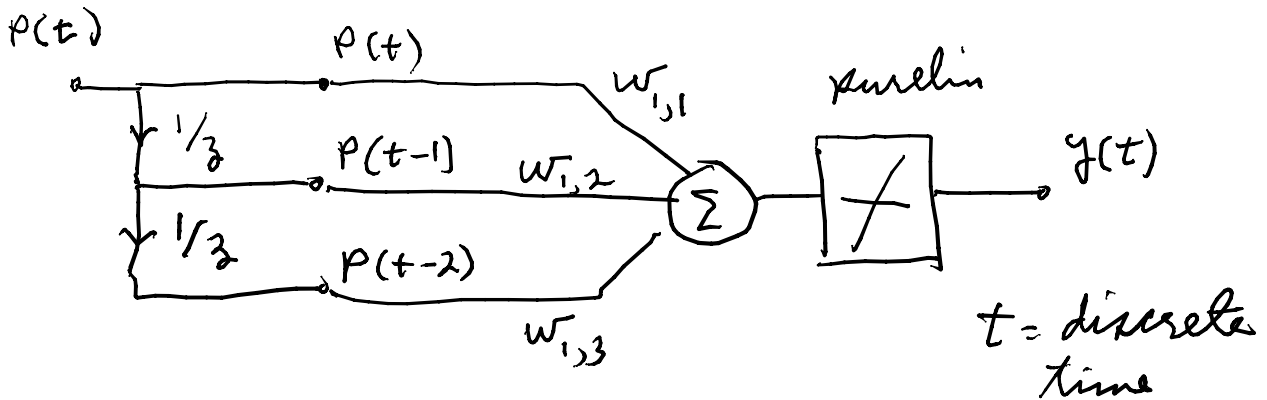


EE 434
02/06/06



$$y(t) = w_{1,1} \cdot p(t) + w_{1,2} p(t-1) + w_{1,3} p(t-2)$$

$$\frac{y(t)}{p(t)} = w_{1,1} + w_{1,2} \frac{1}{z} + w_{1,3} \frac{1}{z^2} = T(z)$$

$$\text{Ex: } T(z) = 0.1 + 0.6 \frac{1}{z} + (-3) \frac{1}{z^2}$$

$$t=1 \Rightarrow y(1) = 0.1 \times 1 + 0 \times 0.6 + 0 \times (-3) = 0.1$$

$$t=2 \Rightarrow y(2) = 0.1 \times 2 + 0.6 \times 1 + (-3) \times 0 = 0.8$$

$$t=3 \Rightarrow y(3) = 0.1 \times 3 + 0.6 \times 2 + (-3) \times 1 = 0.3 + 1.2 - 3 = -1.5$$

$$T(z) = \frac{N(z)}{D(z)} = \frac{\sum_{i=0}^N m_i \left(\frac{1}{z}\right)^i}{\sum_{j=0}^D d_j \left(\frac{1}{z}\right)^j} \quad \text{let } d_0 = 1$$

$$\frac{y(t)}{p(t)} \Rightarrow D\left(\frac{1}{z}\right) y(t) = N\left(\frac{1}{z}\right) p(t)$$

$$y(t) = N\left(\frac{1}{z}\right) p(t) \div \sum_{i=1}^D d_i \left(\frac{1}{z}\right)^i y(t)$$

$$E_x: T(z) = \frac{0.1 + 0.6(z^{-1}) + (-3)(z^{-1})^2}{1 + 0.2(z^{-1}) + 0.4(z^{-1})^2}$$

$$y(t) = 0.1 p(t) + 0.6 p(t-1) - 3 p(t-2) - 0.2 y(t-1) - 0.4 y(t-2)$$

