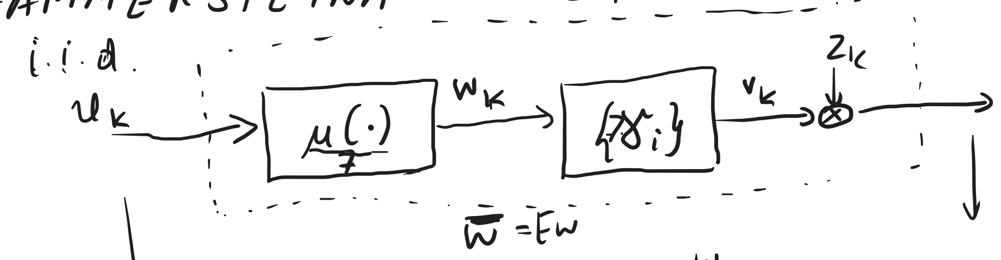
SYSTEM HAMMERSTEINA

$Ez_k = 0$ $\quad z_k, u_k$ – niezależne

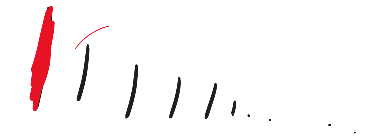


$\bar{w} = Ew$

$$y_k = \sum_{i=0}^{\infty} \gamma_i w_{k-i} + z_k = \sum_{i=0}^{\infty} \gamma_i \mu(u_{k-i}) + z_k$$

1D

$$R(u) \overset{def.}{=} E\{y_k \mid u_k = u\} = E\Big\{\gamma_0 \mu(u_k) + \underbrace{\sum_{i=1}^{\infty} \gamma_i \overbrace{\mu(u_{k-i})}^{w_{k-i}}} + \cancel{z_k} \,\Big|\, u_k = u\Big\} = \gamma_0 \mu(u) + C_1$$



gdzie $C_1 = \bar{w} \cdot \sum_{i=1}^{\infty} \gamma_i$

2D

$$R(u, v) \overset{def}{=} E\{y_k \mid u_k = u;\ u_{k-1} = v\} = E\Big\{\gamma_0 \mu(u_k) + \gamma_1 \mu(u_{k-1}) + \sum_{i=2}^{\infty} \gamma_i w_{k-i} + z_k \,\Big|\, u_k = u\ \ u_{k-1} = v\Big\} =$$

$$= \gamma_0 \mu(u) + \gamma_1 \mu(v) + \underbrace{\bar{w} \sum_{i=2}^{\infty} \gamma_i}_{C_2}$$

S-D

$$R(u^{(0)}, u^{(1)}, \ldots, u^{(s-1)}) = \ldots = \gamma_0 \mu(u^{(0)}) + \gamma_1 \mu(u^{(1)}) + \ldots + \gamma_{s-1} \mu(u^{(s-1)}) + \cancel{C_s}$$

gdzie $C_s = \bar{w} \cdot \sum_{i=s}^{\infty} \gamma_i$

FIR(s)

dla $i \geq s$ zachodzi $\gamma_i = 0$