$$H_p(z) = \begin{bmatrix} H_{00} & H_{01} \\ H_{10} & H_{11} \end{bmatrix}$$

$$H_0(z) = H_{00}(z^2) + z^{-1} H_{01}(z^2)$$

$$H_1(z) = H_{10}(z^2) + z^{-1} H_{11}(z^2)$$

$$F_p(z) = H_p(z)^{-1}$$

PARAUNITARNOST

$$\boxed{H_p(z^{-1})^T \cdot H_p(z) = c\,I}$$

$$P_0(z) = \frac{1}{16}(1+z^{-1})^4 (c - z^{-1})(-c^{-1} + z^{-1})$$

UVJETI KONVERGENCIJE

$$H_0(z)\Big|_{z=-1} = 0 \quad H_0(z)\Big|_{z=1} = \sqrt{2} \quad \text{Nužan}$$

$$F_1(z) = -H_0(-z) \rightarrow f_1[n] = h_0[n](-1)^{n+1}$$

$$H_1(z) = F_0(-z) \rightarrow h_1[n] = f_0[n](-1)^n$$

$$P_0(z) = (1+z^{-1})^{2p} Q_{2p-2}(z)$$

Povoljan - filtar nema nultočaka u rasponu $\left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$

HAAR

$$h_0[n] = \frac{1}{\sqrt{2}}\{1, 1\}$$

$$h_1[n] = \frac{1}{\sqrt{2}}\{1, -1\}$$

$$A[m,0] = \int_{-\infty}^{\infty} x(t)\,\varphi(t-m)\,dt$$

$$A[m,1] = \sum_{k=0}^{N_0} h_0[k] A[2m+k, 0]$$

$$X[m,1] = \sum_{k=0}^{N_0} h_1[n] A[2m+k, 0]$$

UVJET POTPUNE REKONSTRUKCIJE

$$P_0(z) - P_0(-z) = 2z^{-L}$$

ako je $p > 1$ npr 2

$$P_0(z) = \underbrace{(1+z^{-1})^4 (g_0 + g_1 z^{-1} + g_2 z^{-2})}$$

izmnožimo, centriramo tako da sve članovi uz parne = 0 pomnožimo s $N/2$

konstantni član ~~ne~~ 1

broj reda (za $p=2$ množimo s z^3)

$$H_p(z) = \prod_{i=0}^{k-1} \begin{bmatrix} 1 & 0 \\ T_{k-i} & 1 \end{bmatrix} \begin{bmatrix} 1 & -S_{k-i} \\ 0 & 1 \end{bmatrix}$$

$$F_p(z) = \prod_{i=1}^{K} \begin{bmatrix} 1 & S_i \\ 0 & 1 \end{bmatrix} \begin{bmatrix} 1 & 0 \\ -T_i & 1 \end{bmatrix}$$

FUNKCIJA SKALE

$$H_0^{(N)}(z) = \prod_{i=0}^{N-1} H_0(z^{2^i})$$

$$\varphi_N(t) = 2^{N/2} h_{0N}[n], \quad \frac{n}{2^N} \le t \le \frac{n+1}{2^N}$$

WAVELET FUNKCIJE

$$H_1^{(n)}(z) = H_1(z^{2^{N-1}}) \prod_{i=0}^{N-2} H_0(z^{2^i})$$

$$\psi_N(t) = 2^{N/2} h_{1N}[n], \quad \frac{n}{2^N} \le t \le \frac{n+1}{2^N}$$

$$\sigma_x^2 = \frac{1}{N-1} \sum_{n=0}^{N-1} (x[n] - \bar{x})^2$$

$$G_{SBC} = \frac{2^{-2\bar{r}} \sum_{k=1}^{M} \sigma_k^2}{\sum_{k=1}^{M} \sigma_k^2 2^{-2r_k}}$$