Example H264 Integer Transform

Q: $\hat{F} = ?$

Solution of Qp = 0

$$M_f = \begin{matrix} \\ 0 \\ 1 \\ 2 \\ 3 \end{matrix} \begin{matrix} \begin{matrix} 0 & 1 & 2 & 3 \end{matrix} \\ \begin{bmatrix} 13107 & 8066 & 13107 & 8066 \\ 8066 & 5243 & 8066 & 5243 \\ 13107 & 8066 & 13107 & 8066 \\ 8066 & 5243 & 8066 & 5243 \end{bmatrix} \end{matrix}$$

$$\hat{F} = \text{round}\left[(H \times f \times H^T) \cdot M_f / 2^{15} \right]$$

$$H = \begin{bmatrix} 1 & 1 & 1 & 1 \\ 2 & 1 & -1 & -2 \\ 1 & -1 & -1 & 1 \\ 1 & -2 & 2 & -1 \end{bmatrix}$$

$$H \times f \times H^T = \begin{bmatrix} 1288 & -50 & -4 & 10 \\ 2 & -46 & -58 & 32 \\ 4 & -2 & -20 & -46 \\ -4 & 52 & 16 & 16 \end{bmatrix}$$

$$\hat{F} = \begin{bmatrix} \frac{1288 \times 13107}{2^{15}} = 507 & & & \\ & \cdots & & \end{bmatrix}$$