

2025 april 16

Wednesday, April 16, 2025

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$$y[k, l] = h[k, l] * x[k, l]$$

$$= \sum_i \sum_j h[k-i, l-j] x[i, j]$$

$$y[2, 2] = \sum_i \sum_j h[2-i, 2-j] x[i, j]$$

$$h[i, j] \quad \begin{array}{cc} & 0 & 1 \\ 0 & \boxed{\begin{array}{c|c} a & b \\ \hline c & d \end{array}} \\ 1 & \end{array}$$

$$h[-i, -j] \quad \begin{array}{cc} -1 & 0 \\ -1 & \boxed{\begin{array}{c|c} d & c \\ \hline b & a \end{array}} \\ 0 & \end{array}$$

$$x[i, j] \quad \begin{array}{c} 1 \\ 2 \\ 3 \end{array} \begin{array}{c} -1 \quad -2 \quad 3 \\ \boxed{\begin{array}{c|c|c} 7 & 1 & 8 \\ \hline 2 & 6 & 5 \\ \hline 3 & 9 & 4 \end{array}} \end{array}$$