

Question

An image with additive gaussian noise will be thresholded after a gradient operation. Considering the noise, the gradient image will be created in 2 steps, using two of the following filters. Select two of the kernels for the operation, and motivate your choice:

$$\begin{array}{cccccc}
 h_1 & h_2 & h_3 & h_4 & h_5 & h_6 \\
 \begin{bmatrix} -1 & 0 & 1 \\ -1 & 0 & 1 \\ -1 & 0 & 1 \end{bmatrix} & \begin{bmatrix} 1 & & \\ & -4 & \\ & & 1 \end{bmatrix} & \begin{bmatrix} -1 & 0 & 1 \\ -2 & 0 & 2 \\ -1 & 0 & 1 \end{bmatrix} & \begin{bmatrix} -1 & -1 & -1 \\ 0 & 0 & 0 \\ 1 & 1 & 1 \end{bmatrix} & \begin{bmatrix} 1 & & \\ & 4 & \\ & & 1 \end{bmatrix} & \begin{bmatrix} -1 & -2 & -1 \\ 0 & 0 & 0 \\ 1 & 2 & 1 \end{bmatrix}
 \end{array}$$