

1D Masks For Sobel Edge Detection Tutorial Exercise

The output of filtering an image with a $2D$ mask can be also achieved by employing two $1D$ masks and applying them sequentially to the input image. Prove that the output of applying a Sobel mask to an image can be also achieved by employing the mask: $[-1 \ 0 \ 1]$, followed by the mask: $[1 \ 2 \ 1]^T$.