

Počítačové videnie

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Algorithm 1: Calculate Sobel gradient for Y

Data: Image

Result: Changed picture with with Sobel algorithm in direction Y

naveenSobelYgradient (*Image*)

```
    initialization;
    create rows, cols in length of Image;
    Declare matrix Gy with parameters : [1 2 1; 0 0 0; -1 -2 -1];
    Create matrix outputing with zeros in shape of Image;
    foreach i in range(0, rows - 3) do
        foreach j in range(0, cols - 3) do
            image = takePartImage (inputimg, i, j);
            outputimg[i,j] = naveenConvolve(image,Gx);
        end
    end
    outputimg
```

Algorithm 2: Take part of a picture for convolution

Data: Image, i, j

Result: Image in size 3*3

takePartImage (*Image, i, j*)

```
    initialization;
    Create matrix full of zeros with size 3*3;
    Set a = i;
    Set b = j;
    foreach k in range(0,3) do
        set b = j;
        foreach l in range(0,3) do
            image[k,l] = inpimg[a,b]; b = b+1;
        end
        set a = a + 1;
    end
    Image
```

Algorithm 3: Convolution operation

Data: Image, Kernel

Result: Changed picture with with Sobel algorithm in direction Y

naveenConvolve (*img, kernel*)

 initialization;

 row1total = $\text{img}[0,1] * \text{kernel}[0,1] + \text{img}[0,2] * \text{kernel}[0,2] +$
 $\text{img}[0,0] * \text{kernel}[0,0];$

 row2total = 0;

 row3total = $\text{img}[2,1] * \text{kernel}[2,1] + \text{img}[2,2] * \text{kernel}[2,2] +$
 $\text{img}[2,0] * \text{kernel}[2,0];$

$\text{row1total} + \text{row2total} + \text{row3total}$
