

JAVA DIP - ENHANCING IMAGE SHARPNESS

http://www.tutorialspoint.com/java_dip/enhancing_image_sharpness.htm

Copyright © tutorialspoint.com

In this chapter we learn to increase the sharpness of an image using Gaussian filter.

First we use **OpenCV** function **GaussianBlur**. It can be found under **Imgproc** package. Its syntax is given below:

```
Imgproc.GaussianBlur(source, destination, new Size(0,0), sigmaX);
```

The parameters are described briefly:

Sr.No.	Parameters
1	source It is source image.
2	destination It is destination image.
3	Size It is Gaussian kernel size.
4	sigmaX It is Gaussian kernel standard deviation in X direction.

Further, we use **OpenCV** function **addWeighted** to apply image watermark to image. It can be found under **Core** package. Its syntax is given below:

```
Core.addWeighted(InputArray src1, alpha, src2, beta, gamma, OutputArray dst);
```

The parameters of this function are described below:

Sr.No.	Parameters
1	src1 It is first input array.
2	alpha It is weight of the first array elements.
3	src2

It is second input array of the same size and channel number as src1.

4

Beta

It is weight of the second array elements.

5

gamma

It is scalar added to each sum.

6

dst

It is output array that has the same size and number of channels as the input arrays.

Apart from the GaussianBlur method, there are other methods provided by the Imgproc class. They are described briefly:

Sr.No.	Methods
--------	---------

1

cvtColorMatsrc, Matdst, intcode, intdstCn

It converts an image from one color space to another.

2

dilateMatsrc, Matdst, Matkernel

It dilates an image by using a specific structuring element.

3

equalizeHistMatsrc, Matdst

It equalizes the histogram of a grayscale image.

4

filter2DMatsrc, Matdst, intdepth, Matkernel, Pointanchor, doubledelta

It convolves an image with the kernel.

5

GaussianBlurMatsrc, Matdst, Sizeksize, doublesigmaX

It blurs an image using a Gaussian filter.

6

integralMatsrc, Matsum

It calculates the integral of an image.

Example

The following example demonstrates the use of Imgproc and Core class to apply sharpening to an image:

```

import org.opencv.core.Core;
import org.opencv.core.Mat;
import org.opencv.core.Size;
import org.opencv.highgui.Highgui;
import org.opencv.imgproc.Imgproc;

public class Main {
    public static void main( String[] args )
    {
        try{
            System.loadLibrary( Core.NATIVE_LIBRARY_NAME );
            Mat source = Highgui.imread("digital_image_processing.jpg",
            Highgui.CV_LOAD_IMAGE_COLOR);
            Mat destination = new Mat(source.rows(),source.cols(),source.type());
            Imgproc.GaussianBlur(source, destination, new Size(0,0), 10);
            Core.addWeighted(source, 1.5, destination, -0.5, 0, destination);
            Highgui.imwrite("sharp.jpg", destination);
        }catch (Exception e) {
        }
    }
}

```

Output

When you execute the given code, the following output is seen:

Original Image



Sharped Image





Loading [Mathjax]/jax/output/HTML-CSS/jax.js