

JAVA DIP - ADDING BORDER

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In this chapter we learn to add different types of borders to an image.

We use **OpenCV** function **copyMakeBorder**. It can be found under **Imgproc** package. Its syntax is given below:

```
Imgproc.copyMakeBorder(source, destination, top, bottom, left, right, borderType);
```

The parameters are described below:

Sr.No.	Parameters
1	source It is source image.
2	destination It is destination image.
3	top It is the length in pixels of the border at the top of the image.
4	bottom Length in pixels of the border at the bottom of the image.
5	left It is the length in pixels of the border at the left of the image.
6	right It is the length in pixels of the border at the right of the image.
7	borderType It defines the type of border. The possible borders are BORDER_REPLICATE, BORDER_REFLECT, BORDER_WRAP, BORDER_CONSTANT etc.

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

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

1

cvtColor*Matsrc, Matdst, intcode, intdstCn*

It converts an image from one color space to another.

2

dilate*Matsrc, Matdst, Matkernel*

It dilates an image by using a specific structuring element.

3

equalizeHist*Matsrc, Matdst*

It equalizes the histogram of a grayscale image.

4

filter2D*Matsrc, Matdst, intdepth, Matkernel, Pointanchor, doubledelta*

It convolves an image with the kernel.

5

GaussianBlur*Matsrc, Matdst, Sizeksize, doublesigmaX*

It blurs an image using a Gaussian filter.

6

integral*Matsrc, Matsum*

It calculates the integral of an image.

Example

The following example demonstrates the use of Imgproc class to add border to an image:

```
import org.opencv.core.Core;
import org.opencv.core.CvType;
import org.opencv.core.Mat;

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());

            int top, bottom, left, right;
            int borderType;

            /// Initialize arguments for the filter
            top = (int) (0.05*source.rows());
            bottom = (int) (0.05*source.rows());
            left = (int) (0.05*source.cols());
            right = (int) (0.05*source.cols());

            destination = source;
```

```
        Imgproc.copyMakeBorder(source, destination, top, bottom, left, right,
    Imgproc.BORDER_WRAP);
        Highgui.imwrite("borderWrap.jpg", destination);

    }catch (Exception e) {
        System.out.println("error: " + e.getMessage());
    }
}
```

Output

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

Original Image



Isolated Border Image



Wrapped Border Image



Reflect Border Image



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