

JAVA DIP - ERODING AND DILATING

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

Copyright © tutorialspoint.com

In this chapter we learn apply two very common morphology operators: Dilation and Erosion.

We use **OpenCV** function **erode** and **dilate**. They can be found under **Imgproc** package. Its syntax is given below:

```
Imgproc.erode(source, destination, element);  
Imgproc.dilate(source, destination, element);
```

The parameters are described below:

Sr.No.	Parameters
1	source It is Source image.
2	destination It is destination image.
3	element It is a structuring element used for erosion and dilation, if element=Mat, a 3 x 3 rectangular structuring element is used.

Apart from erode and dilate methods, there are other methods provided by the Imgproc class. They are described briefly:

Sr.No.	Method
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

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 perform erosion and dilation on 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());

            destination = source;

            int erosion_size = 5;
            int dilation_size = 5;

            Mat element = Imgproc.getStructuringElement(Imgproc.MORPH_RECT, new
Size(2*erosion_size + 1, 2*erosion_size+1));
            Imgproc.erode(source, destination, element);
            Highgui.imwrite("erosion.jpg", destination);

            source = Highgui.imread("digital_image_processing.jpg",
Highgui.CV_LOAD_IMAGE_COLOR);

            destination = source;

            Mat element1 = Imgproc.getStructuringElement(Imgproc.MORPH_RECT, new
Size(2*dilation_size + 1, 2*dilation_size+1));
            Imgproc.dilate(source, destination, element1);
            Highgui.imwrite("dilation.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





On the above original image, some erosion and dilation operations have been performed which have been shown in the output below:

Erosion



Dilation





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