LEATEN OPENCY BY EXAMPLES

OpenCV simplified for beginners by the use of examples. Learn OpenCV with basic implementation of different algorithms.

Beginners	ne For Begin	f Contents	Keywords
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2D Convolution / Creating new filter

OpenCV function filter2D is used to create new linear filters.

void <u>filter2D</u>(InputArray src, OutputArray dst, int ddepth, InputArray kernel, Point anchor=Point(-1,-1), double delta=0, int borderType=BORDER_DEFAULT) Parameters:

- **src** input image.
- dst output image of the same size and the same number of channels as src.
- ddepth desired depth of the destination image; if it is negative, it will be the same as src.depth(); the following combinations of src.depth() and ddepth are supported:
 - src.depth() = CV 8U, ddepth = -1/CV 16S/CV 32F/CV 64F
 - src.depth() = CV 16U/CV 16S, ddepth = -1/CV 32F/CV 64F
 - src.depth() = CV 32F, ddepth = -1/CV 32F/CV 64F
 - o src.depth() = CV 64F, ddepth = -1/CV 64F

when ddepth=-1, the output image will have the same depth as the source.

• **kernel** – convolution kernel (or rather a correlation kernel), a single-channel floating point matrix; if you want to apply different kernels to different channels, process

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them individually.

- **anchor** anchor of the kernel that indicates the relative position of a filtered point within the kernel; the anchor should lie within the kernel; default value (-1,-1) means that the anchor is at the kernel center.
- **delta** optional value added to the filtered pixels before storing them in dst.
- **borderType** pixel extrapolation method (see **borderInterpolate()** for details).

A kernel is a fixed size array of numerical coefficients along with an *anchor point* in that array.

The code provided below is slight modification of code provided in OpenCV documentation. **Steps:**

- 1. Load image
- 2. Create a kernel to convolve with the input matrix (here all elements of kernel is equal; so performs a low pass filter operation)
- 3. Apply convolution (filter2D)
- 4. Draw contours

Functions:

filter2D, imshow, imread, waitKey.

Example:

```
#include "opencv2/imgproc/imgproc.hpp"
                                                                         ?
    #include "opencv2/highgui/highgui.hpp"
    #include <stdlib.h>
     #include <stdio.h>
 4
5
6
     using namespace cv;
 7
8
     void conv2(Mat src, int kernel_size)
9
10
         Mat dst, kernel;
         kernel = Mat::ones( kernel_size, kernel_size, CV_32F )/ (float)
11
12
13
         /// Apply filter
14
        filter2D(src, dst, -1 , kernel, Point( -1, -1 ), 0, BORDER_DEFA
         namedWindow( "filter2D Demo", CV_WINDOW_AUTOSIZE );imshow( "fil
15
16
    }
17
18
    int main ( int argc, char** argv )
19
     {
20
         Mat src;
21
        /// Load an image
22
        src = imread( "1.jpg" );
23
```

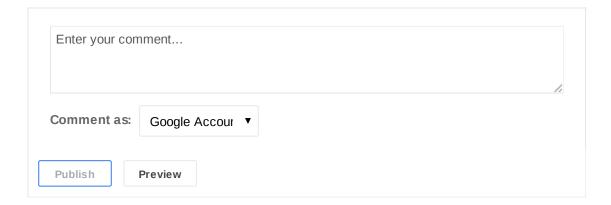
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