Learn OpenCV by Examples

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

Threshold operation

double **threshold**(InputArray src, OutputArray dst, double thresh, double maxval, int type)

Applies a fixed-level threshold to each array element

Parameters:

- **src** – input array (single-channel, 8-bit or 32-bit floating point).
- **dst** – output array of the same size and type as `src`.
- **thresh** – threshold value.
- **maxval** – maximum value to use with the `THRESH_BINARY` and `THRESH_BINARY_INV` thresholding types.
- **type** – thresholding type
  - **THRESH_BINARY**

$$\texttt{dst}(x,y) = \begin{cases} \texttt{maxval} & \text{if } \texttt{src}(x,y) > \texttt{thresh} \\ 0 & \text{otherwise} \end{cases}$$

  - **THRESH_BINARY_INV**

$$\texttt{dst}(x,y) = \begin{cases} 0 & \text{if } \texttt{src}(x,y) > \texttt{thresh} \\ \texttt{maxval} & \text{otherwise} \end{cases}$$

- **THRESH_TRUNC**

$$\texttt{dst}(x,y) = \begin{cases} \texttt{threshold} & \text{if } \texttt{src}(x,y) > \texttt{thresh} \\ \texttt{src}(x,y) & \text{otherwise} \end{cases}$$

- **THRESH_TOZERO**

$$\texttt{dst}(x,y) = \begin{cases} \texttt{src}(x,y) & \text{if } \texttt{src}(x,y) > \texttt{thresh} \\ 0 & \text{otherwise} \end{cases}$$

- **THRESH_TOZERO_INV**

$$\texttt{dst}(x,y) = \begin{cases} 0 & \text{if } \texttt{src}(x,y) > \texttt{thresh} \\ \texttt{src}(x,y) & \text{otherwise} \end{cases}$$

Find an example in OpenCV documentaion.
Steps:

1. Load an image
2. Create a window to display results
3. Create Trackbar to choose type of Threshold
4. Call the function "Threshold_Demo" to perform threshold operation.

Functions:
threshold, createTrackbar, imread, cvtColor, namedWindow, waitKey.

Example:

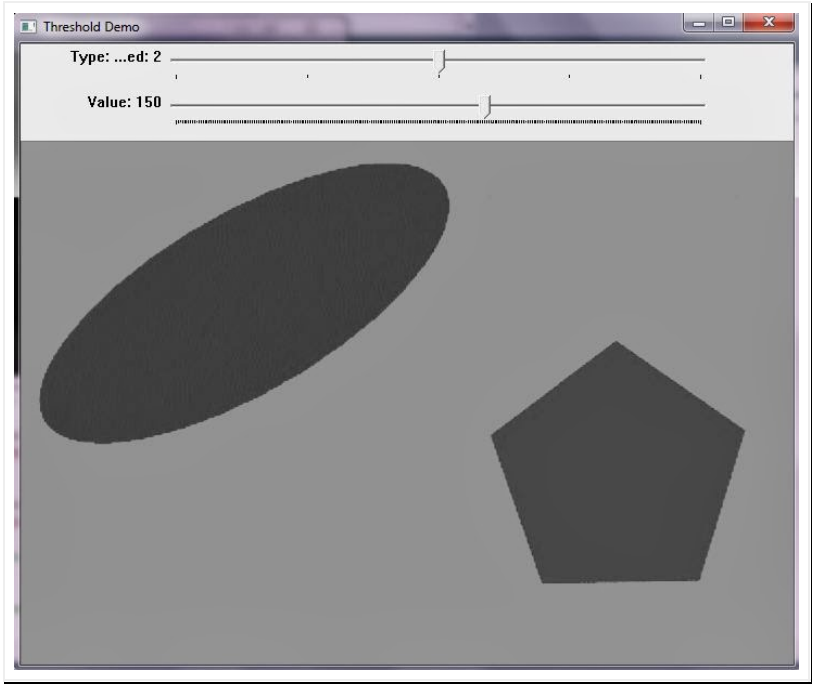
```
1  #include "opencv2/imgproc/imgproc.hpp"
2  #include "opencv2/highgui/highgui.hpp"
3  #include <stdlib.h>
4  #include <stdio.h>
5
6  using namespace cv;
7
```


CATEGORIES

```
int threshold_value = 0;
int threshold_type = 3;;
int const max_value = 255;
int const max_type = 4;
int const max_BINARY_value = 255;

Mat src, src_gray, dst;
char* window_name = "Threshold Demo";

char* trackbar_type = "Type: \n 0: Binary \n 1: Binary Inverted \n
char* trackbar_value = "Value";

void Threshold_Demo( int, void* );

int main( int argc, char** argv )
{
  /// Load an image
  src = imread( "shape.jpg", 1 );

  /// Convert the image to Gray
  cvtColor( src, src_gray, CV_RGB2GRAY );

  /// Create a window to display results
  namedWindow( window_name, CV_WINDOW_AUTOSIZE );

  /// Create Trackbar to choose type of Threshold
  createTrackbar( trackbar_type,
                  window_name, &threshold_type,
                  max_type, Threshold_Demo );

  createTrackbar( trackbar_value,
                  window_name, &threshold_value,
                  max_value, Threshold_Demo );

  /// Call the function to initialize
  Threshold_Demo( 0, 0 );

  /// Wait until user finishes program
  while(true)
  {
    int c;
    c = waitKey( 20 );
    if( (char)c == 27 )
      { break; }
   }
}


void Threshold_Demo( int, void* )
{
  /* 0: Binary
     1: Binary Inverted
     2: Threshold Truncated
```

```
61        3: Threshold to Zero
62        4: Threshold to Zero Inverted
63      */
64
65    threshold( src_gray, dst, threshold_value, max_BINARY_value,thres
66
67    imshow( window_name, dst );
68  }
```

Result:



Sources:
http://docs.opencv.org/doc/tutorials/imgproc/threshold/threshold.html

Labels: Basics, Edge Detection

2 comments: