

Gesture recognition

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Guester language

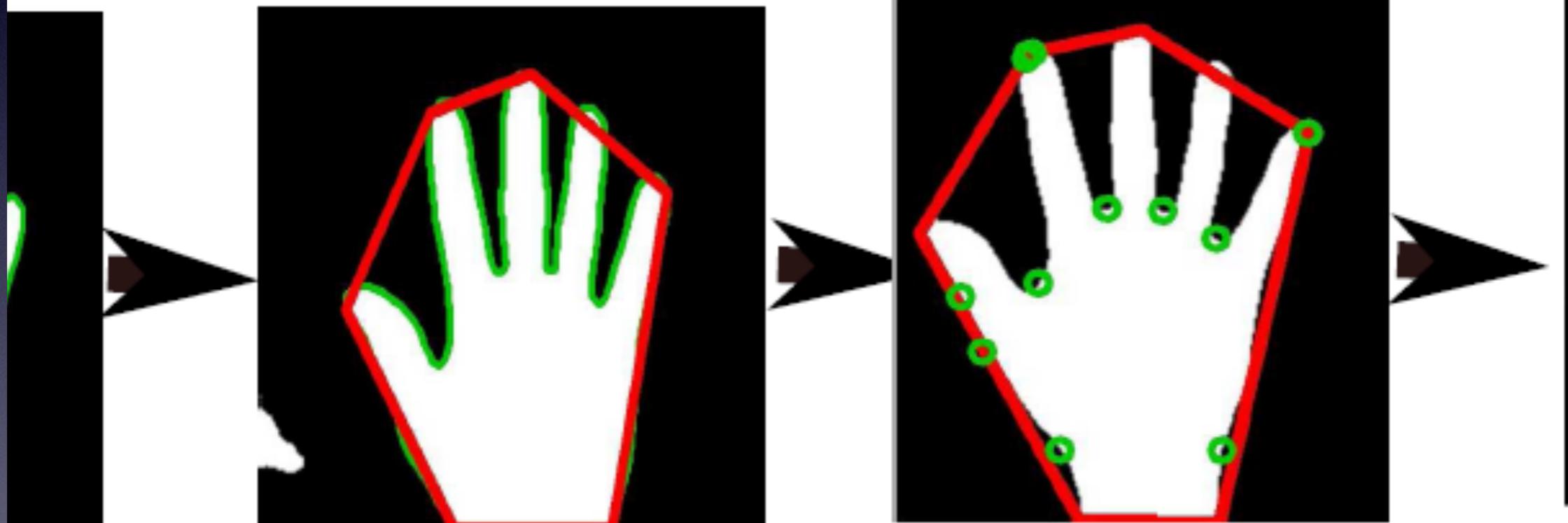
If you want to talk with mute the person you shall understand a sign language If you don't know language, it will be difficult to you to understand it. My project will help you to communicate with the mute person on the webcam. Signs which are shown by the person will be displayed on your screen in the form of words. And you will be able to communicate without difficulties. It is huge plus which cleans all barriers of communication.



Convex Points on contour

Get points furthest away
from each convex vertex
(convexity defects)

Filter out
convexities
not relevant



- This project was done on OpenCV C++

- I used

LIBRARIES:

«opencv2/imgproc/imgproc.hpp»

and

<opencv2/highgui/highgui.hpp>

FUNCTIONS:

VideoCapture - By it in our case I opened web-camera

GaussianBlur - I used it to blur gray window

contourArea - to contour the area where you must put your hand

convexHull and convexityDefects - to counter the object that is shown to web cam

VideoCapture

```
VideoCapture cam(0);
if(!cam.isOpened()){
    cout<<"ERROR not opened "<< endl;
    return -1;
```

GaussianBlur

```
GaussianBlur(img_gray,img_gray,Size(19,19),0.0,0);
threshold(img_gray,img_threshold,0,255,THRESH_BINARY_INV
+THRESH_OTSU);
```

Counters Finding

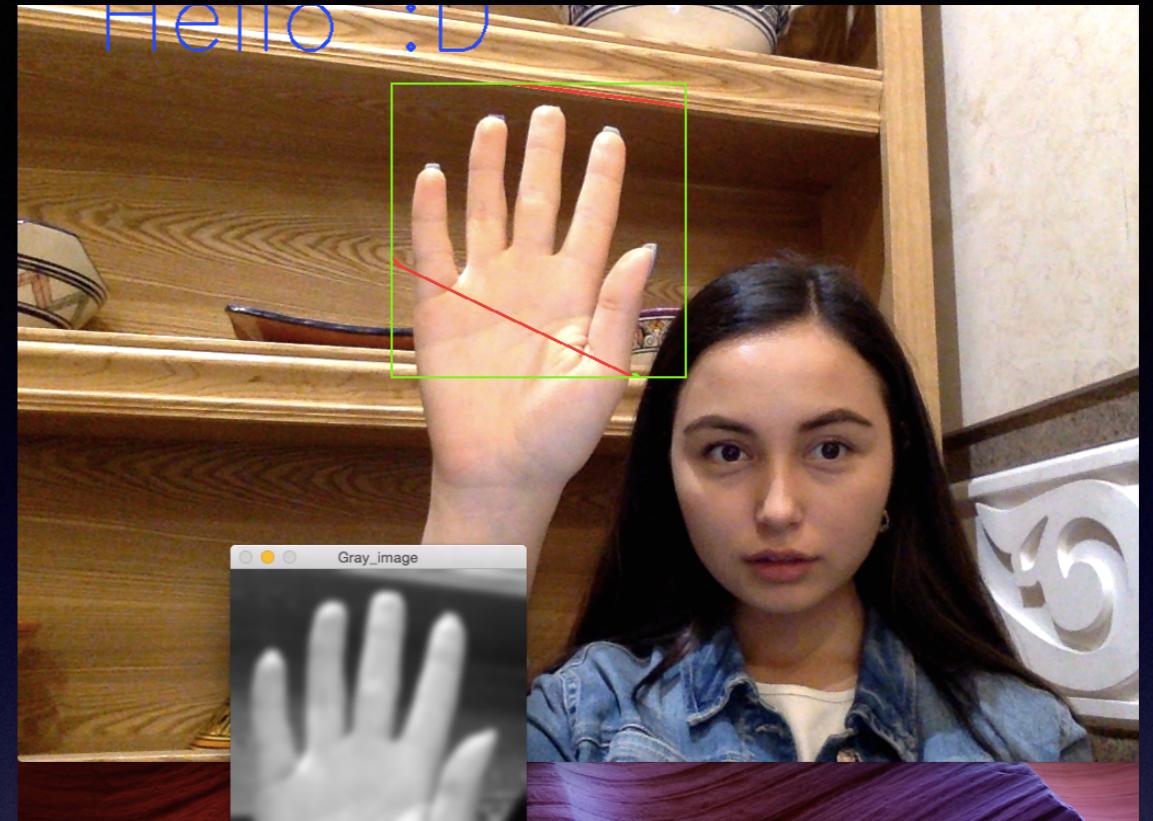
```
vector<vector<Point>>contours;
vector<Vec4i>hierarchy;

findContours(img_threshold,contours,hierarchy,CV_RETR_EXTERNAL,CV_CHAIN_
APPROX_SIMPLE,Point());
    if(contours.size()>0){
        size_t indexOfBiggestContour = -1;
        size_t sizeOfBiggestContour = 0;

        for (size_t i = 0; i < contours.size(); i++){
            if(contours[i].size() > sizeOfBiggestContour){
                sizeOfBiggestContour = contours[i].size();
                indexOfBiggestContour = i;
            }
        }
        vector<vector<int>>hull(contours.size());
        vector<vector<Point>>hullPoint(contours.size());
        vector<vector<Vec4i>>defects(contours.size());
        vector<vector<Point>>defectPoint(contours.size());
        vector<vector<Point>>contours_poly(contours.size());
        Point2f rect_point[4];
        vector<RotatedRect>minRect(contours.size());
        vector<Rect> boundRect(contours.size());
        for(size_t i=0;i<contours.size();i++){
            if(contourArea(contours[i])>5000){
                convexHull(contours[i],hull[i],true);
                convexityDefects(contours[i],hull[i],defects[i]);
                if(indexOfBiggestContour==i){
                    minRect[i]=minAreaRect(contours[i]);
                    for(size_t k=0;k<hull[i].size();k++){
                        int ind=hull[i][k];
                        hullPoint[i].push_back(contours[i][ind]);
                    }
                }
            }
        }
    }
};
```



I specified in the project by all the known signs, such as "world", "hello", of figure and etc. If to put a hand to the place of the designated square, then on screen there is a writing of these signs. I think that if to develop and add this project very convenient and necessary program will turn out.



Thank you your attention!