영상처리 실제 - 9주차 과제

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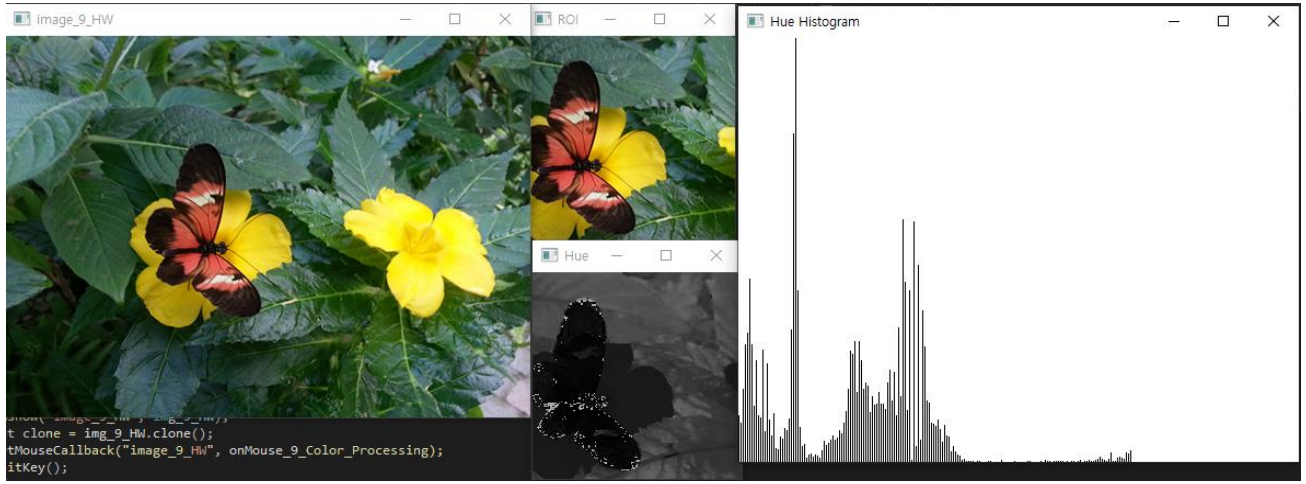
: 13 – 칼라영상처리 – HW1

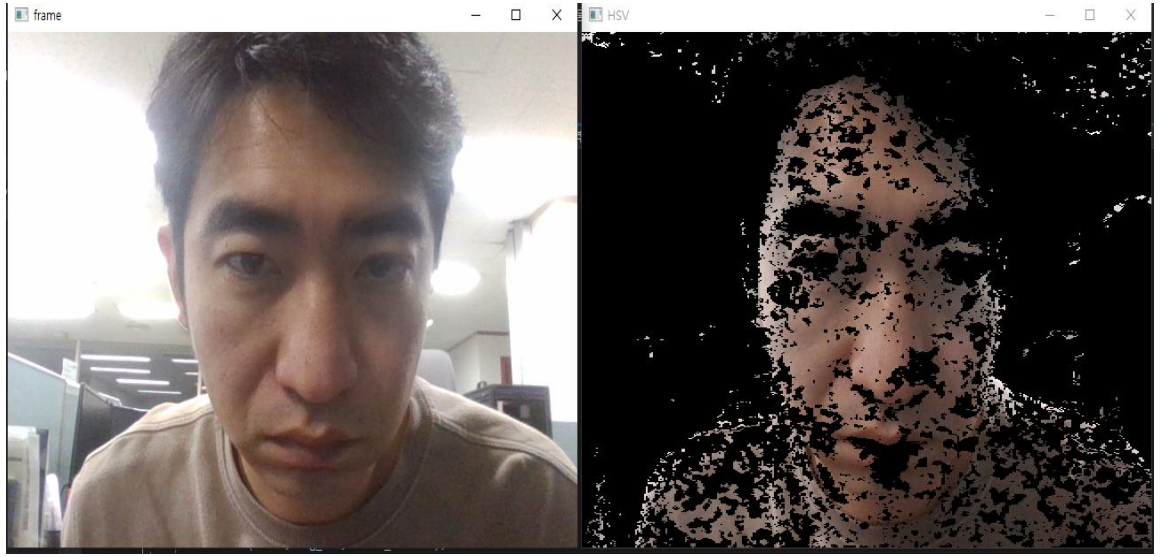
```cpp
Mat img_9_HW, roi_9_HW;
int mx1_9_HW, my1_9_HW, mx2_9_HW, my2_9_HW;

void onMouse_9_Color_Processing(int event, int x, int y, int flags, void* param)
{
    if (event == EVENT_LBUTTONDOWN)
    {
        mx1_9_HW = x;
        my1_9_HW = y;
    }
    else if (event == EVENT_LBUTTONUP)
    {
        mx2_9_HW = x;
        my2_9_HW = y;

        if (mx1_9_HW <= mx2_9_HW && my1_9_HW <= my2_9_HW)
        {
            roi_9_HW = img_9_HW(Rect(mx1_9_HW, my1_9_HW, mx2_9_HW - mx1_9_HW, my2_9_HW - my1_9_HW));
        }
        else if (mx1_9_HW > mx2_9_HW && my1_9_HW <= my2_9_HW)
        {
            roi_9_HW = img_9_HW(Rect(mx2_9_HW, my1_9_HW, mx1_9_HW - mx2_9_HW, my2_9_HW - my1_9_HW));
        }
        else if(mx1_9_HW <= mx2_9_HW && my1_9_HW > my2_9_HW)
        {
            roi_9_HW = img_9_HW(Rect(mx1_9_HW, my2_9_HW, mx2_9_HW - mx1_9_HW, my1_9_HW - my2_9_HW));
        }
        else
        {
            roi_9_HW = img_9_HW(Rect(mx2_9_HW, my2_9_HW, mx1_9_HW - mx2_9_HW, my1_9_HW - my2_9_HW));
        }

        imshow("ROI", roi_9_HW);

        Mat img_HSV;
        cvtColor(roi_9_HW, img_HSV, COLOR_BGR2HSV);

        Mat arrayHSV[3];
        split(img_HSV, arrayHSV);
        imshow("Hue", arrayHSV[0]);

        int histSize = 256;
        float range[] = { 0, 256 };
        const float* histRange = { range };

        Mat Hue_hist;
        calcHist(&arrayHSV[0], 1, 0, Mat(), Hue_hist, 1, &histSize, &histRange);

        int hist_w = 512, hist_h = 400;
        int bin_w = cvRound((double)hist_w / histSize);// 상자의 폭
        Mat histImage(hist_h, hist_w, CV_8UC3, Scalar(255,255,255));
        normalize(Hue_hist, Hue_hist, 0, histImage.rows, NORM_MINMAX, -1, Mat());

        for (int i = 0; i < 255; i++)
        {
            line(histImage, Point(bin_w * (i), hist_h), Point(bin_w * (i), hist_h - Hue_hist.at<float>(i)), Scalar(0, 0, 0));
        }
        imshow("Hue Histogram", histImage);
    }
}
```

```cpp
    //9장 - 칼라영상처리 - HW1
#if 1
    img_9_HW = imread("D:\\999.Image\\color_space.jpg");
    imshow("image_9_HW", img_9_HW);
    Mat clone = img_9_HW.clone();
    setMouseCallback("image_9_HW", onMouse_9_Color_Processing);
    waitKey();
#endif
```



: 13 – 칼라영상처리 – HW2

```
//9장 - 칼라영상처리 - HW2
if 1
VideoCapture capture(0);
if (!capture.isOpened())
{
    return -1;
}
for (;;)
{
    Mat img_HSV;
    Mat frame;
    capture >> frame;
    cvtColor(frame, img_HSV, COLOR_BGR2HSV);

    Mat imgThreshold;
    Scalar lowerLimit = Scalar(5, 10, 10);
    Scalar upperLimit = Scalar(10, 255, 255);

    inRange(img_HSV, lowerLimit, upperLimit, imgThreshold);

    Mat dst;
    bitwise_and(frame, frame, dst, imgThreshold = imgThreshold);
    imwrite("d:\\test.bmp", frame);
    imshow("frame", frame);
    //imshow("imgThreshold", imgThreshold);
    imshow("HSV", dst);
    if (waitKey(30) >= 0)
    {
        break;
    }
}
waitKey();
endif
```



- 상의 색상이 얼굴의 색상과 비슷하여 같이 검출 됨.