Lab 4

Detect an object in an image based on its colour

Part A: Hue Color-Correspondence Experiment

Goal:
Experiment to see which hue-values correspond to which visible-spectrum colours in OpenCV.

Idea:

1. Load Image (folder “images”).
2. Convert Image from RGB space into HSV space.
3. Isolate pixels with a specific hue value.
4. Convert the image containing the isolated pixels from HSV space back into RGB space.
5. Visualize the result.

Hints:

1. Your solution may require you to process each pixel individually.
2. When displaying your results, use a window named "Processed Hue" (it is integrated with a trackbar associated with the ‘hue’ variable)

Example:

Figure 1. The HSV image (Picture3.png)

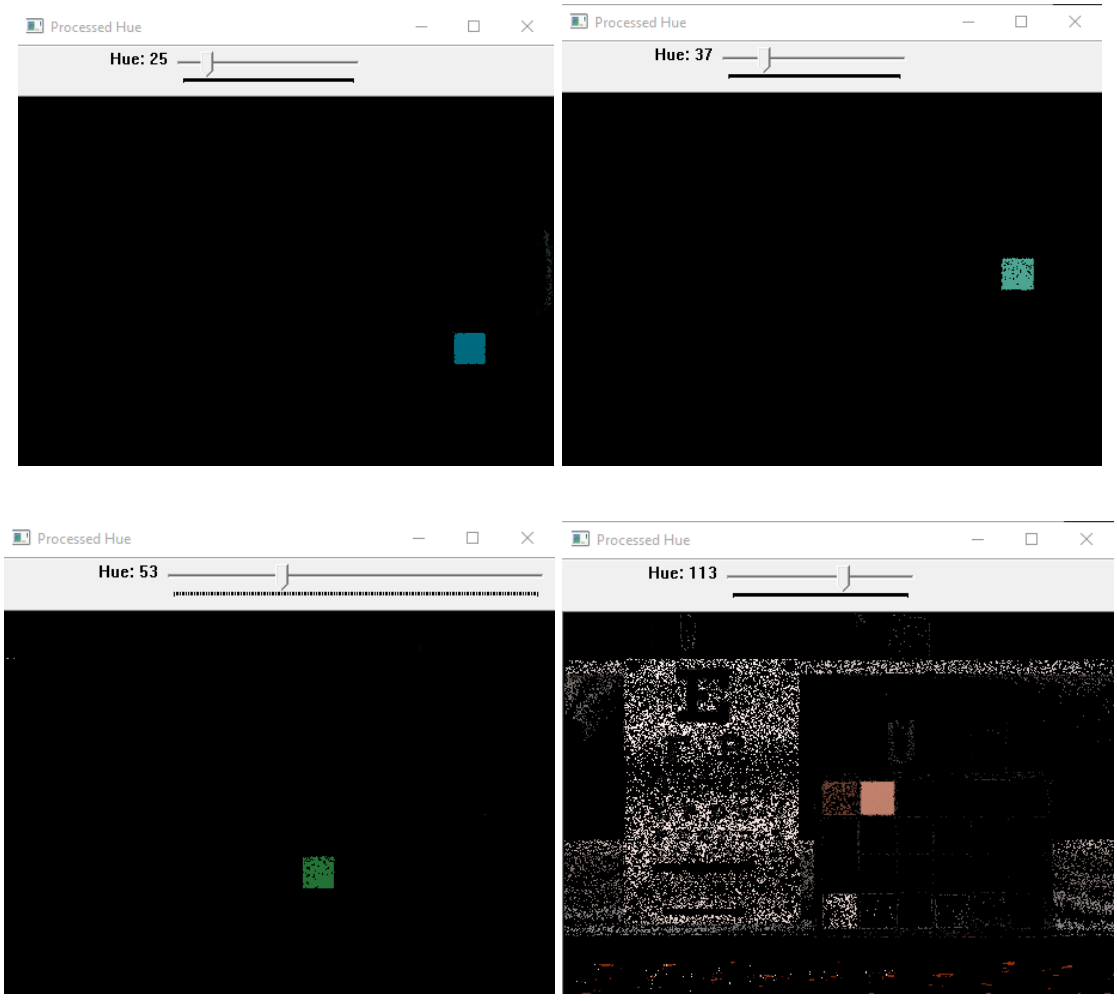

Figure 2. Different Hue Values

Part B: Colour-based object detection

Idea:

1. Yellow-Green object detection.
2. Violet object detection.
3. Red object detection.

Hints:

1. Use Part A's solution to help you pick appropriate **hue** values/ranges.
2. Generate color masks for different colors.
3. Some creativity may be required in getting rid of noise.

Example:

Figure 3. Original RGB Image（Picture3.png ）

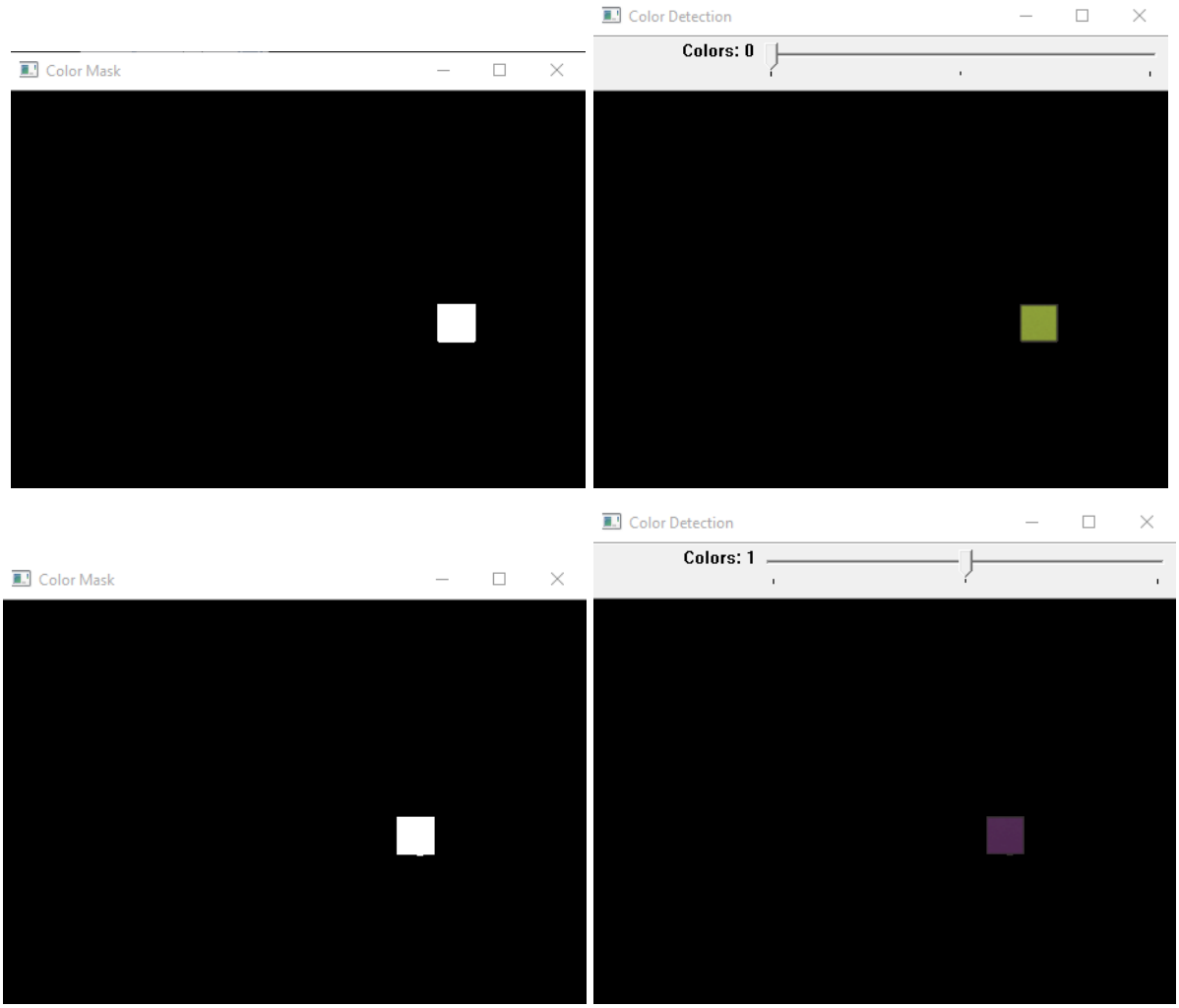

Figure 4. Yellow-Green and Violet object detection results
(left: color masks, right: color detection results)

Helpful Methods:

Helpful Methods	**Description**
Basic operations	Link
Morphology operators	Link
Simple GUI	**Description**
Trackbar Demo	Link