

Image Processing and Computer Vision - Lab 5



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Image Segmentation

- Today
 - 1,5 hours
- Text of the exercises/tasks
 - on the Teaching Portal
- You need a webcam and a still image
 - the image is on the Teaching Portal
- Goal
 - Experiment with common image segmentation algorithms (like Canny) and the morphological operators

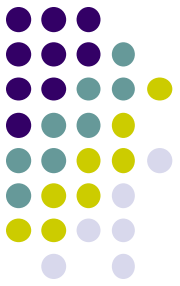


Image Segmentation

- Two exercises:
 1. Edge detection
 2. Dilation and erosion
- It is a good idea to “*remove some noise*” before applying the image segmentation methods



Edge Detection: Canny

```
edges = cv2.Canny(image, min_threshold,  
                  max_threshold)
```

- where `min_threshold` **and** `max_threshold` usually have a 1:3 ratio



Edge Detection: Sobel

```
x = cv2.Sobel(image, cv2.CV_16S, 1, 0,  
              ksize)
```

```
y = cv2.Sobel(image, cv2.CV_16S, 0, 1,  
              ksize)
```

- you can compute Sobel along x and/or along y



Edge Detection: Sobel

- After computing Sobel, to show the result of both operations on screen, you need to:
 - `x = cv2.convertScaleAbs(x)`
[repeat for y]
 - perform a linear blending between `x` and `y`
 - display the result of the previous step



Morphological Operators

- Dilate

```
ris = cv2.dilate(src, kernel,  
                 iterations)
```

- Erode

```
ris = cv2.erode(src, kernel,  
                iterations)
```

- kernel can be a matrix of 1s
(`np.ones(m, n)`), e.g., 2x2 or 3x3

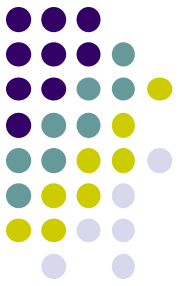
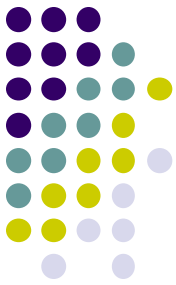


Image Segmentation

- Hints, insights, links, etc. are in the text of the exercises
 - I am here for you...
 - ... please ask if you need any help or clarification

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