Computer Vision (2016/2017)

Lecture 04

1. Implement a program to capture images from your digital camera and explore the use of the function `Sobel` to calculate the image of gradients. Calculate the gradient of the first order. Explore the parameters of the function and comment the results. Explore also the Scharr's algorithm.

2. Based on the previous exercise, calculate also the Laplacian of an image. Explore the parameters of the function and comment the results.

3. Implement a program to capture images from your digital camera and perform edge detection with Canny's algorithm. Explore the effects of changing the parameters and comment the obtained results.

4. Implement a program to capture images from your digital camera and perform corner detection. Try for example the Harris's algorithm (explore the function `cornerHarris`). For each corner detected, draw a circle or a square in the image (explore the drawing functions of OpenCV).

5. Implement a program to detect lines and circles on an image. As suggestion, start by calculating a binary image with the edges present on the scene. Adjust the parameters to get the best edges as possible. Then explore the use of the function `findContours` to identify the contours corresponding to the objects of interest.

6. Implement a different solution for the previous problem using the Hough Line Transform and the Hough Circle Transform.

7. Write a report about the experiences done in this class. It should contain an example of the images displayed in each exercise, as well your comments about them.