Image processing course – homework #5

imageprocessinghaifau@gmail.com

In this assignment you will detect edges and find patterns.
You will be using Canny edge detector, Hough transform.

Create a single file hw5_123456789.py with the following functions:

1) Sobel Edge detection – Calculate the edge magnitude image of balls1.tif, using Sobel Edge detection.
   Do not use a **built-in edge** function. You may use **convolve2d from scipy**.
   return a binary edge image (1 edge pixel, 0 no edge) of strong edge pixels (above a threshold - Determine a threshold that eliminates the ball shadows).

2) Canny Edge detection – Find the edge boundary of the coins in image coins1.tif.
   You must create an edge image that contains the complete coin boundaries with as minimum internal edge clutter as possible.
   Use opencv Canny Edge Detection function (cv2.Canny)
   You must determine the best Canny parameters to obtain the desired results.
   return the edge image.

3) Hough Transform – Circles
   Find all circles of coins in coins3.tif using Hough Transform.
   Use opencv function **HoughCircles**
   return the original image with the found circles marked (use cv2.circle to mark them).

4) Hough Transform – Lines
   Find all lines of dividers and boundary of box in image boxOfChocolates1.tif.
   Your segments should have as few lines as possible.
   Do not miss boundaries.
   Use opencv **houghlines**.
   return the original image with the found lines marked (use cv2.line to draw lines).

Google the documentation of the built in opencv functions to know how to use them.

Good luck!

My results: