# Lab 4. Task 1- preparation task Template for answers

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*Version (in case you need to re-submit):*

1. **Hough transform**

**1)** H1:



**2)** Your guess:

The x values of the intersections are at around 310, which with the values from teta give a angle of 64.5 degrees clockwise from the original image.

**3)** What is the exact angle corresponding to the lines in ?

The exact angle is 65 degrees.

**4)** What is the angle of **clockwise** rotation to rotate to the horizontal level? Use your answer from problem 3.

We need to rotate 25 degrees clockwise => 65 - 90 = -25 degrees.

**5)** Image1a\_rotated:

**A black background with white lines

Description automatically generated**

**6)** What is the exact angle corresponding to the straight lines in ?

The angle is -75 degrees.

**7)** What is the angle of **counterclockwise** rotation to rotate to horizontal level? Use your answer from problem 6.

-75 + 90 = 15 degrees counterclockwise to get image1b to horizontal level.

**8)** Image1b\_rotated:

**9)** Image1c with noise removed:

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**10)** Image1c\_clean (noise and lines removed):

**11)** RGB-image displaying the 3 different classes of objects in different colors:

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**12)** Your structuring element: SE = strel('disk', 40);

Segmented image with all the grains of rice:

**13)** Labeled image, L, scaled by max value:A black background with circles and lines

Description automatically generated

**14)** What are the perimeters for the large objects (having area > 3000 pixels)?

A number on a white background

Description automatically generated

Image containing only the large objects:

**15)** What is your selected threshold value?

We chose a threshold value of 150, since it was between the spikes around 100 and 200

What are the labels of the objects belonging to the class with the smallest perimeter?

**A white background with black text

Description automatically generated**

**16)** What are the labels of the objects belonging to the class with the largest perimeter, and that has no holes?

The labels of the objects with the largest perimeter are 4 % 7

A white background with black text

Description automatically generated

Image containing only objects having the largest perimeter, without holes: **A group of white circles on a black background

Description automatically generated**

*Don’t forget to save the document as* ***.pdf*** *before submitting!*