Instructions:

1. This assignment must be completed individually

2. No plagiarism is allowed. Please refer to the University's policy on plagiarism.

3. You are allowed to make use of any programming language.

4. You are not allowed to use a library where the image processing operations are already implemented. You have to implement these processing operations yourself. If you make use of a library for some other functionality, you must reference it in your code and mention it during the demo.

1.   Task: Implementation

This assignment will introduce you to some image processing techniques that are often used for image analysis. For the assignment you need to implement the following:
- Uniform thresholding of a grayscale image that results in a binary image
- Mathematical morphology (specifically erosion and dilation) on the binary image that resulted from the above thresholding
- Edge detection by calculating the difference between the original image and the dilated/eroded image

For each of the image processing techniques the resulting image should be displayed for comparison.

2.   Demonstration of Assignment

Once you have implemented the processing techniques, you need to demonstrate your assignment during a designated timeslot in class. During the demonstration you need to:
- Illustrate the results of the thresholding operation
- Discuss the visual effects of thresholding and how this differs based on different thresholding values
- Illustrate the results of both erosion and dilation on the resulting binary image
- Discuss the choice of structural element
- Illustrate the results of using mathematical morphology as edge detection

You should use the images available in *images.zip* on the course website to demonstrate these processing operations. You are welcome to demonstrate your findings using a Powerpoint (or similar) presentation.

The demonstration slot is only approximately 5 minutes. Once the booking for these demonstrations are available, you need to book for one of the slots on the course website.

3.   Submission of the Assignment

The assignment files should be compressed into a single file and submitted via the course website before the deadline.

The deadline for the assignment is 20 October 2019 at 23h00.

For any further information contact Tayana Morkel (*tmorkel@cs.up.ac.za*)