

ME 5405 Machine Vision

Assignment – AY20/21 Semester 1

Computing Project

You are required to form a group of 2-3 students to work on the computing project. The software must be developed using MATLAB. Your report should include the followings:

1. an introduction to the problem,
2. a description of your algorithm and flow chart,
3. screen dumps of every stage of the image processing,
4. an explanation on why you choose the method employed in your project, and
5. a conclusion including comments on how processing the two images are similar and/or different.

Image 1: Available on LumiNUS-ME5405-Files-Lecture Notes – charact1.txt

Image 2: Available on LumiNUS-ME5405-Files-Lecture Notes – charact2.jpg

Images 1 is a 64x64, 32 level images. The image is shown a coded array that contains an alphanumeric character for each pixel in the image. The range of these characters is 0-9 and A-V, which corresponds to 32 gray levels.

Image 2 is a JPEG image of a label on a microchip. The characters are inverted. You are required to invert them before proceed with the following tasks.

For each image, perform the following tasks sequentially:

1. Display the original image on screen.
2. Create a binary image using thresholding.
3. Segment the image to separate and identify the different characters.
4. Rotate the characters in the image about their own respective centroids by 90 degrees clockwise.
5. Rotate the characters in the image from Step 4 about their own respective centroids by 35 degrees counterclockwise.
6. Determine the outline(s) of characters of the image.
7. Determine a one-pixel thin image of the characters.
8. Arrange the characters in one line with the sequence:
A1B2C3 for Image 1 and **81344100ARHDFS** for image 2.

You should upload your report and software to LumiNUS-ME5405-Files-Student Submission by 20 November 2020, 23:00 hours.

This is a group project. Please submit only one set of report and software. All members of the group will receive the same scores.

Image 1

