ME 5405 Machine Vision

Assignment

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.bmp

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 BMP image of a label on a microchip.

For each image, perform the following tasks:

1. Display the original image on screen.
2. Create a binary image using thresholding.
3. Segment the original 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 from Step 3.
7. Determine a one-pixel thin image of the characters from Step 3.
6. Scale and display the characters of Image 1 in one line with the sequence: **1A2B3C**.
7. Scale and display the characters of Image 2 in one line with the sequence: **7M2HD44780A00**.

You should upload your report and software to LumiNUS-ME5405-Files-Student Submission by 20 November 2019, 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

Image 2