UNIVERSITY of HOUSTON ECE

ECE 5397/6397: Intro to Robotics HW 5, Due Nov 13 Computer vision

This homework may be completed in groups of two. Sign the following promise:

Name 1: I, Nick Anderson and (opt) Name 2: <u>Sikender Shahid</u> completed this coding assignment on our own. The code is not copied from anyone else

Part I: All

Given the Matlab code **AutoThreshold.m**, fill in the six TODOs to implement image thresholding. Insert the answers for these TODOs below:

See Lollowing Page

- 1. TODO #1
- 2. TODO #2
- 3. TODO #3
- 4. TODO #4
- 5. TODO #5
- 6. TODO #6
- 7. Run your code on the file Duplos.png.

Part II: Graduate students

Using the same image, label the connected components using the two-pass algorithm from section 11.4. Call your file **ConnectedComponents.m** with function call **cc = ConnectedComponents(binary_img)**, where binary_img is a binary image and cc is a matrix the size of binary_img with 0 assigned to background pixels and integers to different connected components.

Show a screenshot of the connected components applied to the thresholded Duplo.png Attach your code

Part III: Graduate students

Compute and label the centroids and orientation of each connected component. Call your code **CentroidAndOrientation.m**, with function call

[centroids, orientations] = CentroidAndOrientation(cc), where cc is the output from part II.

Show an image applied to the output from Part II. Draw the centroids and orientation lines in white.

Attach your code

#1
$$mv=0$$
;
for $Z = double(1): double(N-1)$
 $mv = mv + Z * P(Z)$;

#2
$$sigSq = 0$$
; $sigSq = 0$; $sigSq = sigSq + ((z-mu) 12 * P(z))$; $sigSq = sigSq = double(sigSq)$;

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