German University in Cairo
Faculty of Media Engineering and Technology
Winter 2023

DMET 901 – Computer Vision

Assignment #3
(Due on 16th of December)

The main aim of this assignment is implement image segmentation. More specifically, you are asked to implement the split-merge algorithm. As per that, the following components are to be implemented:

1. Split.
2. Merge.

Split

In this part, you are asked to perform the split algorithm shown in class. The expected output of this step is a quad-tree where each node represents a segment. The homogeneousness definition here is that the difference between maximum and minimum brightness within it is less than an input parameter.

Merge

In this part, you are asked to perform the Merge algorithm shown in class. The expected output of this step is an image where each segment post merging is colored in the mean average of the pixels forming it. The homogeneousness definition here is exactly the same as the split step. Regions merging conflicts are solved in a first come first serve way, as regions merging is performed right away without considering conflict cases.

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Test images

1.https://www.ipadwallpaper.org/wp-content/uploads/2021/02/Tiger-looking-at-camera-iPad-wallpaper.jpg

2.https://i.stack.imgur.com/UYYqo.jpg

3.https://www.ipadwallpaper.org/wp-content/uploads/2021/05/Dark-moon-crescent-luna-space-iPad-wallpaper.jpg

Submission Guidelines

1. Please note that only one team member should submit the form.
2. Please put your code in a Google Colab notebook and submit the link with the property of "editor" turned on.
3. Please put your code with all your test cases already run.
4. Explain your code in the cells in your notebook as comments.

Please Note: you are allowed to use built in methods,but you need to understand everything that is being done

The submission form will be sent later.