German University in Cairo
Faculty of Media Engineering and Technology
Spring 2021

DMET 1002 – Advanced Media Lab

Mini Project 2

Object Region Extraction using Basic Saliency

Project Description:

For object detection using saliency, there exists multiple algorithms to tackle the issue using a single frame.

In this project, you are asked to implement a saliency-based object detection algorithm.

Task:

You need to follow the following steps in order to perform the prior mentioned task:

1. Read the image
2. Convert the image to Grayscale.
3. See if the image should be typecasted into a certain type (double, uint8, etc)
4. Apply 2D Fast Fourier Transform on the Image.
5. Get the absolute values of the image from step 4.
6. Get the log of the result from step 5. This image is called the Log Amplitude.
7. Get the angle of the result from step 4. This image is called the Phase.
8. Get the median image of the LogAmplitude using a kernel of size 7.
9. Subtract the median of the LogAmplitude from the LogAmplitude image to obtain the SpectralResidual Image.
10. Reapply steps 8 and 9 with a kernel size of 50 and comment on the output.
11. Add the SpectralResidual to the Phase image multiplied by *i* (*i* is the imaginary part of the complex number).
12. Get the exponential (exp) of the result from step 11.
13. Get the inverse fast Fourier transform of the result from step 8.
14. Get the absolute of the result from step 11 then square the result.
15. Filter the result from step 14 with fspecial using the ‘disk’ argument and a kernel size of 15 (You can use imfilter)
16. Convert the resultant matrix to a grayscale image to get the basic Saliency result.
17. Save the Image as a png file

Submission Details:

The deadline for the submission is on the 31st of May for the group on Sunday and on the 1st of June for the group on Tuesday

Your code is to be submitted along with the output Saliency image.

Your project should be sent as google drive link to this email:

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Good Luck ☺