Akshay Sarashetti 2020MCS2448
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COL 783
Assignment 2

Implementation:

A) **Barycentric Triangle mapping**:

Steps:

1) Iterate over corresponding triangles of Images.
2) Using reverse warping, for every point in a subject image triangle find a Barycentric equivalent point in the corresponding example image triangle and replace the pixel value.

B) **Bilateral filtering** :

Bilateral filtering is basically an extension of Gaussian filtering. Bilateral filtering not only accounts for the spatial distance like the Gaussian filtering method but also accounts for the intensity difference between the neighboring pixels. Thus the advantage of a bilateral filter is that it smoothes the image while preserving the edges.

Steps: 1) Iterate over the entire image

2) Take the weighted average of the difference in spatial distance times the intensity difference to the center pixel.

Parameters of the Bilateral Filter: sigma_s = 16, sigma_r = 0.8

Experiments

1) The parameters for calculating the XDoG (sigma, k, gamma, epsilon, phi) of the subject image were changed to obtain different images on which makeup transfer was done.
2) We experimented with different values of alpha used in color blending and different values of delta_i and delta_e to obtain the best result.
3) In the Lip makeup section, we tried different gradients in the gradient replacement to get the best possible image. The different gradients used are shown in the experiment section of the code.

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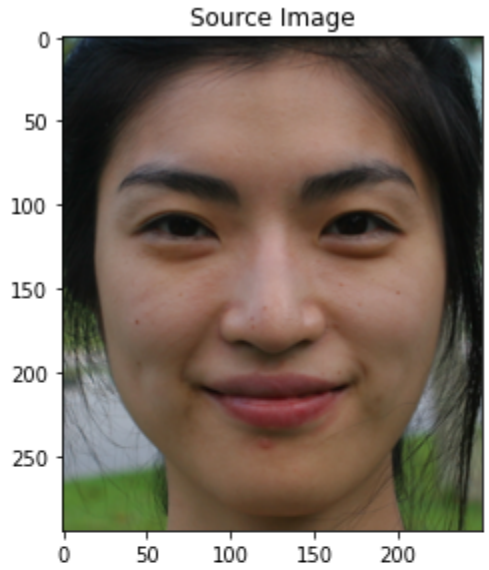
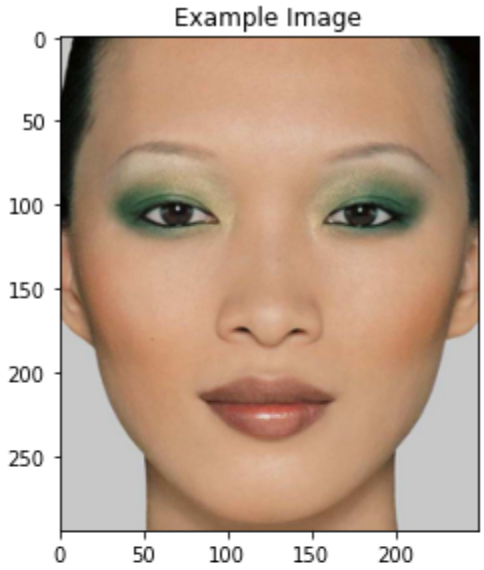
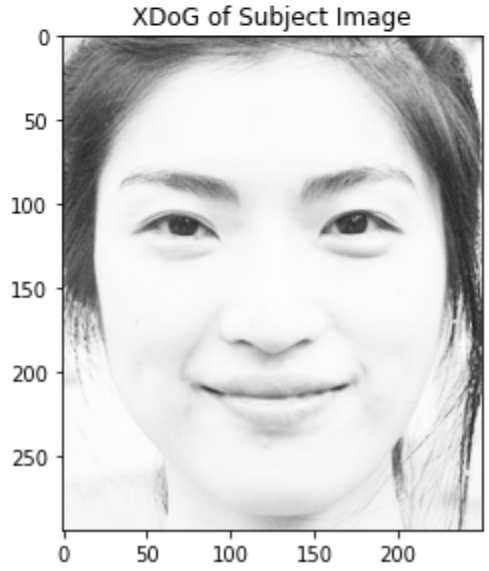
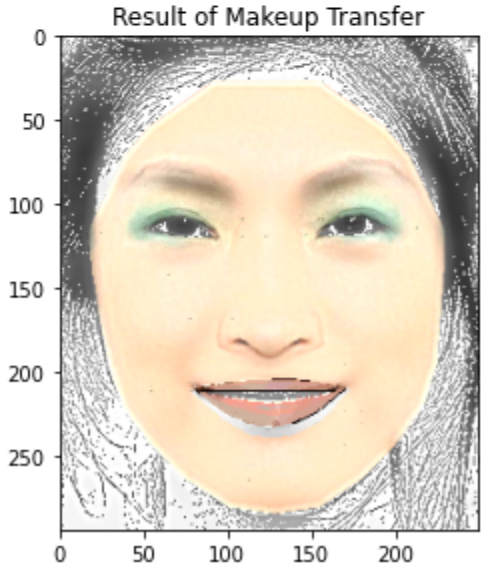
Results:

Result 1: Parameters for XDoG: sigma=0.4, k=1.6, gamma=0.5, epsilon=-0.5, phi=10









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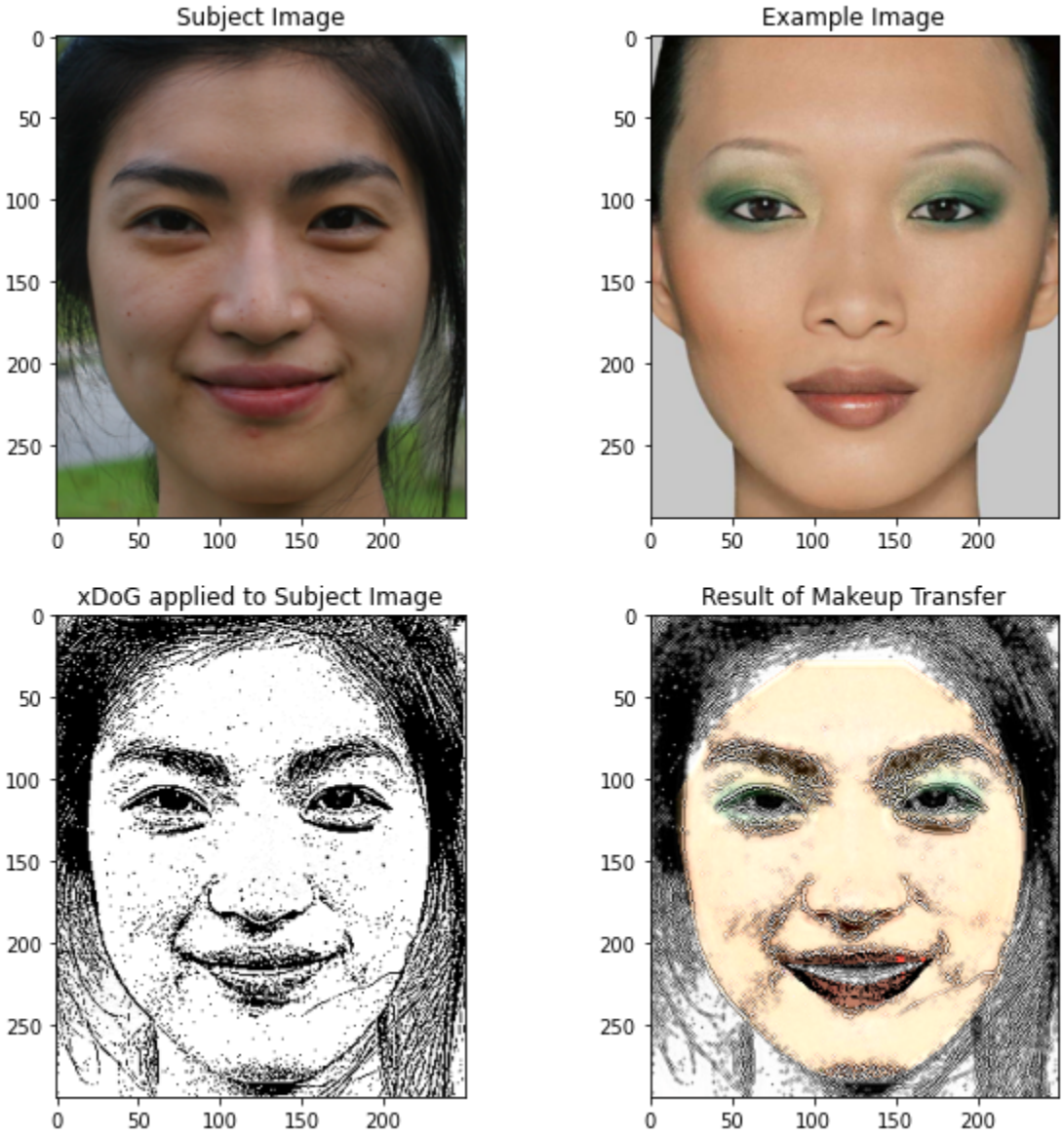
Result 2: Parameters for XDoG: sigma=0.4,k=0.1, tuo=1,epsilon=1,phi=12



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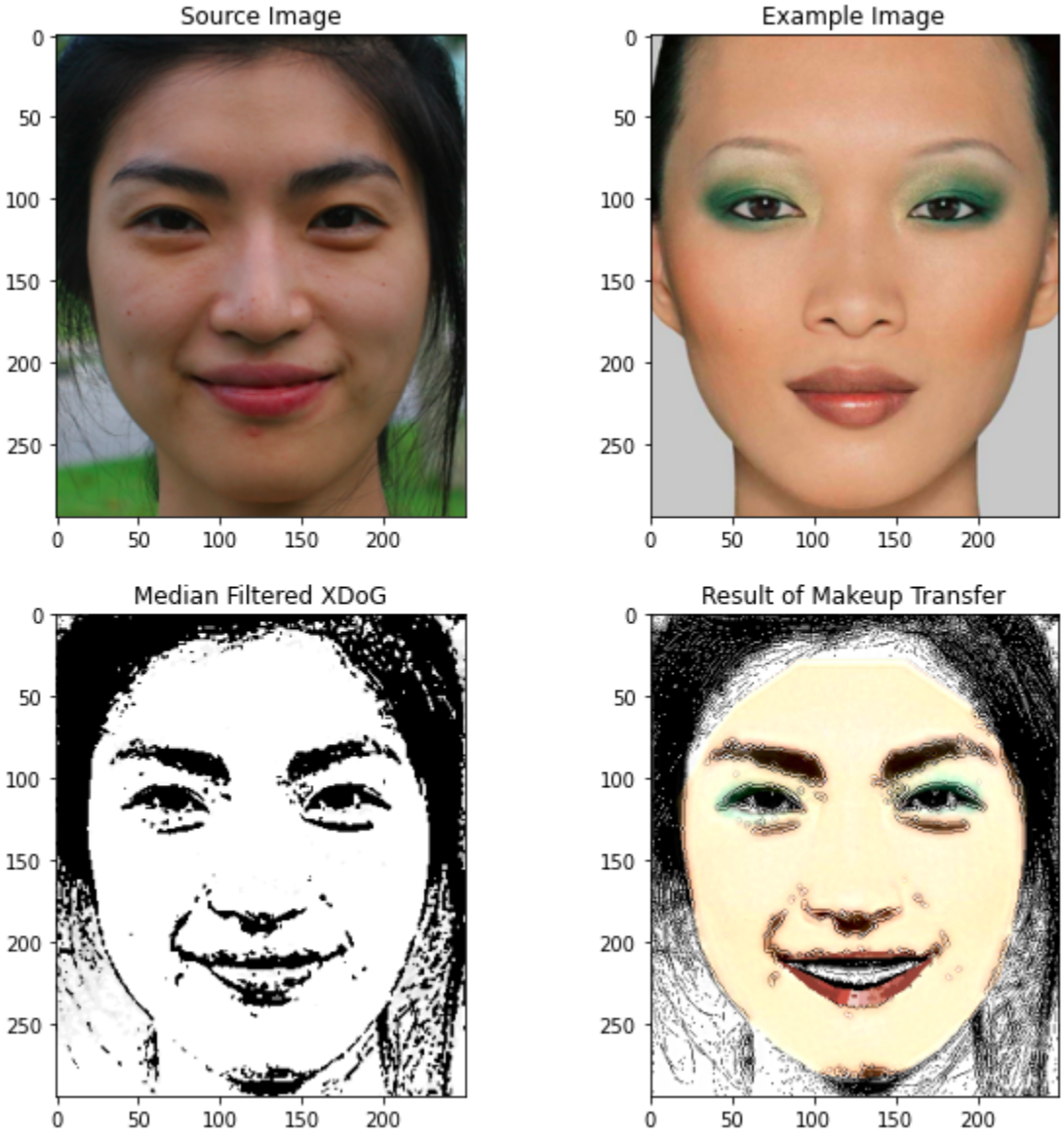
Result 3: Median filtering applied to XDoG of Result 2



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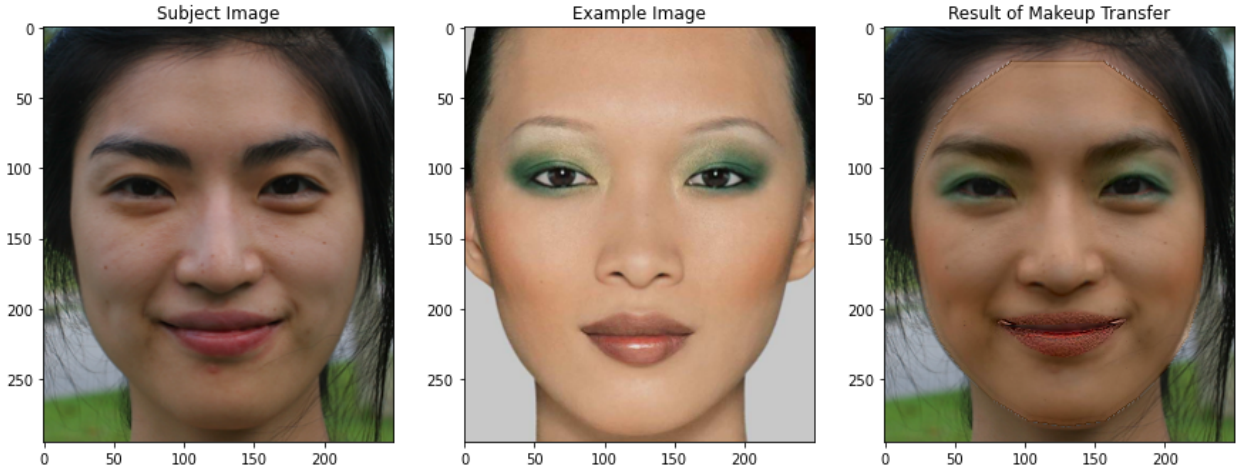
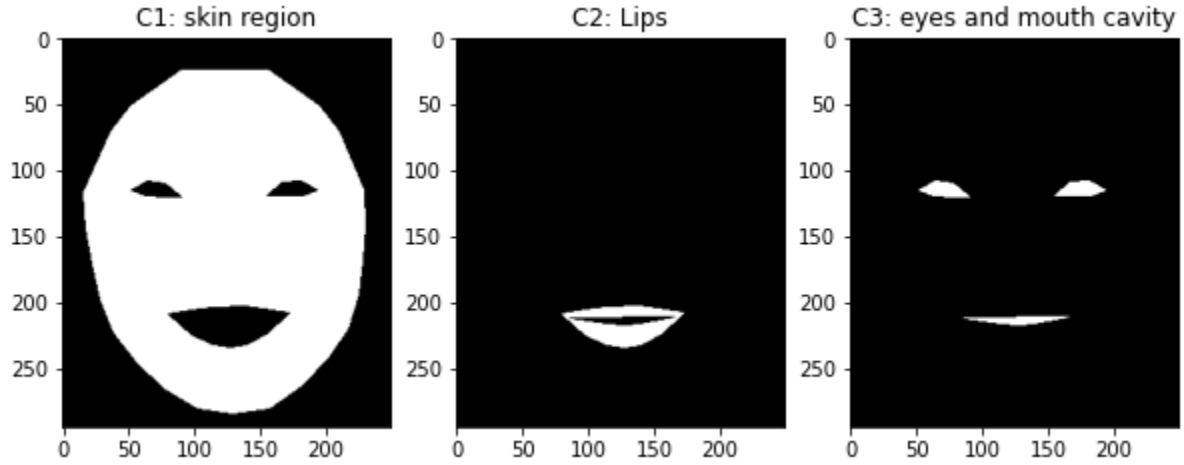
Result 4: Transferring the makeup before stylizing by XDoG



More Results:

The C1, C2, and C3 regions used for calculating different layers of makeup.



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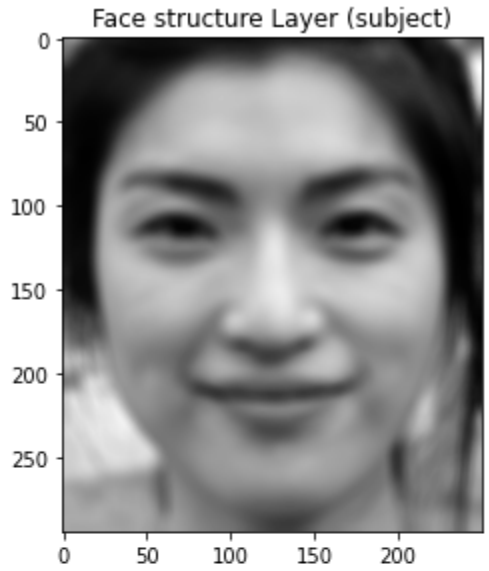
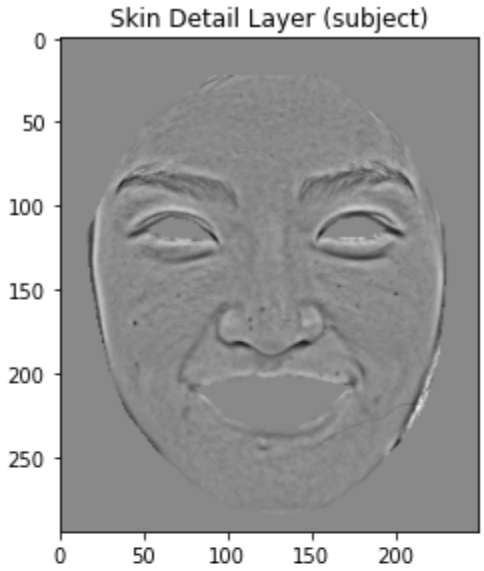
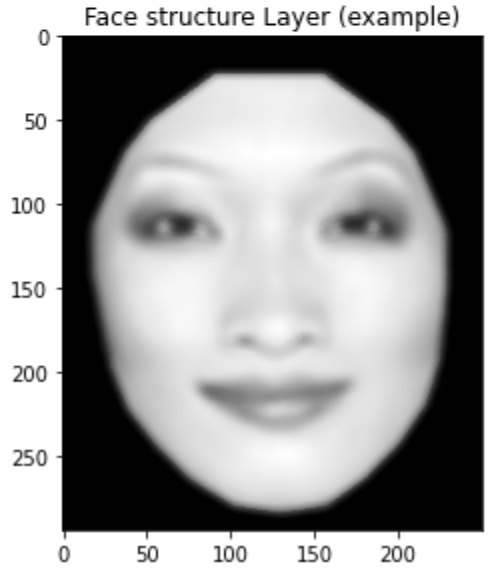
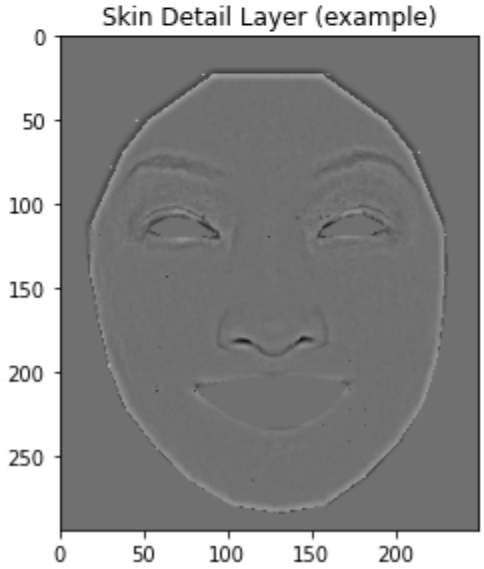
The Face structure layer and the Skin Detail Layer of the subject and the example.









Observations:

The best XDoG of the subject image was obtained for the parameters: Parameters for XDoG: sigma=0.4, k=1.6, gamma=0.5, epsilon=-0.5, phi=10. Further using value of alpha = 1 and delta_i= 1 and delta_e = 0 gave the best result.

While transferring makeup from example to source image (without XDoG) the best result was obtained for alpha = 0.8, delta_i = 0.7 and delta_e = 0.3

It was interesting to note that adding the gradient of the source image to the L channel of the result gave good images.