DIP ASSIGNMENT: 02

Submitted By:

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Question No.-01

Contrast Enhancement

Part-a

Full Scale Contrast Stretching (FSCS) on ECE.png and IIScMain.png.

Output Images and Comments

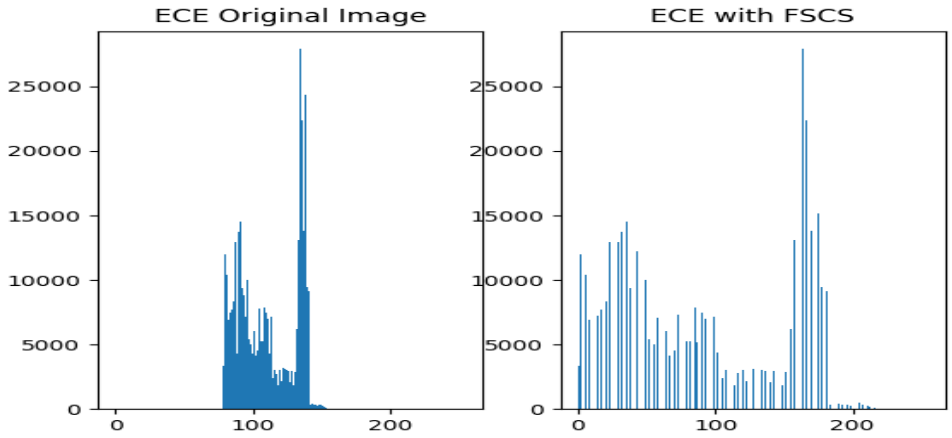

Figure- Histogram of ECE.png and its FSCS version

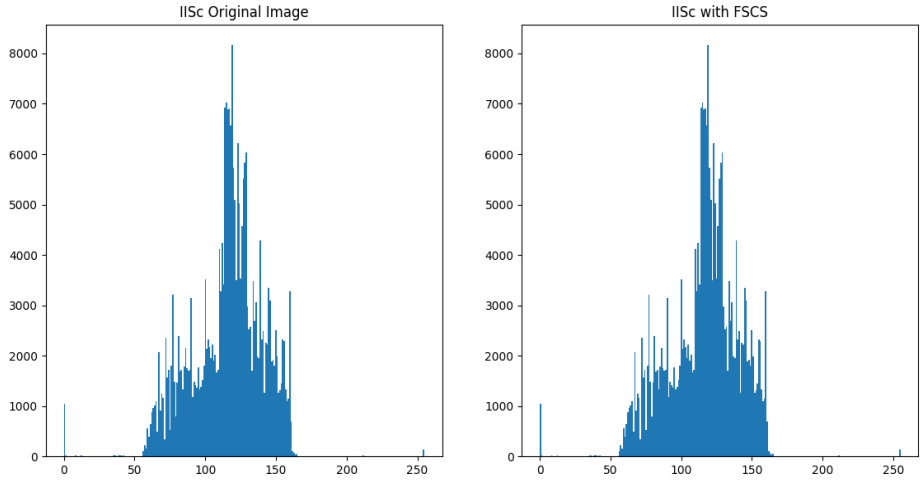

Figure- Histogram of IISc.png and its FSCS version

Figure- Image of ECE.png and its FSCS version

Figure- IISc of ECE.png and its FSCS version

Comments-

In ECE.png the frequency is concentrated near the middle of the histogram. Here, FSCS is performed on the image.

In case of IISc.png have some frequency at 0 & 255 intensity level. Therefore, it is full stretched already. So, if FSCS is performed then same output will be given.

Part-b

Histogram Equalization on lion.png, Hazy.png and StoneFace.png

Fig. Hisogram Equalization on lion.

Fig. Hisogram Equalization on Hazy.

Fig. Hisogram Equalization on StoneFace.

Commment: -

HE does not performed well for lion image due to following reasons-

- Darken intensity have high realtive frequencies.
- The reasulted image in more brighter than required. Low intensity was over emphasised.
- Worked well with hazy and stone face image.

Part c

Fig. CLAHE on StoneFace without ovelap and with overlap.

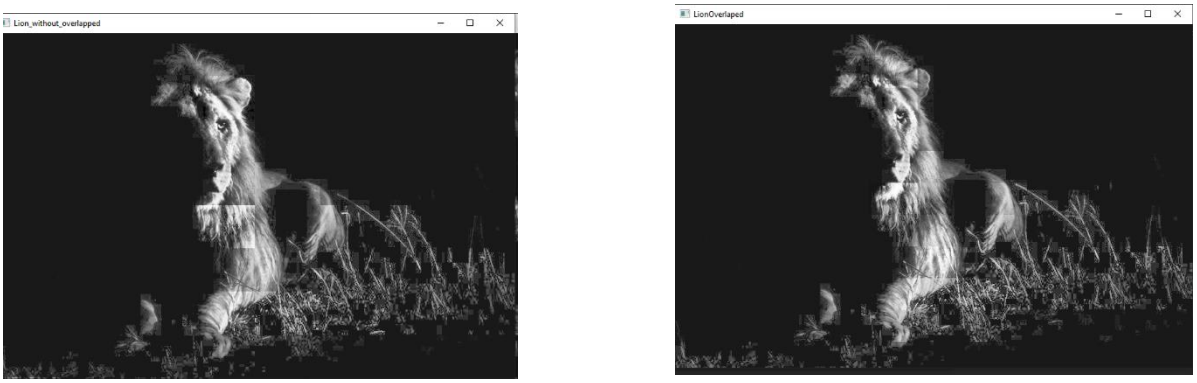

Fig. CLAHE on lion without ovelap and with overlap.

Comment :-

CLAHE without overlap worked with giving some boundry artifacts in the image. Here clip limit helped to maintain the brightness level.

CLAHE with overlap is helped to reduce the boundary artifacts.

Question No.-02

Image Up Sampling with interpolation

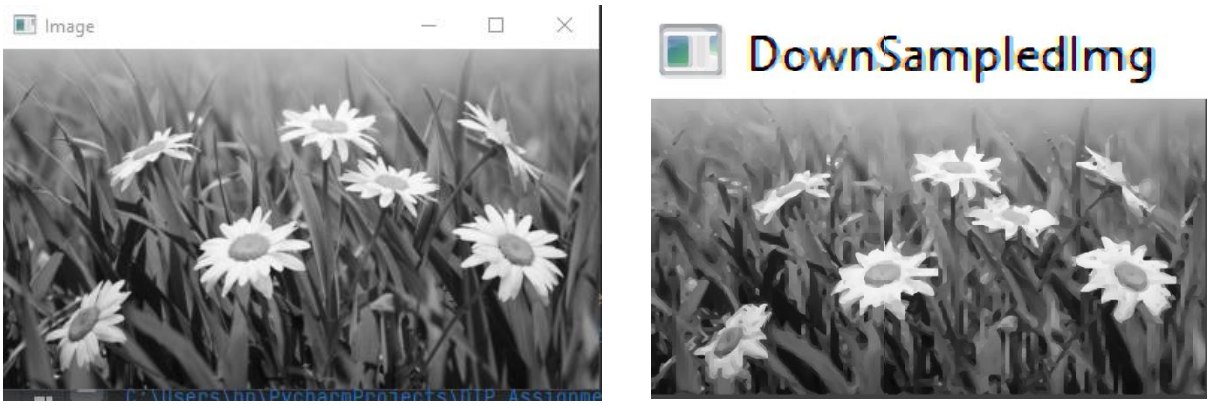

Fig.- Image and downsampled Image

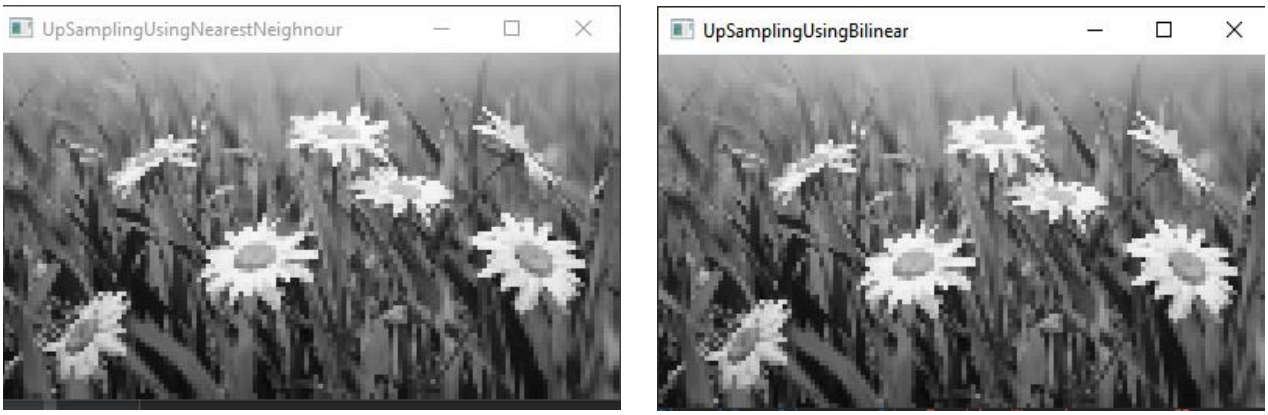

Fig.-Up samoled Image using Interpolation and bilinear interpolation

Comments:-

For down sampling no issue was found. But while doing up sampling using interpolaion using input as down samppled image turn out to some what streched artifacts and by doing bilinear interpolaton some artifacts where reduced.

Question No.-03

Spatial Domain Filtering:

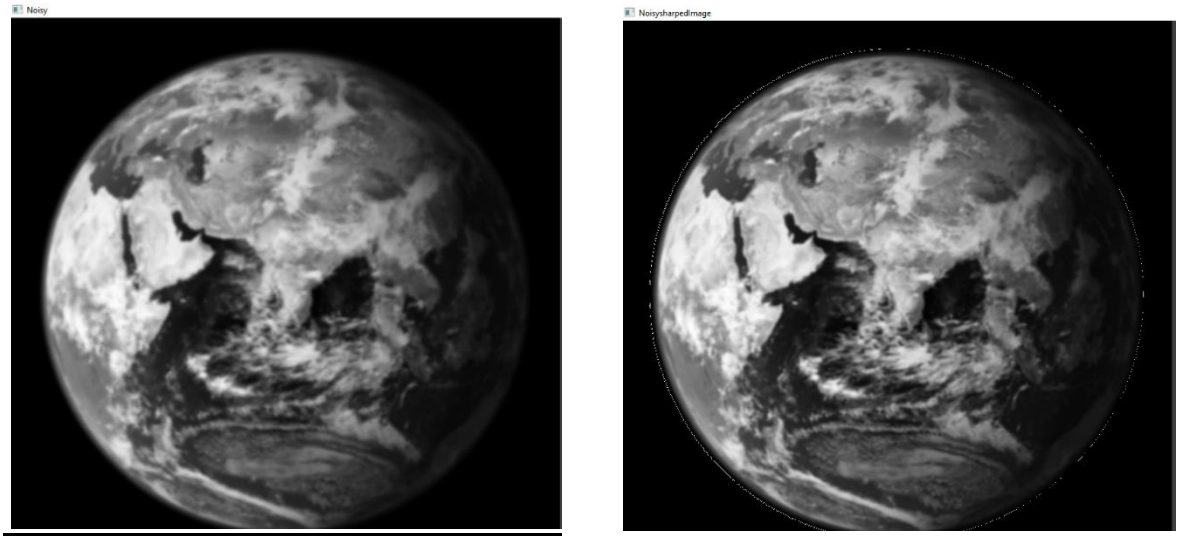

Fig.- blur image & its High boost filtered Image.

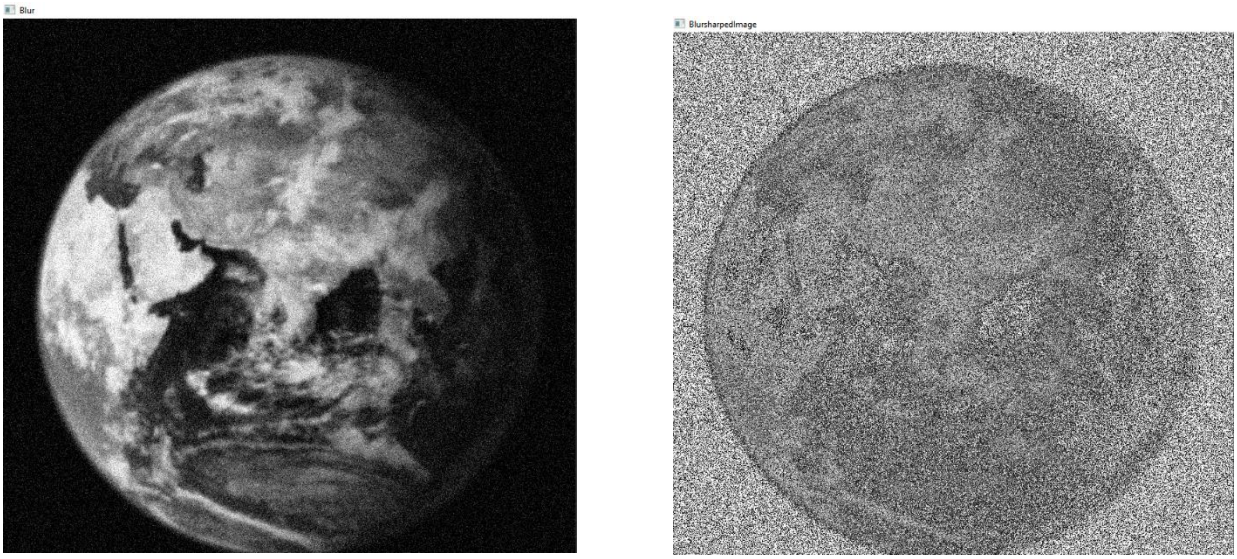

Fig.- Noisy image & its High boost filtered Image.

Comment-

It worked well with blur image. But when high boost filter was subjected to nosiy image the noise got amplified. This is because High boost filter serves for sharpening the image and it sems to be high pass. So, here noise was as a high pass component so it got amplified and result undesired image