

# Computer Vision

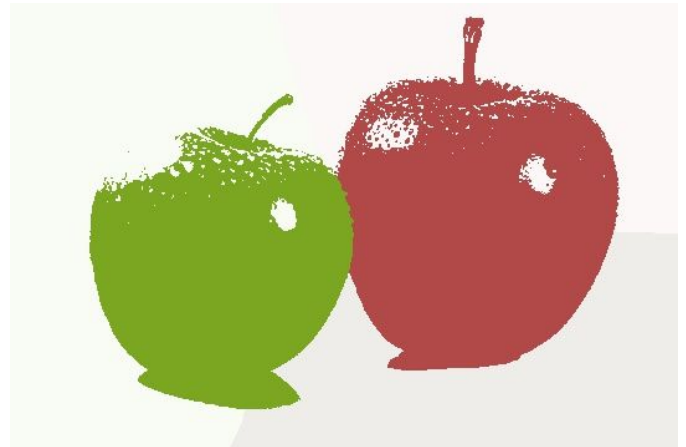
## Report Assignment-3

By Kaustav Vats (2016048)

### Question 1



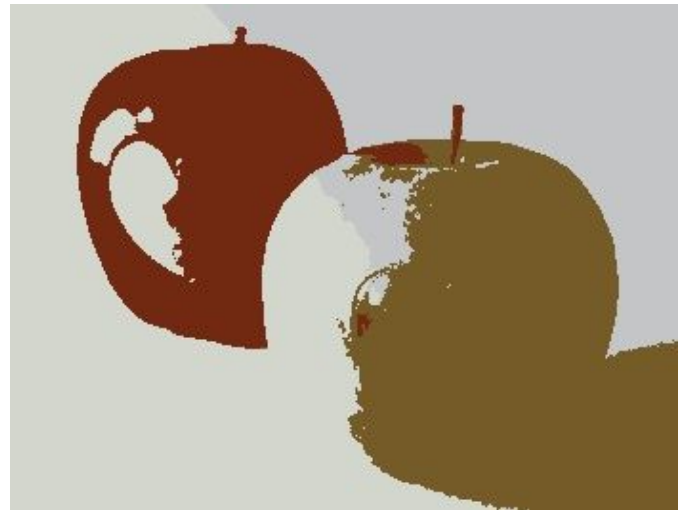
**K = 3, 3D**



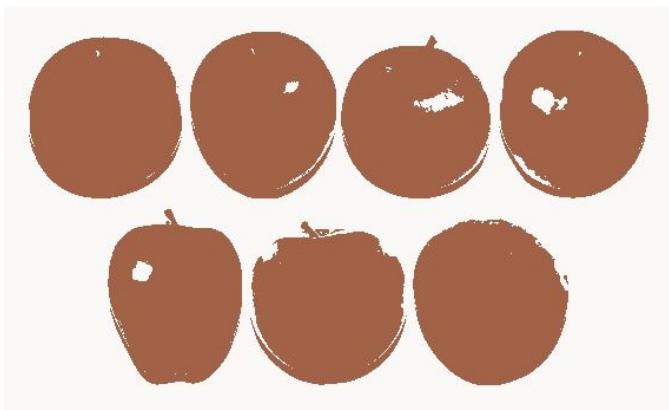
**K = 5, 5D**



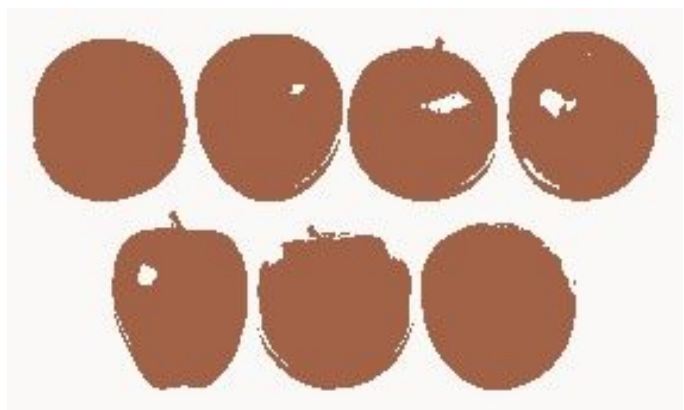
**K = 4, 3D**



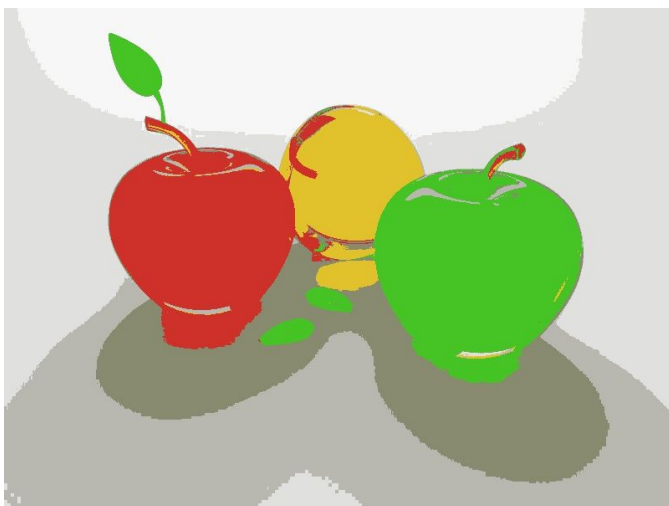
**K = 4, 5D**



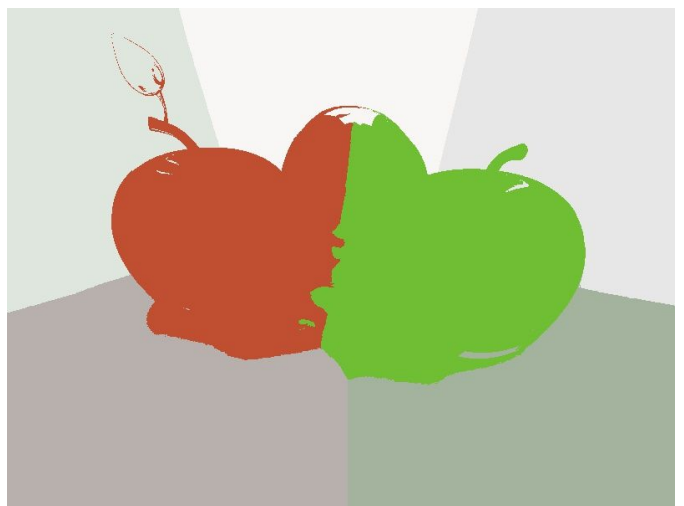
**K = 2, 3D**



**K = 2, 5D**



**K = 7, 3D**



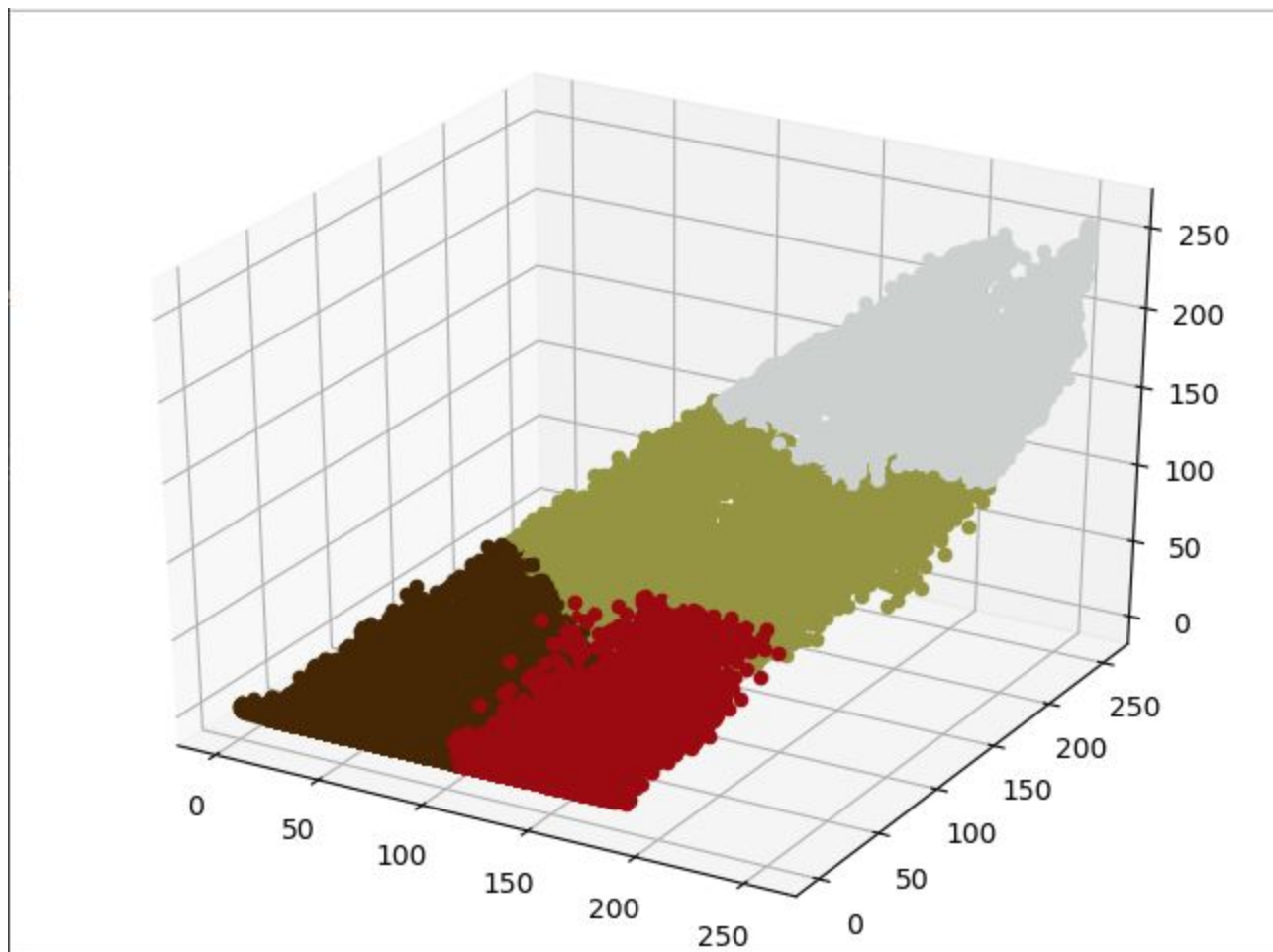
**K = 7, 5D**



**7 Apple with K = 4, 3D**



**K= 7, 5D**



**Scatter plot for Image 2or4Object**

## Question 2



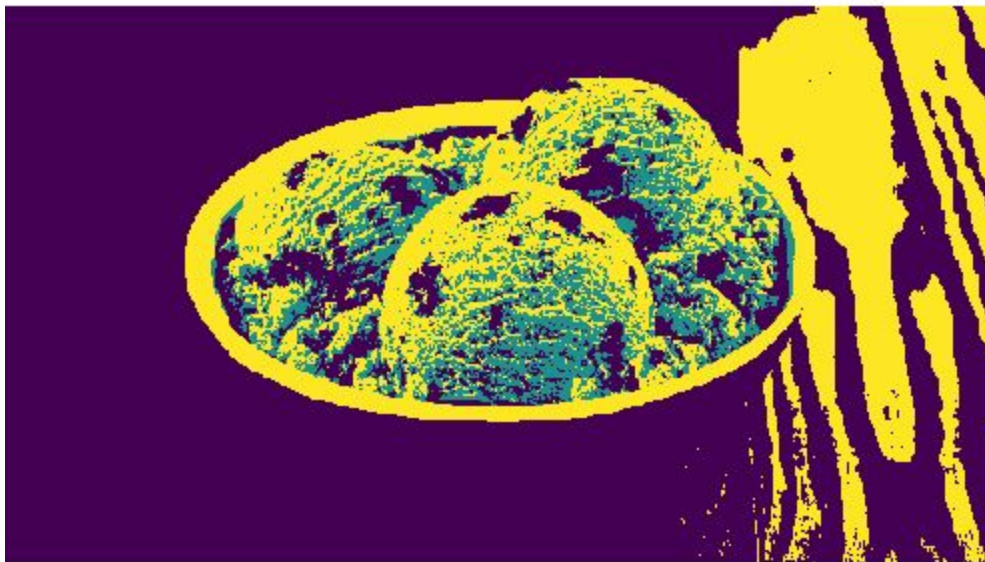
Ice Cream 1

*quantile=0.3, n\_samples=1000*



Ice Cream 3

*quantile=0.3, n\_samples=1000*



Ice Cream 2

*quantile=0.2, n\_samples=1000*

Quantile = 0.5 mean take median of all pairwise distance, similarly for 0.3

N\_samples mean the number of samples to use for mean shift

Lowering the quantile value give much better segmentation and increasing the n samples give



Question 3

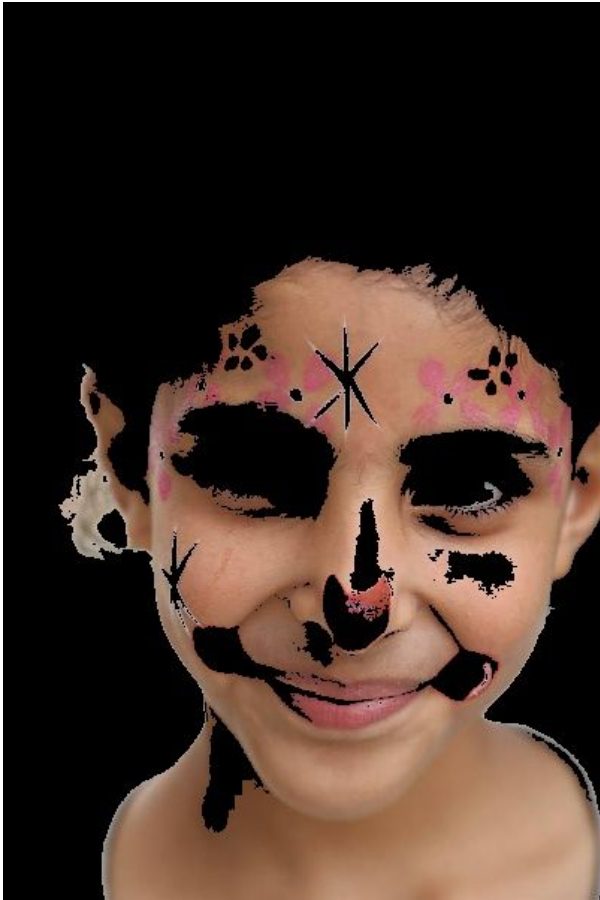
Skin Color Thresholding



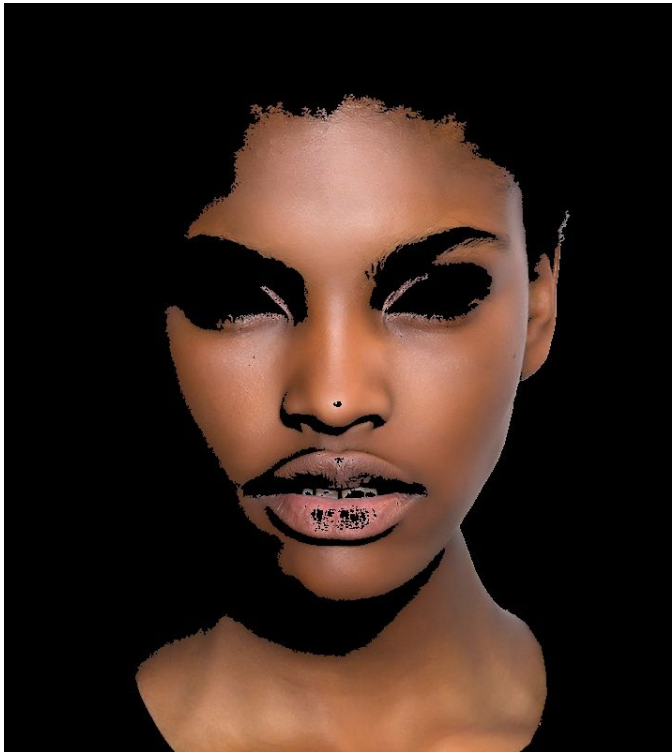
Seeded Segmentation



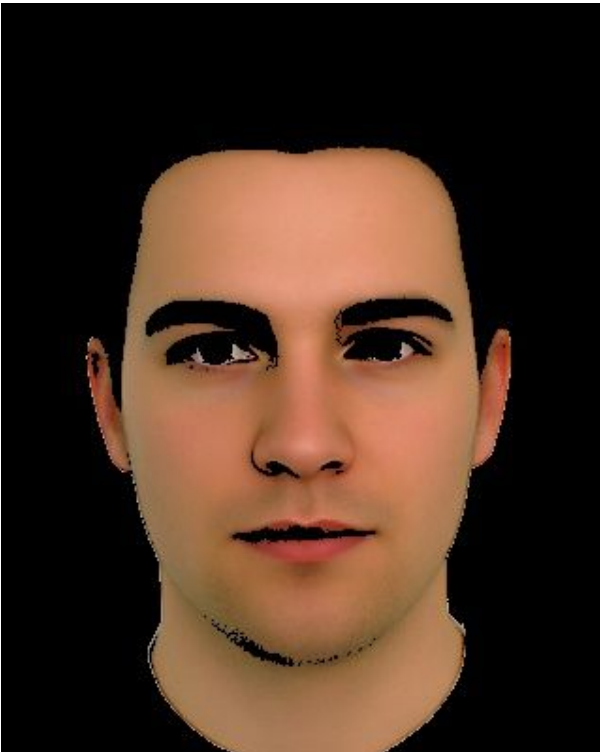
SeedPoint = [600, 950], Tolerance = 33.7%



SeedPoint = [250,250], Tolerance = 23.5%



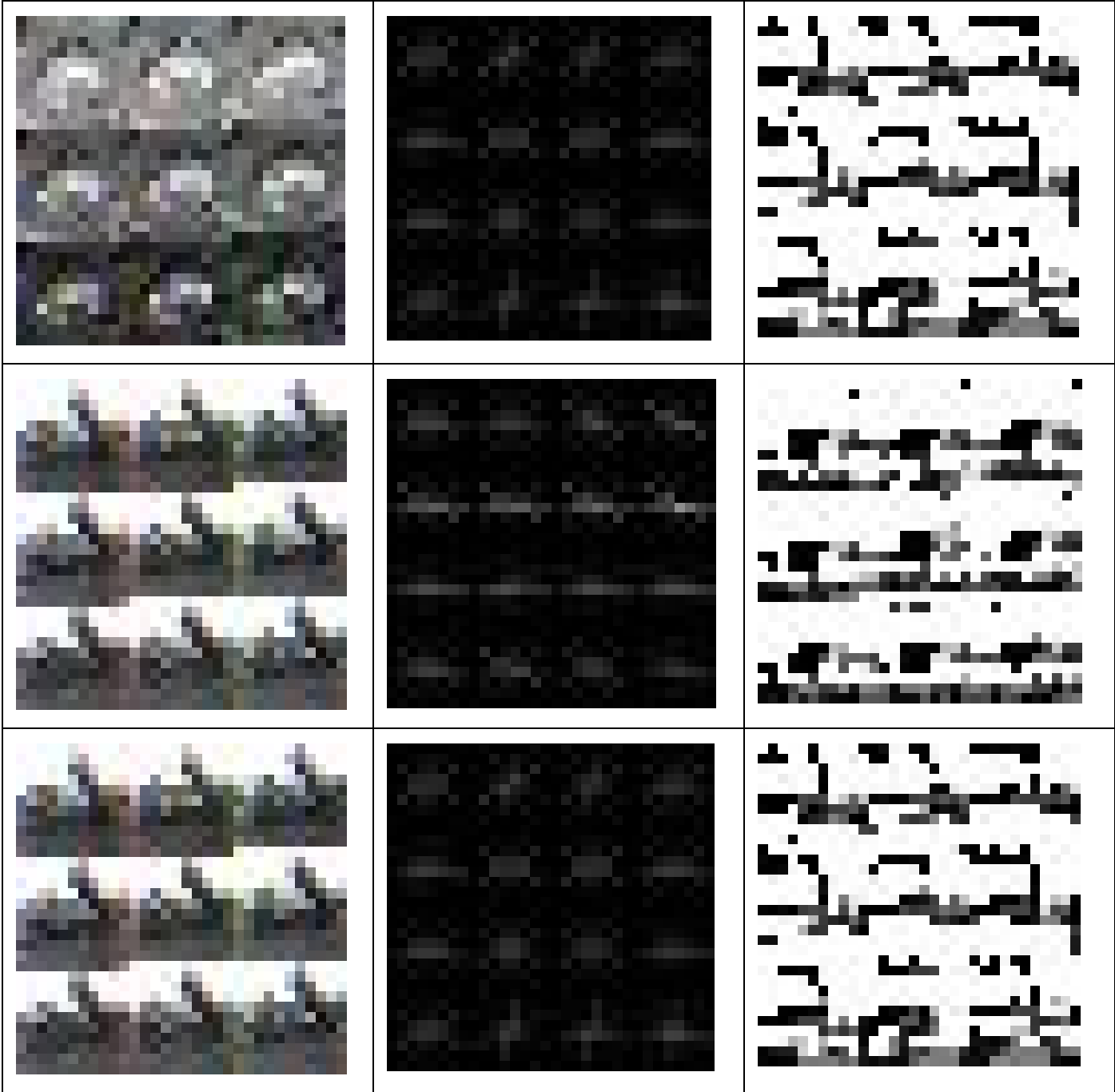
SeedPoint = [200,350], Tolerance =30%

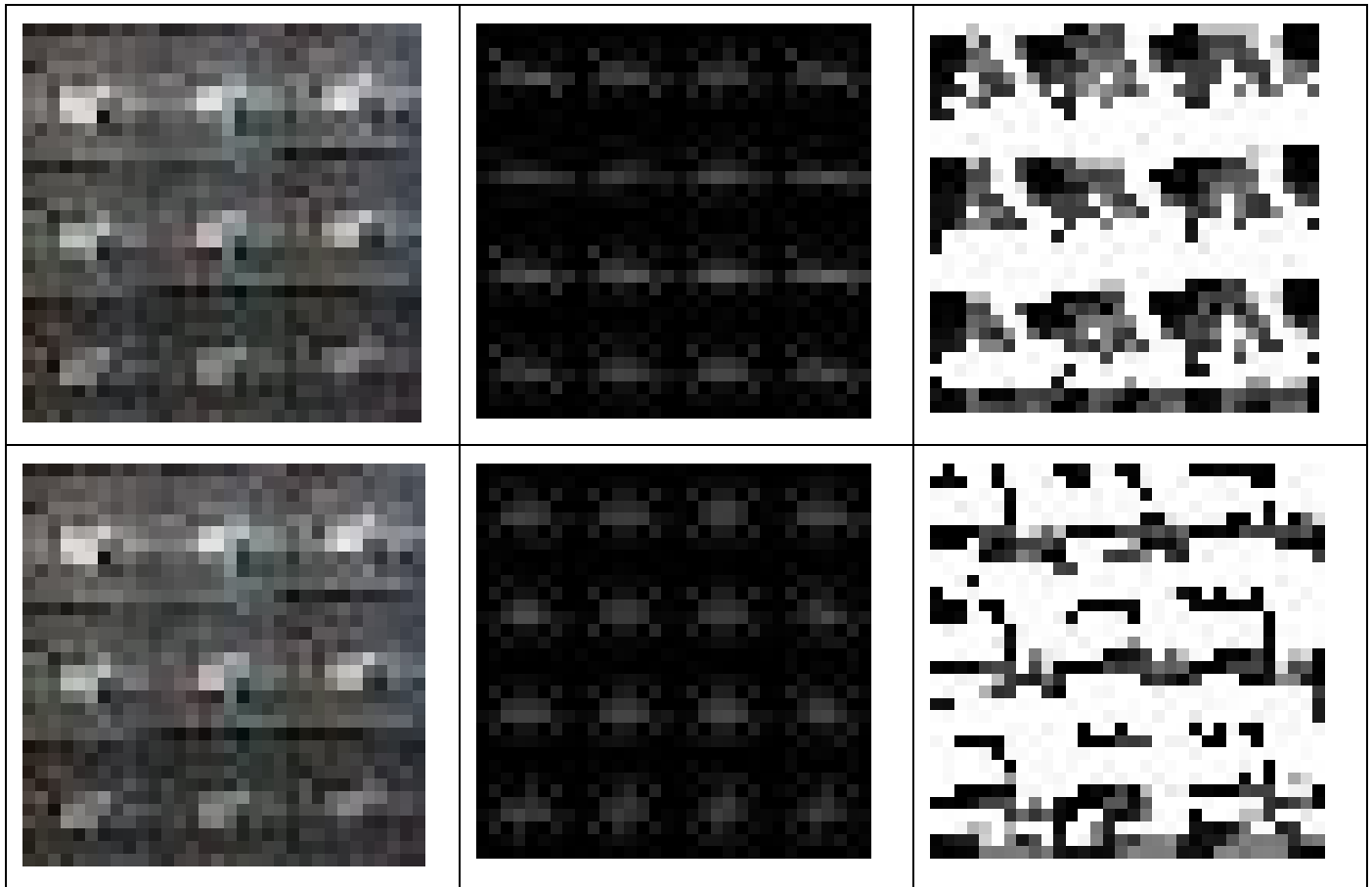


SeedPoint = [120, 150], Tolerance =30%

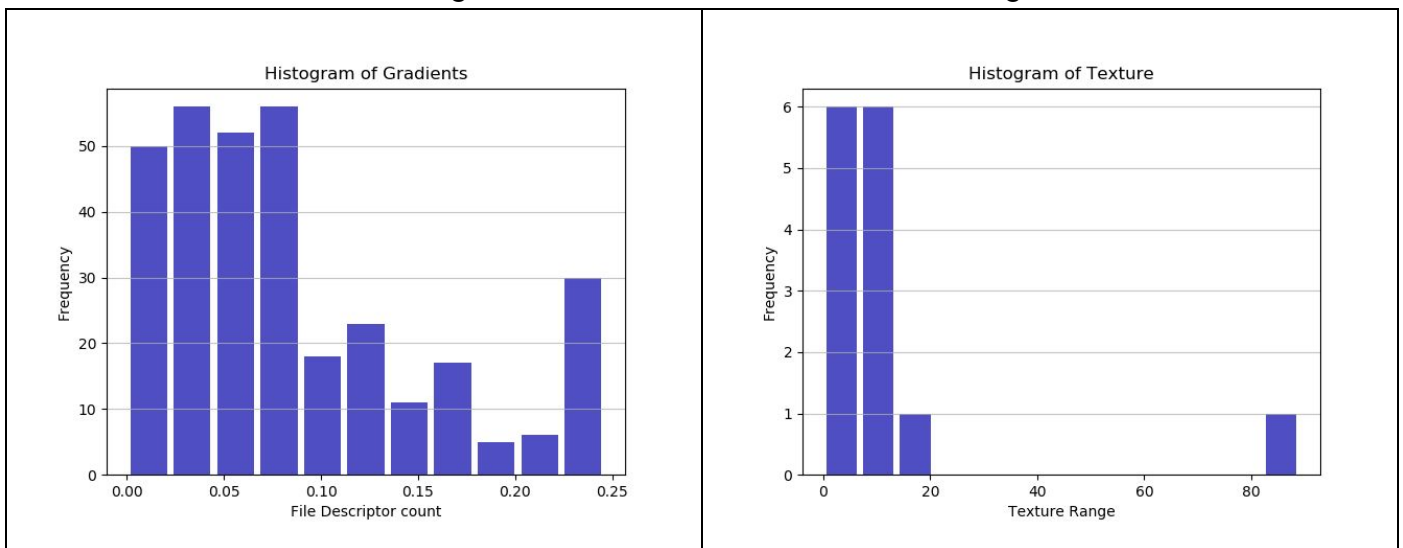
I observed that seeded segmentation gives poor result for image having lot of texture, shades etc. lightning, reflection, shining can affect skin based segmentation. Color should be uniform to use skin based segmentation.

Question 4  
Visual Images  
Original, HOG, LBP

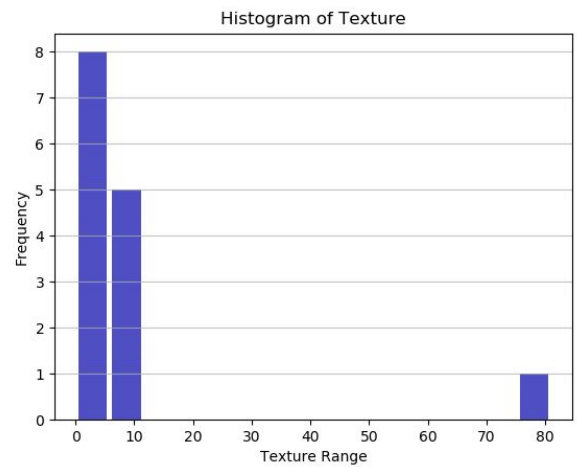
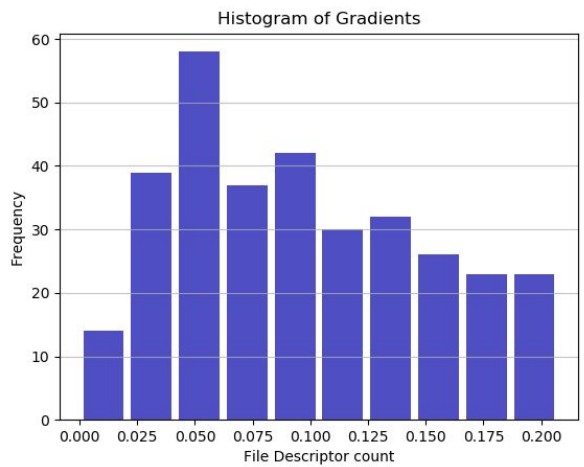
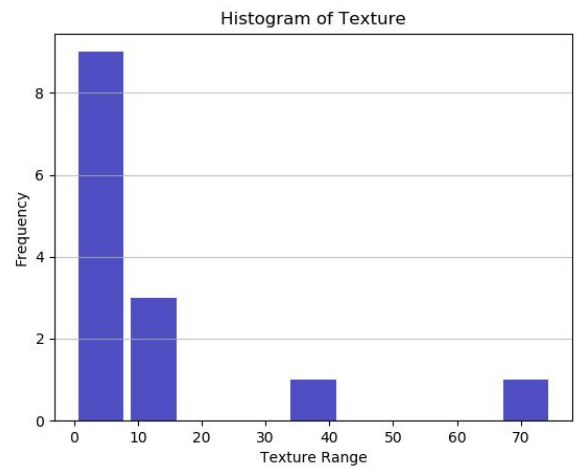
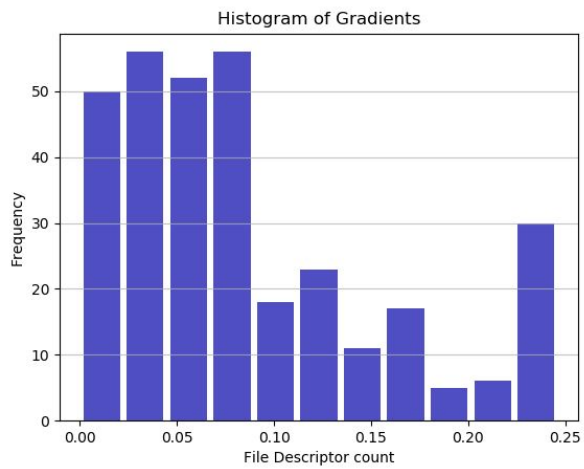
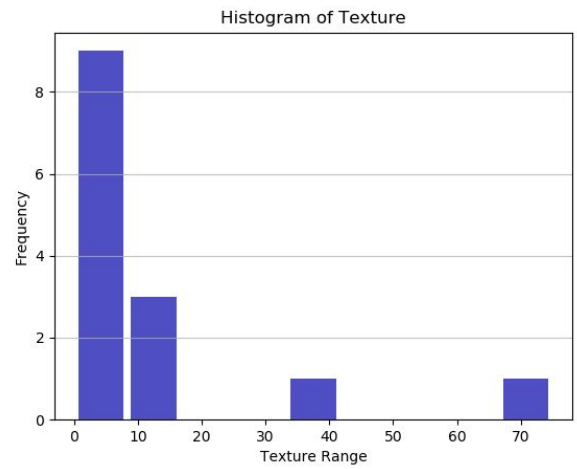
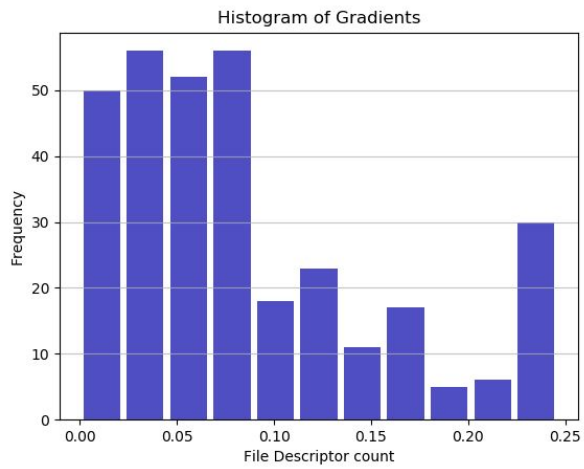


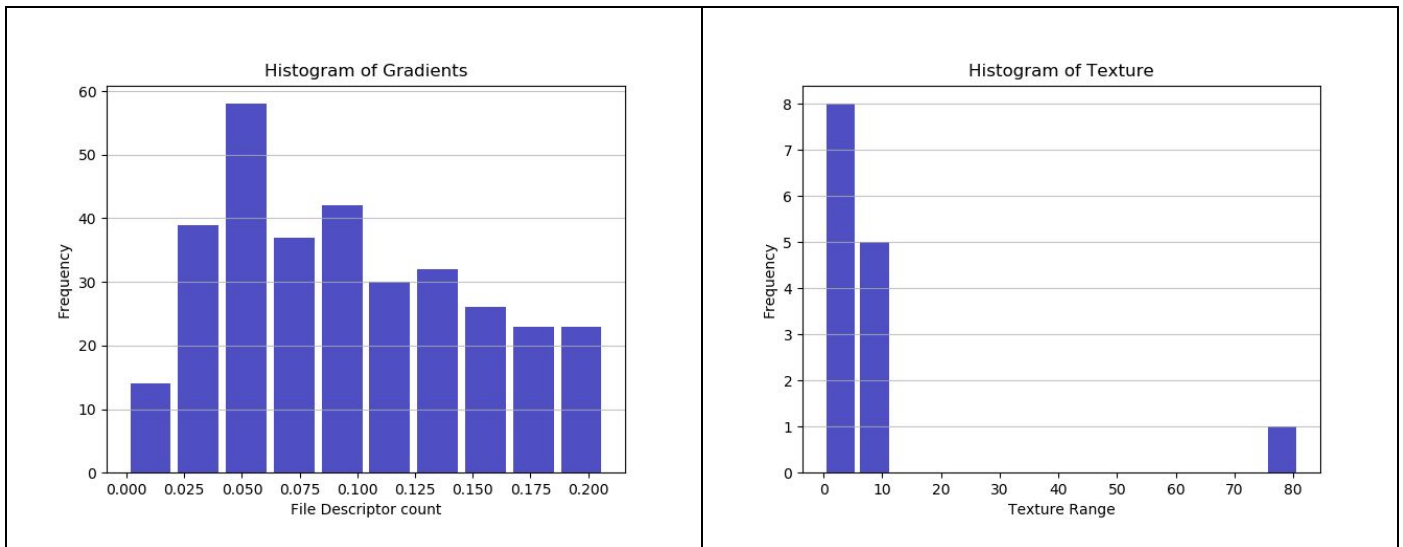


**Below Are the HOG and LBP Histograms which are used as a feature for Image classification**









We can see that histogram of some images are same because of similar images.

Accuracy with HOG Features	15.49%
Accuracy with LBP Features	19.60%

First extract features from the images. Then extend them and create 1D array. Do clustering over them. After cluster create a histogram of each image and pass it as features for Train then do classification using SVM.