Assignment 1

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Image Enhancement/Segmentation for Non Photorealistic Rendering of Images

For this assignment we used Qt 4.3.2 and Intel OpenCV 1.0. Qt is used to create GUI as well as for most of the functions we used it to read write and display images. While some for a couple of function we used OpenCV to read images. Our GUI Includes some basic enhancement techniques on images e.g. Guassian Blur, Edge Detections with sobel's mask, Image Segementation etc. For One technique we have also included Functions to convert RGB color model to HSI Model and vice Versa.

We include 3 methods for PR image to NPR conversion :

1. Pastel filter : For this effect first we convert RGB image space to HSI. Then We normalize the Hue to reduce the number of overall colors--similar to a "cutout" effect. Then, compression of the Saturation (S) information from 15-100 into 15-50. This should lighten up all the colors to a nice pastel tone. Then, it compresses the Value (V) from 5-100 into 85-100. This should really get rid of all the dark colors. To deal the near black pixels we converted all of the near black pixels to a shade of gray. Ref[1]
2. Pyramid Segmentation : We have Observed that the pyramid segmentation itself gives very good painting effect of images with proper threshold. Our GUI includes this method with threshold value of 10,20, and 30. We used this method provided by OpenCV.
3. The third method is to the Region Grow Segmentation. We implemented this method of segmentation. To Highlight the boundaries we use Canny Edge technique and merger of these to gives good results. Ref[3]

Reference :

1. http://paintdotnet.forumer.com/viewtopic.php?t=2392
2. Paint By Numbers by P Haeberly
3. Stylization_and_Abstraction_of_Photographs By Aaron Hertman et al.