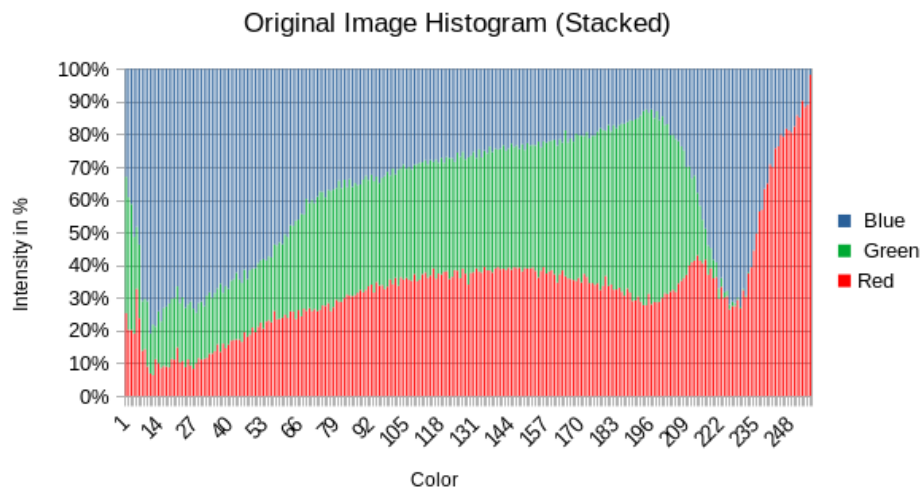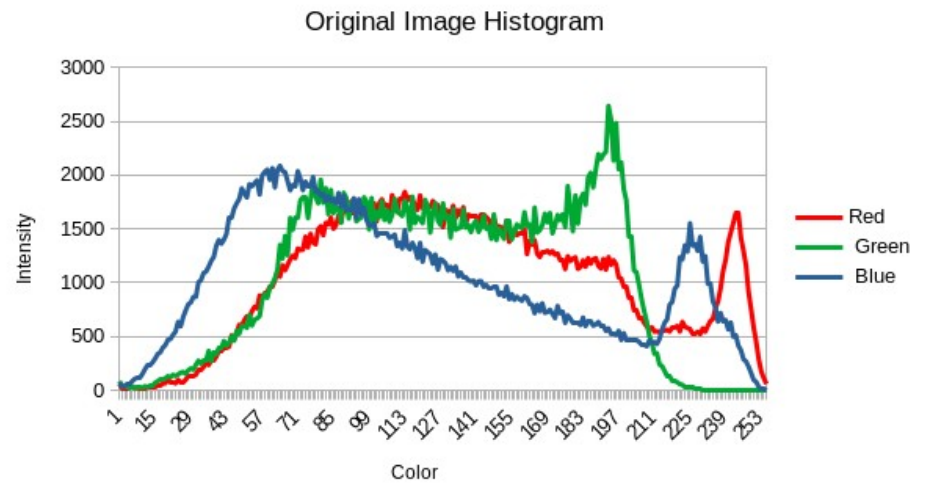YTU Department of Mathematical Engineering
MTM4552 Görüntü İşleme Spring 2023
Color Image Processing Homework

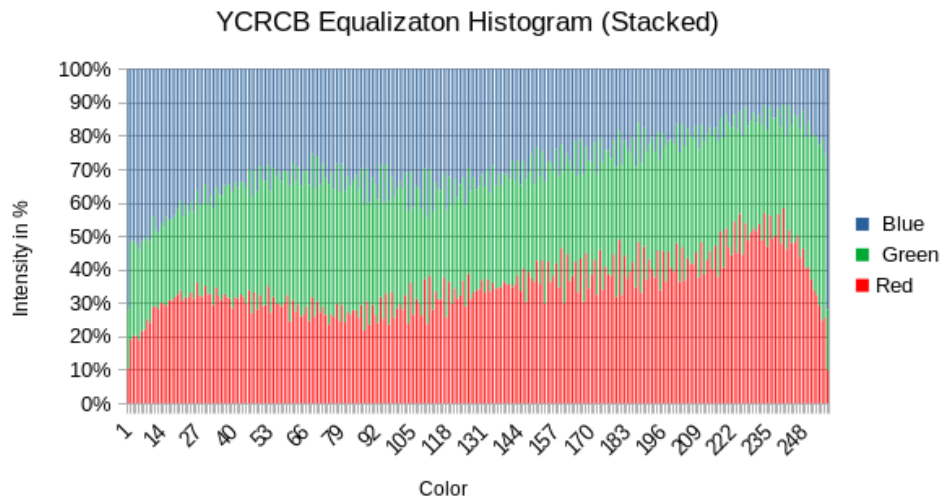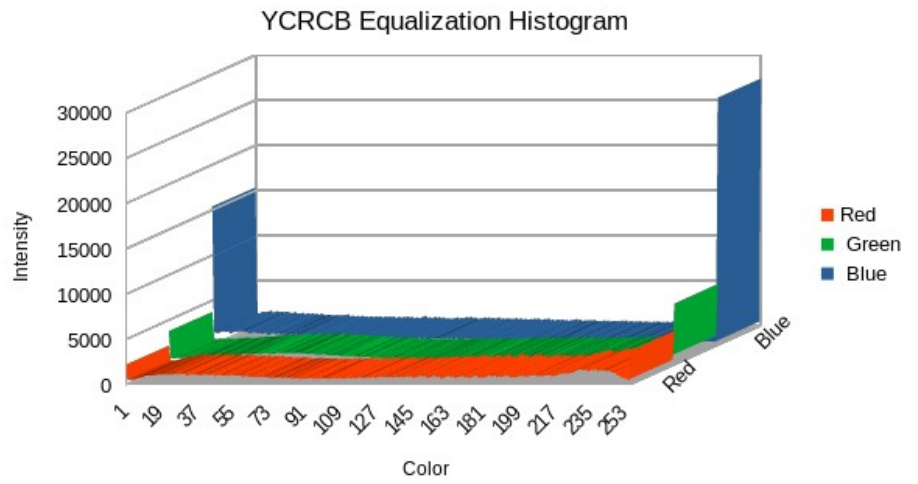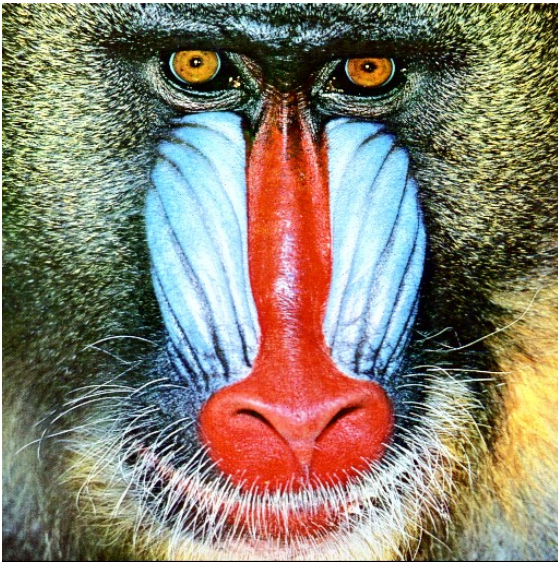Name: Kozha Akhmet Abdramanov
Student Number: 19052901

  In this homework our goal is to do color space conversion from RGB to HSI and RGB to YcbCr and compare histogram equalized images using SNR/PSNR measures. As library I used opencv for equalization.

At first, I converted .ppm file to MAT class and computed equalization by using HSI color space. After I did same with YcbCr color space and calculated SNR/PSNR measures for both of them.
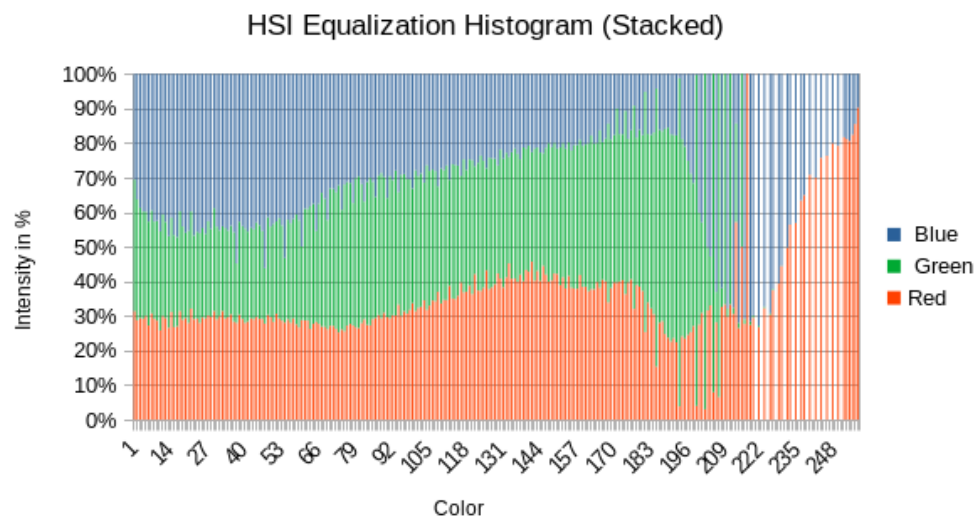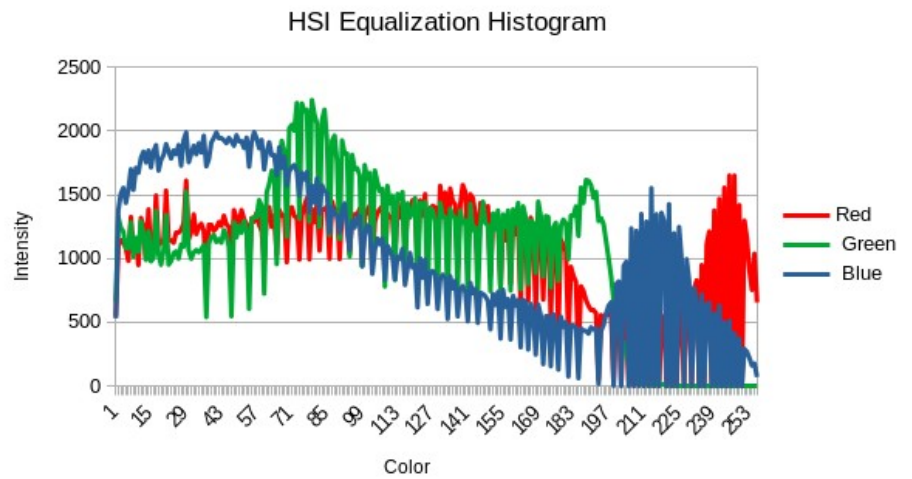
Original Image

Original Image Histogram

Original Image Histogram (Stacked)

YcbCr

YCRCB Equalization Histogram

YCRCB Equalizaton Histogram (Stacked)

- SNR: 78.5163 dB
- PSNR: 24.8714 dB

HSI

HSI Equalization Histogram

HSI Equalization Histogram (Stacked)
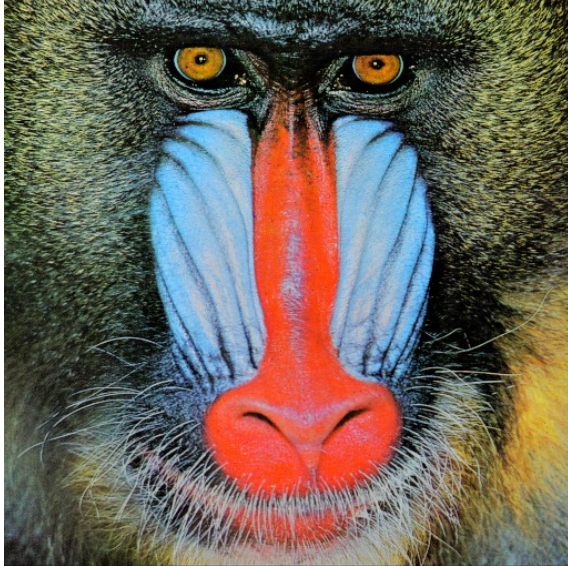
- SNR: 78.85 dB
- PSNR: 25.2051 dB

Results

Finally, as you see this equalizations have pros and cons in its own way. YcbCr have problems with first and last pixels which we can see in histogram. HSI lost some values after equalization.

Even with that, the SNR measures are really good for both equalization:
- HSI is 78.85 dB
- YcbCr is 78.5163 dB

But PSNR is awful and nearly same:
- HSI is 25.2051 dB
- YcbCr is 24.8714 dB