



Hacettepe University

Computer Engineering Department

BBM415 – Fundamentals of Image Processing Lab.

Assignment 2 Report

Color Transfer Between Images

Oğuzhan Deniz – 21946022

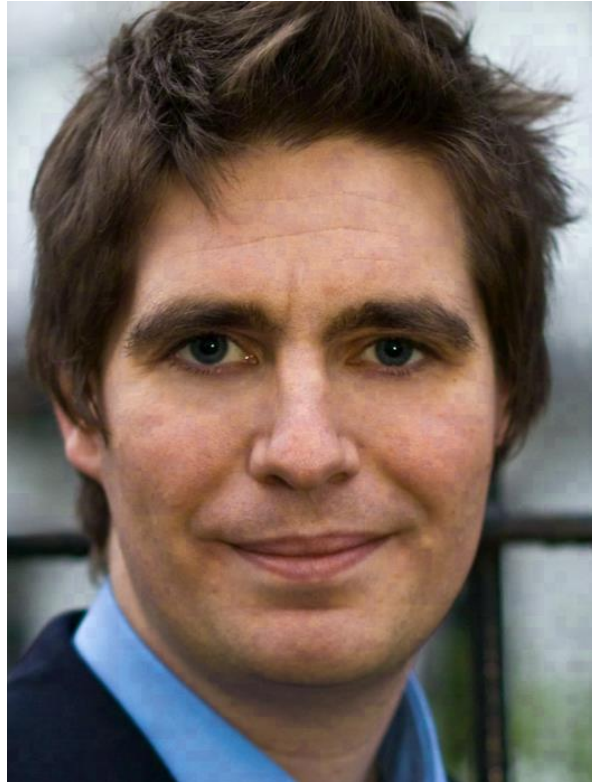
In this problem, we need to do color transfer between images using their mean and standard deviation values. We have source image and target image, we need to apply target image's color palette to source image.

I followed given steps in my approach. Firstly, I convert both images to LAB color space representation from RGB color space. Then I converted into float32 because I will do some math operations with values of pixels. Secondly, I calculated mean and standard deviation values for both images.

After that, I loop through every single pixel. I subtracted mean value of source image from pixel's values. Then I scaled new data points according to the relative standard deviations of target and source images with multiplying by $(\text{target_std} / \text{source_std})$. I added mean value of target image to pixel values. I rounded it, clipped it and convert it back to uint8. Last of it, I converted back to RGB color space from LAB color space.

For part 2, I divided source and target images into equal rectangular pieces. Then I calculated NCC value for every piece I divided. I did color transfer between most similar parts of image. At that point, my results was different than normal results. I didn't understand what to do in here. Here is my failed attempts for part2.





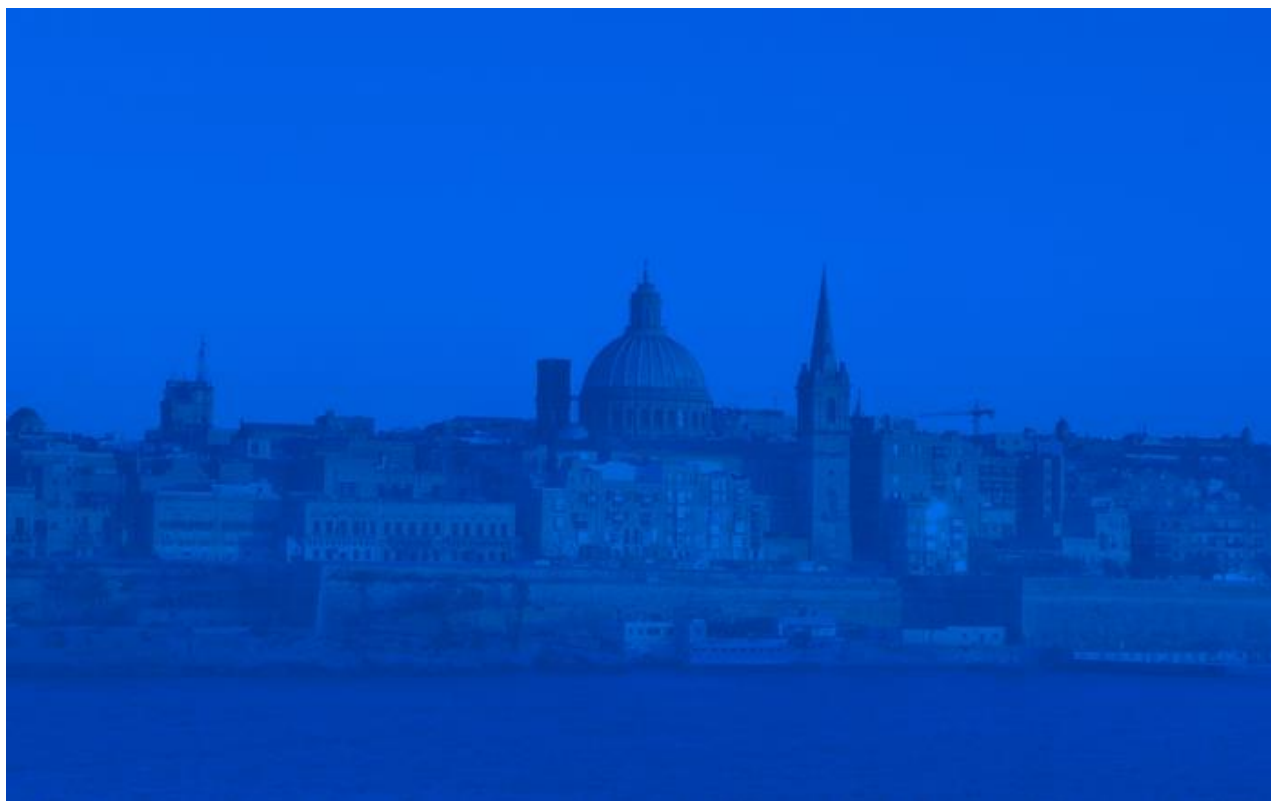
After this fail, I changed my approach to the problem. Instead of color transferring between most similar parts, I decided to use most similar part's mean and standard deviation value for color transferring process. This approach failed too, here is my results for this approach.



I used different sized of regions for calculating part2 but it didn't help.

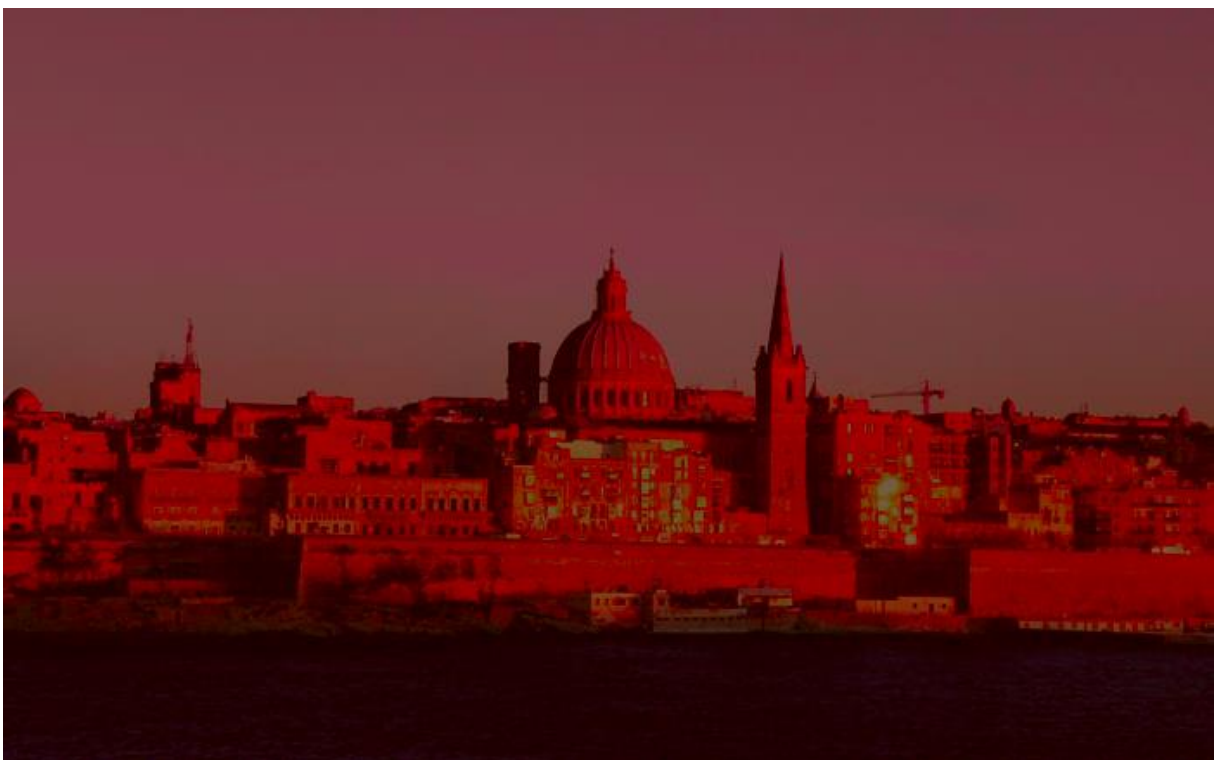


Here is fail result for input 01 too.

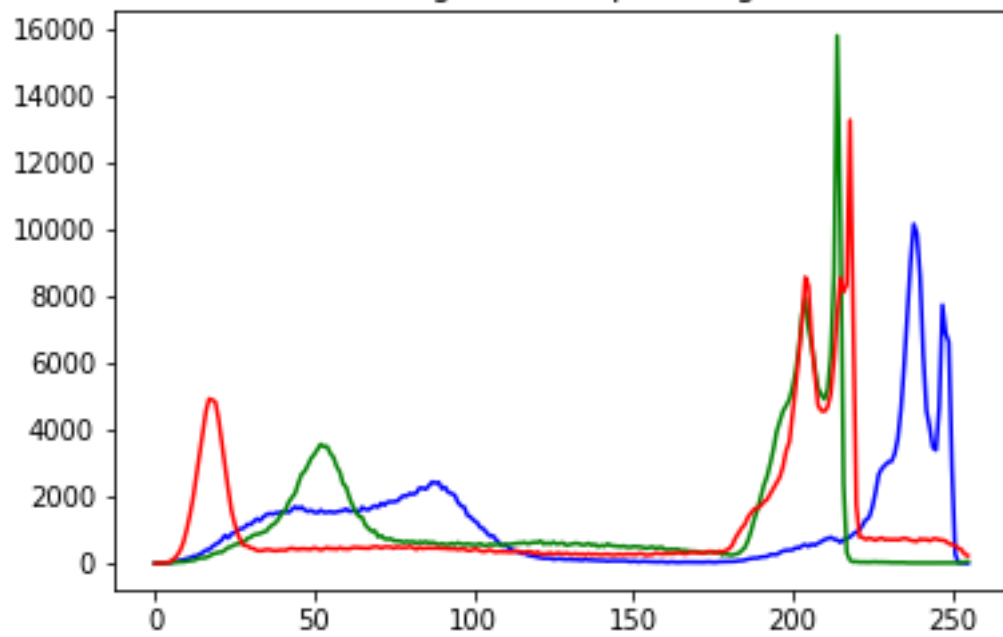


At that point, I tried everything I could think of but none of them helped.
Here is my normal results.

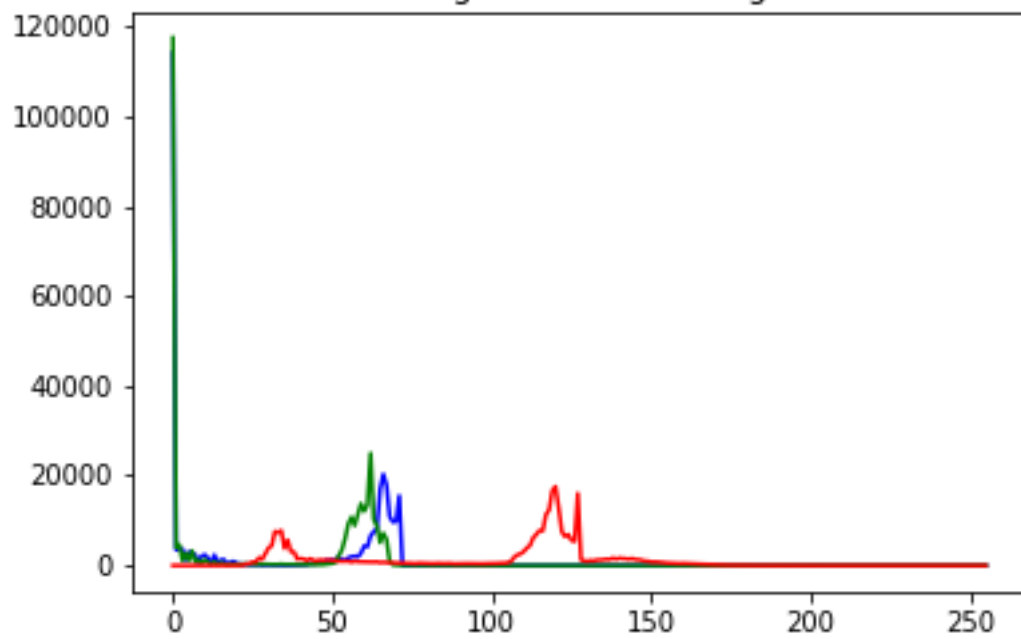
Results for Image 01:



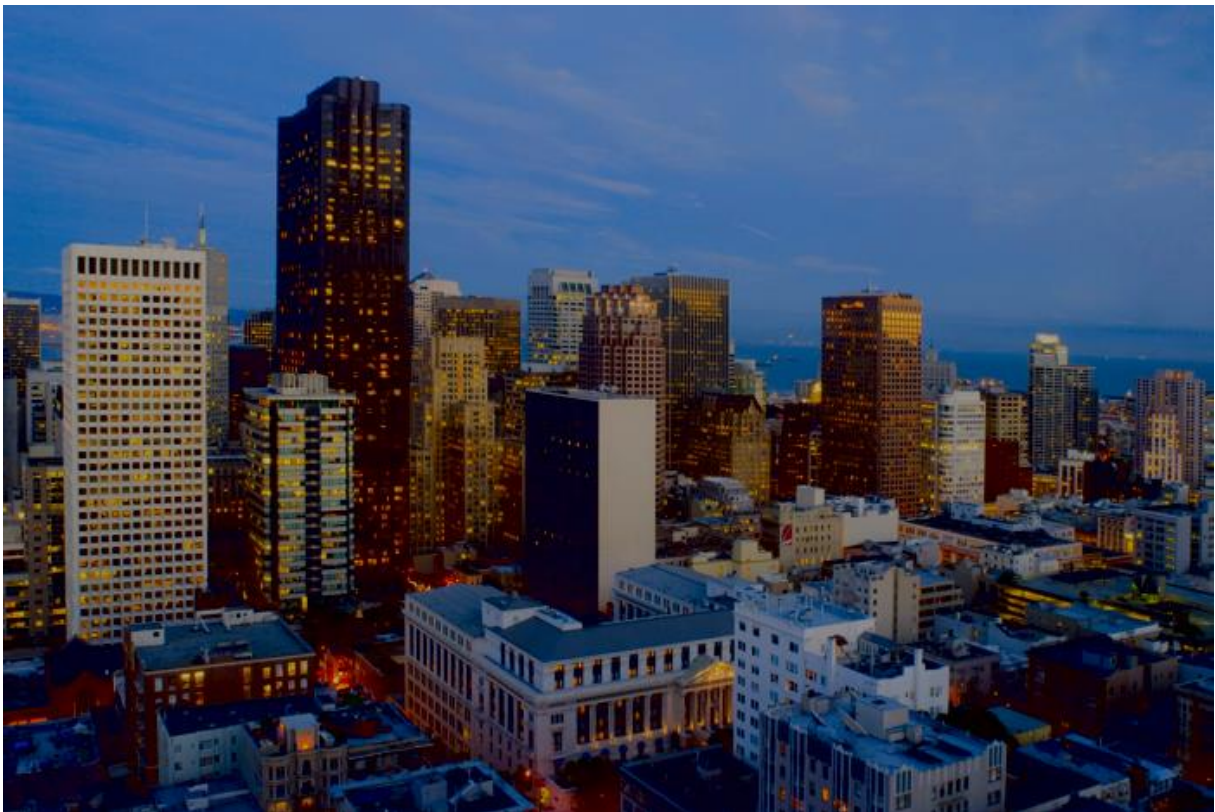
Histogram for Input Image



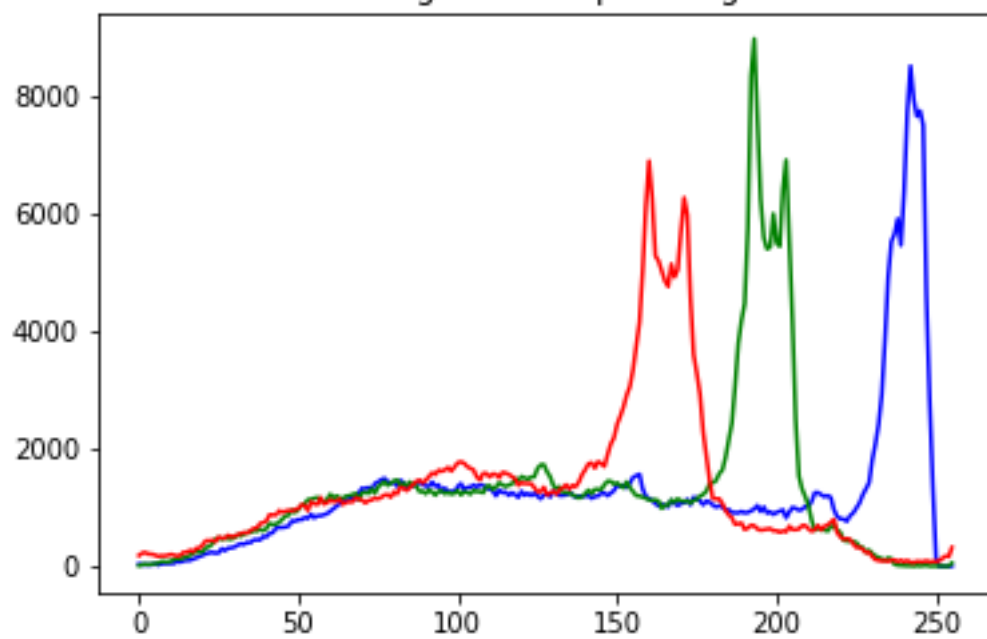
Histogram for Final Image



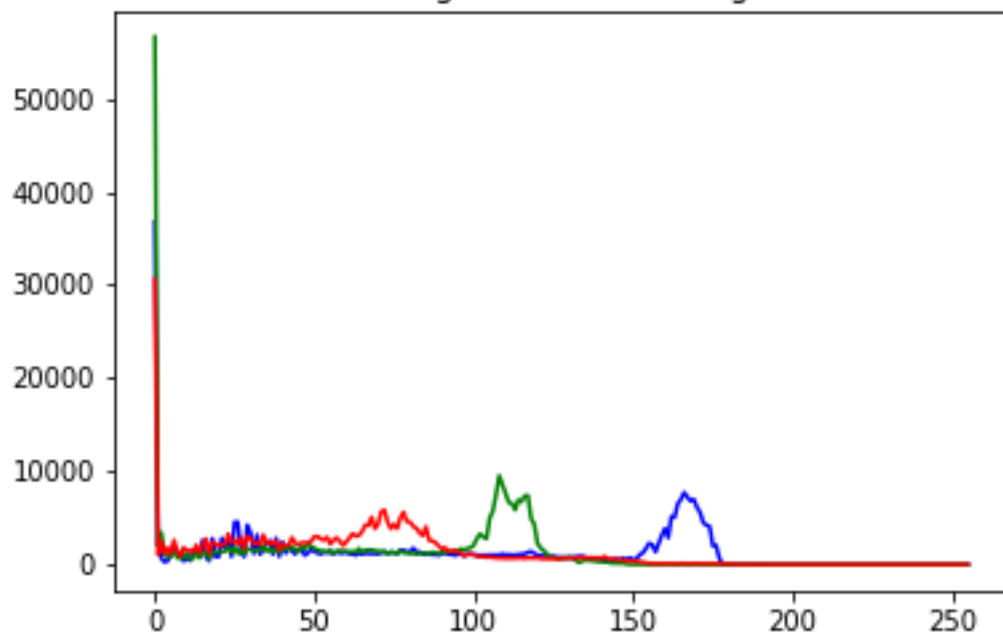
Results for Image 03:



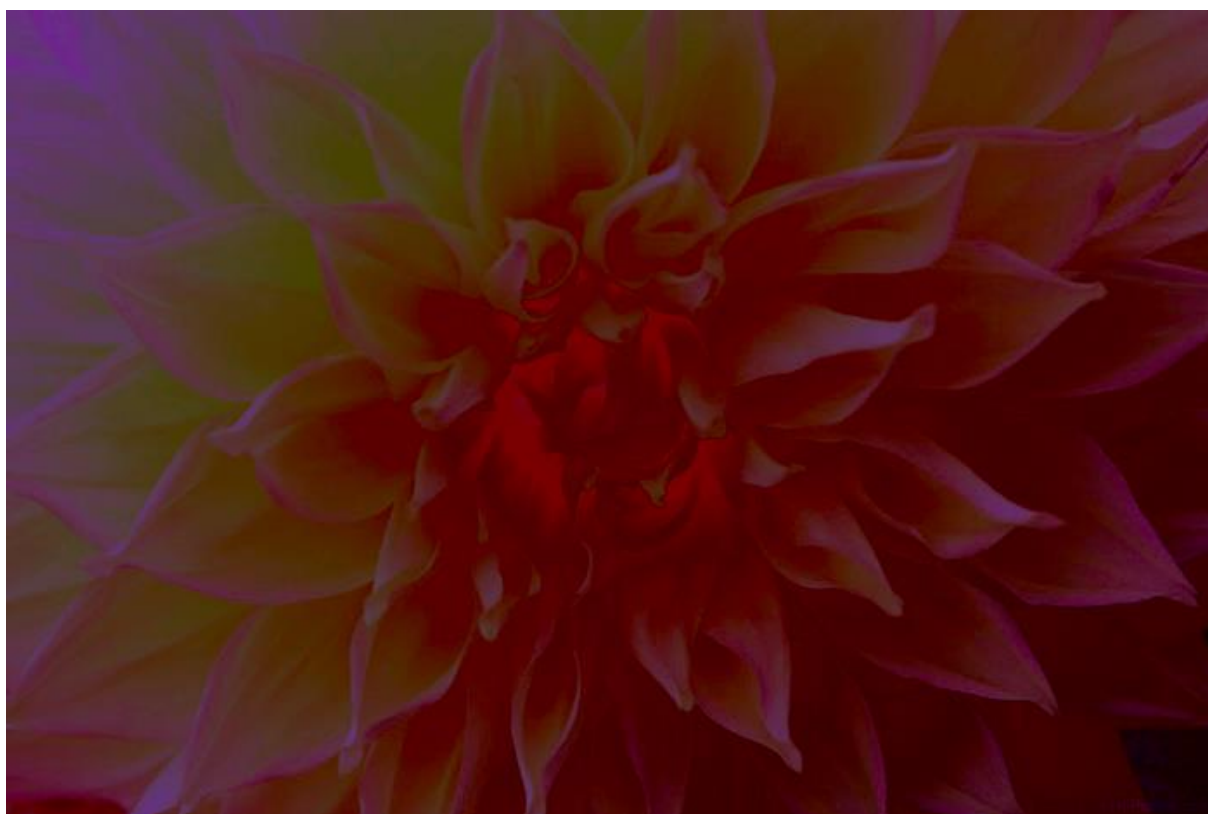
Histogram for Input Image



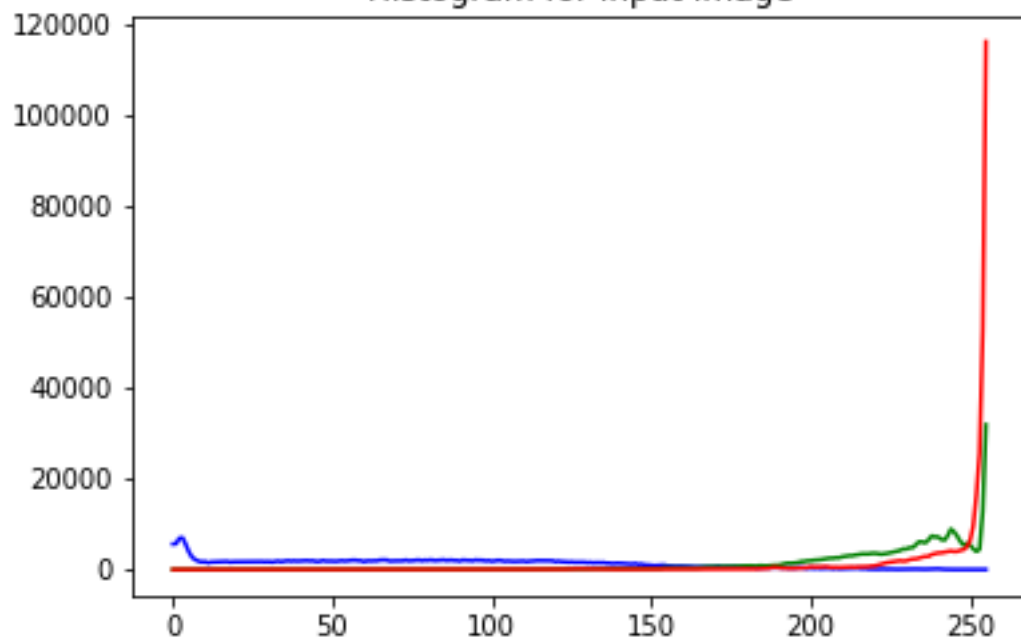
Histogram for Final Image



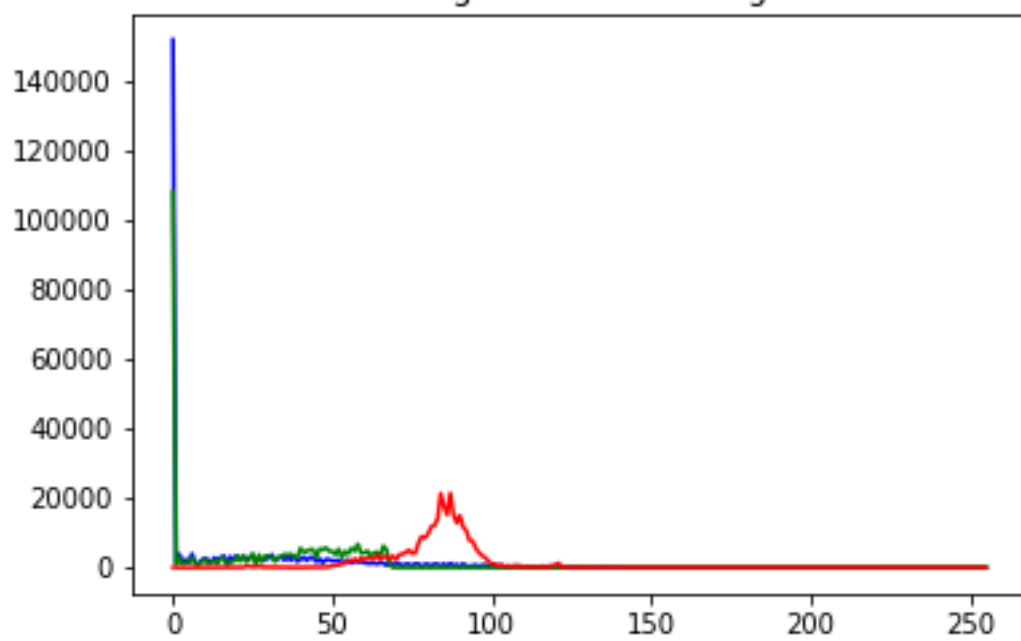
Results for Image 09:



Histogram for Input Image



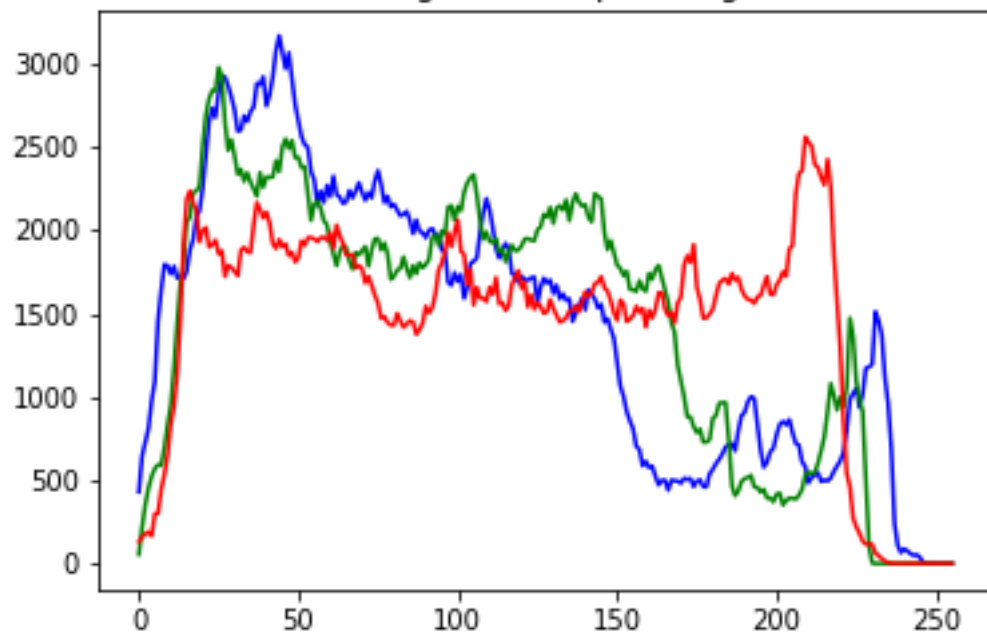
Histogram for Final Image



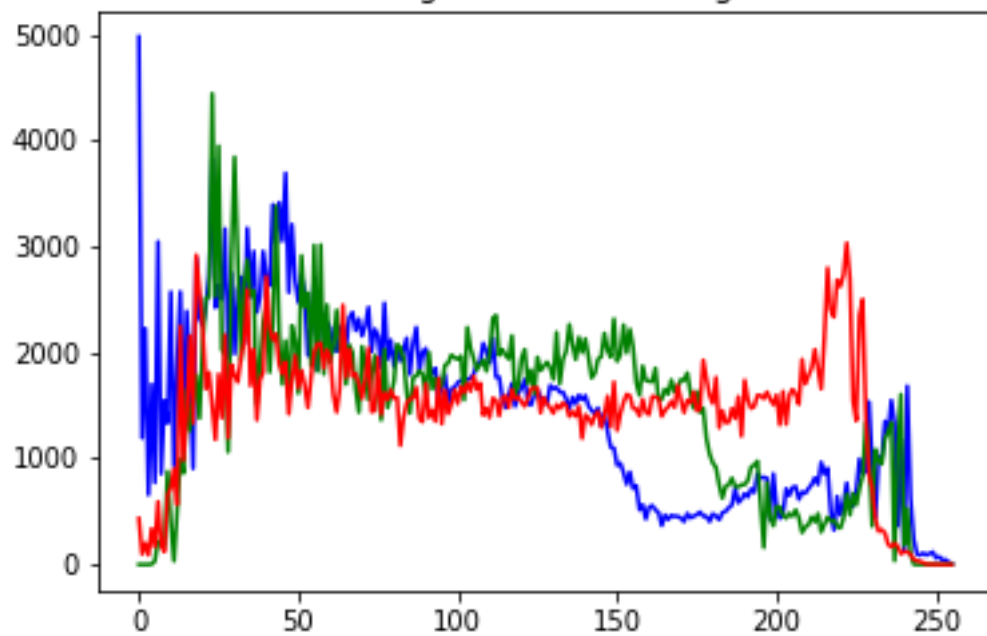
Results for Image 11:



Histogram for Input Image



Histogram for Final Image



Here is my other results without histograms:

Image 02



Image 15

